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OCT 11 1977

MEMORANDUM FOR: Steven A. Varga, Chief
Light Water Reactors Branch #4

FROM: L. G. Hulman, Chief
Hydrology-Meteorology Branch, DSE

SUBJECT: METEOROLOGICAL ACCEPTANCE REVIEW OF FSAR FOR MIDLAND

PLANT NAME: Midland - Units 1&2
LICENSING STAGE: OL
DOCKET NUMBER: 50-329 & 50-330
MILESTONE NO.: 01-32
RESPONSIBLE BRANCH: LWR#4
REQUESTED COMPLETION DATE: September 27, 1977
REVIEW STATUS: Meteorology Section (HMB) - Complete

The Meteorology Section has reviewed the FSAR for Midland and finding it NOT complete recommend that it be accepted.

Enclosed are questions that have been developed by W. Snell and J. Fairobent during the acceptance review and they may be considered as draft Q-1's.

Original Signed by
L. G. Hulman

L. G. Hulman, Chief
Hydrology-Meteorology Branch
Division of Site Safety and
Environmental Analysis

Enclosure:
As Stated

cc: w/o encl:
R. Boyd
R. DeYoung
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cc: w/encl:
E. Denton
D. Muller
D. Reed
G. Gammill
W. Snell
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DATE ▶	10/7/77	10/7/77	10/11/77		

NRC FORM 318 (9-76) NRCM 0240 ★ U.S. GOVERNMENT PRINTING OFFICE 1976—626-624

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MEMORANDUM FOR: Karl Kood, Project Manager
Light Water Reactors Branch #4

FROM: Earl H. Markee, Jr., Leader, Meteorology Section
Hydrology-Meteorology Branch, DSE

SUBJECT: METEOROLOGICAL ACCEPTANCE REVIEW OF FSAR FOR MIDLAND

PLANT NAME: Midland - Units 1&2
LICENSING STAGE: OL
DOCKET NUMBER: 50-329 & 50-330
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RESPONSIBLE BRANCH: LWR#4
REQUESTED COMPLETION DATE: September 27, 1977
REVIEW STATUS: Meteorology Section (HMB) - Complete

The Meteorology Section has reviewed the FSAR for Midland and finding it 90% complete recommend that it be accepted.

Enclosed are questions that have been developed by W. Snell and J. Fairobent during the acceptance review and they may be considered as draft Q-1's.

Earl H. Markee, Jr., Leader
Meteorology Section
Hydrology-Meteorology Branch
Division of Site Safety and
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Enclosure:
As Stated

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DATE			10/5/77	10/ /77	10/ /77	

2.3 Meteorology

2.3.1 Regional Climatology

75% Complete

372.01 (2.3.1) In the discussion of snowpack (p. 2.3-3), reference is made to a 1971 study by M. A. Bilello entitled, "Frozen Precipitation: Its frequency and Associated Temperatures," published at the Eastern Snow Conference, New Brunswick. In this study, the mean monthly density of snowpack at Oscoda, Michigan was estimated to be 0.3 g/cm^3. For calculations of the weight of snowpack at the Midland site, a snowpack density of 0.25 g/cm^3 was assumed.

a) Provide further justification for using the assumed value of 0.25 g/cm^3, including elaboration of the statement that estimates of the density of snowpack in the site area were less than 0.1 g/cm^3.

b) Provide a copy of the Bilello reference.

372.02 (2.3.1) The bases for the discussion of the frequency of lightning strikes to structures (p. 2.3-6) is a 1971 publication by D. Bodle, "Electrical Protection Guide for Land-Based Radio Facilities" (JES-159-3-3M 1/74, Joslyn Electronic Systems). Provide a copy of this publication.

372.03 (2.3.1) Provide information on the occurrence of tornado's in the vicinity of the site for 1976 through the present, including estimates of the intensity (maximum wind speed) and path area of each.

372.04 (2.3.1) Provide the basis for the temperature values "used for the design of the Midland plant heating, ventilating, and air conditioning systems" (p. 2.3-1 Discuss the meteorological conditions that are important to the systems operation such as extreme temperatures over extended time periods and large temperature changes over short time periods.

2.3.2 Local Meteorology

80% Complete

372.05 (2.3.2) The onsite stability distribution for the 60-10 meter vertical temperature difference appears to be biased toward the neutral (D) stability class and does not correlate well with other sites in similar meteorological regimes and using the same vertical temperature stability classification. For example, data from the Greenwood site (located 12 miles NW of Port Huron) showed 25% D stability while the Midland site indicated 57% D stability. In addition, the Midland stability distribution which is

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based on a vertical temperature gradient, shows good correlation with the Flint stability distribution (derived from the STAR program) which is based on cloud cover, time of day and wind speed. However, these two stability classification schemes have historically shown poor agreement. Discuss further the validity of the stability distribution based on the onsite data at the Midland plant.

372.06 (2.3.2) Since the main tower is located in a parking lot, discuss any effects this may have on the meteorological parameters being measured. Include discussion on the material the parking lot is made of, how close cars and/or trucks may be parked to the tower, any obstructions or events that may influence the meteorological measurements and any effects the cooling pond may have on the tower measurements. Also compare meteorological variables recorded at the north and south towers with those similar variables at the main tower.

372.07 (2.3.2) The basis for the discussion on the frequency of fog occurrence was based on the following publications: "The Environmental Effects of the Midland Plant Cooling Pond", Report for Consumers Power Company (1972), Bechtel Corporation; "Fog and Plumes from Power Plant Cooling Systems in the Tri-Cities-Saginaw Bay Area", D. J. Portman, Report for Consumers Power Company (1975); "An Analytical and Experimental Study of Transient Cooling Pond Behavior", P. J. Ryan and D. R. F. Harleman Report No 181 (1973), Ralph M. Parsons Laboratory for Water Resources and Hydrodynamics, MIT, Cambridge, Massachusetts. Provide a copy of these publications.

2.3.3 Onsite Meteorological Measurements Program — 90% Comple

372.08 (2.3.3) Provide the calibration results for all calibrations of onsite meteorological instrumentation and data acquisition systems.

372.09 (2.3.3) Describe the process in which the plant control room will receive meteorological data from the main tower including such things as how the data will be received (i.e., teletype, visual, etc.), in what form the data will be received (i.e., instantaneous values, hourly averaged values, etc.) and what the procedure will be if something happens to render data from the main tower unreceivable at the control room.

2.3.4 Short-Term (Accident) Diffusion Estimates — 100% Comple

2.3.5 Long-Term (Routine) Diffusion Estimates — 95% Compl

372.10 (2.3.5) Compare and explain any differences in the power law exponential values given in Table 2.3-29 with those from the "Recommended Guide for the Prediction of the Dispersion of Airborne Effluents" (Smith, M.E. (ed), 1968, The American Society of Mechanical Engineers, New York, N. Y.). Identify the period of onsite data used for the calculations of the site-specific exponential values.

3.3 Wind and Tornado Loadings

3.3.1 Wind Loadings — 100% Comp

3.3.2 Tornado Loadings — 90% Compl

372.11 (3.3.2) According to Regulatory Guide 1.76, the criteria for a design basis tornado (DBT) indicates a pressure drop followed instantaneously by a pressure rise. However, for the Midland DBT a 2 second lag time is indicated between the pressure drop and pressure rise. Discuss the basis for this deviation from Regulatory Guide 1.76 and the effects it will have on any safety-related structures.