



Consumers
Power
Company

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PDR
Return
to
39655

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February 25, 1983



John G Davis, Director
Office of Nuclear Material Safety and Safeguards
US Nuclear Regulatory Commission
Washington, DC 20555

MIDLAND ENERGY CENTER PROJECT
SPECIAL NUCLEAR MATERIAL LICENSES APPLICATION
DOCKET NOS 70-2964 AND 70-2965
RESPONSE TO NRC REQUEST FOR ADDITIONAL INFORMATION
FILE: 0487.3 SERIAL: 20426

Reference: Letter from M H Killinger, NRC, to J W Cook, Consumers Power
Company, dated November 26, 1982

Enclosures: Eight (8) copies of response and associated drawings

Enclosed are eight (8) copies of Consumers Power Company responses to the
referenced NRC request for additional information on the Special Nuclear
Material Licenses application for the Midland Nuclear Cogeneration Plant.
This submittal also formally documents several commitments to administrative
controls on the storage, transfer and accountability of new fuel. As agreed
to by M H Killinger of the NRC, Consumers Power Company will provide a
separate response addressing that portion of Request No 2 which concerns the
subject of minimum spacing between fuel assemblies when located out of
approved storage racks or shipping containers. This response will be
submitted following completion of the ongoing Consumers Power Company
evaluation.

James W. Cook

JWC/DRW/fms

- CC RJCook, Midland Resident Inspector (w/o drawings)
- RHernan, US NRC (w/o drawings)
- DSHood, US NRC (w/o drawings)
- RGPage, US NRC (w/o drawings)
- MHKillinger, US NRC

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RESPONSE TO NRC REQUEST FOR
ADDITIONAL INFORMATION REGARDING
APPLICATION FOR SPECIAL NUCLEAR MATERIAL LICENSES
FOR FRESH FUEL AT
CONSUMERS POWER COMPANY
MIDLAND PLANT UNITS 1 AND 2

NEW FUEL STORAGE AREAS

NRC Request No 1

A legible drawing showing the relative locations of the new fuel storage areas and the spent fuel pool.

Response

Enclosed are Drawings C-245(Q), Rev 15; M-6(Q), Rev 15; and M-7, Sheet 1(Q), Rev 17, which show the relative locations of the New Fuel Storage Vaults and the Spent Fuel Pool.

NEW FUEL STORAGE AREASNRC Request No 2

If the stainless steel checker plates on top of the vaults are designed to preclude low density moderators in the new fuel storage areas, please provide a description of the plates, including drawings, and administrative controls to be used to assure against mist in the vaults.

Response

The checker plates on top of the New Fuel Storage Vaults are not designed to preclude low density moderators. These plates are intended to provide protection against dirt, debris, etc from falling into the vaults. Furthermore, these plates are made of carbon steel not stainless steel as was stated in the NRC's request.

NEW FUEL STORAGE FUELSNRC Request No 3

If the checker plates are not designed to preclude mist in the vaults, please provide physical dimensions and spacing of the stainless steel cans surrounding each fuel assembly. Also, provide the configuration of fuel assemblies in each of the two areas, including information on spacing between assemblies.

Response

The storage racks for each New Fuel Storage Vault are designed to store new, unirradiated fuel assemblies in the array configuration shown in enclosed Drawing 140-30, Q, Rev 3. The racks are designed with a minimum center-to-center assembly spacing of 21.0 ± 0.06 inches as shown in Drawing 140-32, Q, Rev 6 and 140-131, Q, Rev 5.

The stainless steel cans surrounding each fuel assembly also have a minimum center-to-center spacing of 21.0 ± 0.06 inches as shown in Drawing 140-31, Q, Rev 5 and 140-32, Q, Rev 6. The dimensions of the cans are provided in enclosed Drawing 140-29, Q, Rev 15 (Group-1 Fuel Box Sub-Assembly).

SPENT FUEL POOLNRC Request No 1

An expanded drawing of Q&R Figure 4A-1 of Exhibit B-IV (spent fuel storage racks). We are especially interested in whether there are one or two Boraflex sheets between assemblies.

Response

There are two sheets of Boraflex between each fuel assembly. This is depicted by the poison insert assembly (elevation view) in enclosed Drawing 140-8, Q, Rev 2. The drawing's List of Materials provides the nominal dimensions of each of the Boraflex sheets. The poison insert assemblies (shown in Drawing 140-9, Q, Rev 3) are positioned between the fuel storage rack boxes as depicted in Drawings 140-2, Q, Rev 8; 140-3, Q, Rev 6; 140-4, Q, Rev 6; 140-5, Q, Rev 6; and 140-10, Q, Rev 2. Details of the fuel storage rack boxes are provided by Drawing 140-6, Q, Rev 9.

SPENT FUEL POOLNRC Request No 2

The physical and chemical properties of the Boraflex used in the spent fuel racks, including the density and weight percentages for different elements and compounds.

Response

The Boraflex used in the spent fuel racks consists of a boron carbide (BC_4) in a matrix of silicone polymer with an average B10 loading of 0.020 g/cm^2 . The average elemental composition of the Boraflex expressed in weight percentage is as follows (each accurate within 2%):

<u>Element (wt %)</u>	
Boron	38.0
Hydrogen	2.3
Oxygen	18.5
Silicon	20.5
Carbon	20.7

The average density for this type of Boraflex used in the racks is 1.75 g/cc .

Physical dimensions for the Boraflex sheets used are provided in Drawing 140-8, Q, Rev 2 (see Response to Request No 1 above).

GENERALNRC Request No 1

Please provide the maximum enrichment desired on the license.

Response

The maximum U-235 enrichment for fresh fuel desired on each SNM license is 3.5 percent (by weight), including analytical and sampling errors, which is the enrichment shown to be acceptable by the criticality analysis described in Exhibit B-IV of Consumers Power Company's Application for SNM Licenses previously submitted to the NRC.

GENERALNRC Request No 2

We understand from the application (paragraphs 1.2.1 and 1.2.3) that upon receipt, the fuel assemblies will be moved through the following areas: first, the fuel assemblies may be stored in their shipping containers in a temporary controlled access area; second, they will be placed in the fuel handling and storage areas; finally, they will be transferred for extended storage in both the New Fuel Storage Vaults and the Spent Fuel Pool. Please confirm that whenever more than 20 full shipping containers are on site, arrays of more than 20 containers will be spaced at least 20 feet, edge-to-edge, from other fuel assemblies or arrays of containers.

Paragraph 2.2.4 of the application states that four fuel assemblies could be located outside approved storage racks or shipping containers. Please confirm that no two assemblies will be within six feet of each other at any time, especially considering possible relative locations when one assembly is in the New Fuel Elevator.

Response

Consumers Power Company does not anticipate having more than twenty full shipping containers on site at any one time. However, in the unlikely event that more than twenty full shipping containers are on site at one time, administrative controls will require that each array of twenty full containers be spaced at least twenty feet, edge-to-edge from other fuel assemblies or arrays of containers.

As agreed to by M H Killinger of the NRC, Consumers Power Company will provide by separate submittal its response addressing the subject of minimum spacing between fuel assemblies when located outside of approved storage or shipping containers. This response will be submitted following completion of the ongoing Consumers Power Company evaluation.

GENERALNRC Request No 3

If the fuel assemblies are in plastic dust wrappers, please describe controls to assure drainage from the wrappers will occur.

Response

The plastic dust wrapper for each fuel assembly will contain filtered perforations on the sides and bottom to provide for drainage in the unlikely event of water in the storage areas.

GENERALNRC Request No 4

Please confirm that lost or stolen material will be reported in accordance with 10 CFR Part 70.52 as well as 10 CFR Part 20.402.

Response

Lost or stolen special nuclear material at the Midland Plant Units 1 and 2 will be reported by Consumers Power Company in accordance with 10 CFR Part 70.52 and 10 CFR Part 20.402. 10 CFR Part 70.52 reporting requirements are addressed by the Nuclear Operations Department's Nuclear Material Control Manual and 10 CFR Part 20.402 reporting requirements are addressed by CHP Procedure 8030.6, 13.1, Revision 5.

RESPONSE TO NRC REQUEST
 FOR ADDITIONAL INFORMATION REGARDING
 APPLICATION FOR SPECIAL NUCLEAR MATERIAL LICENSES
 FOR FRESH FUEL AT
 CONSUMERS POWER COMPANY
MIDLAND PLANT UNITS 1 AND 2

DRAWING LIST

<u>Drawing Number</u>	<u>Title</u>
C-245(Q), Rev 15	Fuel Pool Area General Arrangement
M-6(Q), Rev 15	Equipment Location Reactor & Auxiliary Buildings Plant of El 645'-0"
M-7, Sheet 1(Q), Rev 17	Equipment Location Reactor & Auxiliary Buildings Plan of El 659'-0"
140-30, Q, Rev 3	Plan Arrangement New Fuel Storage Racks
140-32, Q, Rev 6	New Fuel Storage Rack Type 18 Assembly
140-31, Q, Rev 5	New Fuel Storage Rack Type 24 Assembly
140-29, Q, Rev 15	New Fuel & Temporary Storage Rack Details
140-8, Q, Rev 2	Poison Design Poison Insert Assembly & Details
140-9, Q, Rev 3	Poison Design Lead-In Guide & Poison Insert Details & Assembly
140-2, Q, Rev 8	Poison Design Rack Assembly Type 72-1 Through 72-4
140-3, Q, Rev 6	Poison Design Rack Assembly Type 80-1 Through 80-8
140-4, Q, Rev 6	Poison Design Rack Assembly Type 66
140-5, Q, Rev 6	Poison Design Rack Assembly Type 55
140-10, Q, Rev 2	Poison Design Spent Fuel Storage (LIN)
140-6, Q, Rev 9	Poison Design Fuel Storage Rack Box Details