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MEMORANDUM FOR: S. A. Varga, Chief
Light Water Reactors Branch #4
Division of Project Management

FROM: Franz P. Schauer, Chief
Structural Engineering Branch
Division of Systems Safety

SUBJECT: MIDLAND PLANT - SETTLEMENT OF THE
DIESEL GENERATOR BUILDING (SER: 1120)

We have reviewed the structural aspects of the diesel generator building settlement issue, and we find that additional information is required before we can complete our review. The additional information required, which concerns structural aspects, is contained in the enclosure. This review has been completed by Abdel Hafiz of Section B of the Structural Engineering Branch.

Franz P. Schauer, Chief
Structural Engineering Branch
Division of Systems Safety

Enclosure:
Request for Information

cc/w/encs:
R. Boyd
W. Pike

cc w/encs:
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D. Varrallo
J. Knight
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DATE:	3/9/79	3/9/79	3/1/79			

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MIDLAND NUCLEAR PLANT
STRUCTURAL ENGINEERING BRANCH

130.25
(3.8) Indicate, in general, whether the predictable differential settlement was considered in the design of all Seismic Category I Structures, and if so, state how the effects resulting from this differential settlement was included in the postulated load combinations for these structures.

An acceptable procedure is to consider the effect of the differential settlement as part of the dead load and to use the SRP 3.3 load combinations in conjunction with appropriate ACI Code criteria.

130.26
(3.8) For all Seismic Category I Structures (including, but not limited to diesel generator building), which are located on backfill and experiencing settlements in excess of that predicted, provide an evaluation of the ability of these structures to withstand the increased differential settlement. For the diesel generator building and/or any Seismic Category I Structure, which exhibits cracking, evaluate the effects of the existing and/or anticipated cracks on the performance of the intended function of these building.

An acceptable procedures of evaluation is use the load combinations of SRP 3.3 and the appropriate ACI Code criteria in conjunction with Regulatory Guide 1.60, 1.61, and 1.92, and the consideration of the soil-structure interaction between the structure and the supporting media. The calculated stresses for Seismic Category I Structures at

critical locations should be tabulated and compared to that of allowable stresses as stated in the appropriate ACI Codes.

130.27
(3.8)

For all Seismic Category I Structures, which are partially located on backfill and partially located on clay, provide a detailed evaluation of the ability of these structures to withstand the differential settlement. The possibility of not having a contact surface between the structures and the backfill should be considered, otherwise, it should be properly justified.

The acceptable procedure is to use the load combination of SRP 3.8 and the appropriate ACI Code criteria in conjunction with Regulatory Guide 1.60, 1.61, and 1.92, and the consideration of the soil-structure interaction between the structure and the supporting media. The calculated stresses for Seismic Category I Structures at critical locations should be tabulated and compared to that of allowable stresses given in the appropriate ACI Codes.

130.28
(3.7)

For all Seismic Category piping whether buried or not, provide an evaluation of these piping to withstand the predictable and/or the increased settlement. The differential seismic anchor movement should also be considered.