ENCLOSURE 2

VIEWGRAPH SLIDES USED

DURING 12/5/80

MEETING

Enclosure 1

ATTENDEES
December 5, 1980

Name	Organization/Position
Darl Hood	DPM/NRR Lic. Proj. Mgr.
Edward N. Levine	Weston Geophysical
Richard Holt	Weston Geophysical
Dennis M. Budzik	Consumers Power Co.
Zenon Cybriwsky	Weston Geophysical
J. W. Cook	Consumers Power Co.
R. C. Bauman	Consumers Power Co.
T. E. Johnson	Bechtel/Chief Civil
R. P. Kennedy	Struct. Mechanics Assoc.
F. Rinaldi	NRC/NRR/SEB
George C. Klimkiewicz	Weston Geophysical Corp.
Joseph Kane*	NRR/HGEB/GES
George Lear*	NRR/HGEB
Leon Reiter*	NRC/GSB
Jeff Kimball	NRC/GSB
R. E. Jackson	NRC/GSB
B. Dhar	Bechtel/Midland Civil
T. R. Thiruvengadam	Consumers Power Co./Civil Engineering
Dinesh C. Gupta	NRR/HGEB/GES
John P. Matra, Jr.	NSWC

*Part-time

cc: Commander, Naval Surface Weapons Center
ATTN: P. C. Huang
G-402
White Oak
Silver Spring, Maryland 20910

Mr. L. J. Auge, Manager
Facility Design Engineering
Energy Technology Engineering Center
P. O. Box 1449
Canoga Park, California 91304

Mr. William Lawhead
U. S. Corps of Engineers
NCEED - T
7th Floor
477 Michigan Avenue
Detroit, Michigan 48226

Charles Bechhoefer, Esq.
Atomic Safety & Licensing Board
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Mr. Gustave A. Linenberger
Atomic Safety & Licensing Board
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dr. Frederick P. Cowan
Apt. B-125
6125 N. Verde Trail
Boca Raton, Florida 33433

Mr. J. W. Cook
Vice President
Consumers Power Company
1945 West Parnall Road
Jackson, Michigan 49201

cc: Michael I. Miller, Esq.
Ronald G. Zamarin, Esq.
Alan S. Farnell, Esq.
Isham, Lincoln & Beale
Suite 4200
1 First National Plaza
Chicago, Illinois 60603

James E. Brunner, Esq.
Consumers Power Company
212 West Michigan Avenue
Jackson, Michigan 49201

Myron M. Cherry, Esq.
1 IBM Plaza
Chicago, Illinois 60611

Ms. Mary Sinclair
5711 Summerset Drive
Midland, Michigan 48640

Frank J. Kelley, Esq.
Attorney General
State of Michigan Environmental
Protection Division
720 Law Building
Lansing, Michigan 48913

Mr. Wendell Marshall
Route 10
Midland, Michigan 48640

Mr. Steve Gadler
2120 Carter Avenue
St. Paul, Minnesota 55108

Mr. Don van Farowe, Chief
Division of Radiological Health
Department of Public Health
P.O. Box 33035
Lansing, Michigan 48909

William J. Scanlon, Esq.
2034 Pauline Boulevard
Ann Arbor, Michigan 48103

U. S. Nuclear Regulatory Commission
Resident Inspectors Office
Route 7
Midland, Michigan 48640

Ms. Barbara Stamiris
5795 N. River
Freeland, Michigan 48623

Ms. Sharon K. Warren
636 Hillcrest
Midland, Michigan 48640

DEC 2 2 1980

MEETING SUMMARY DISTRIBUTION

Docket File
NRC PDR
Local PDR
TIC/NSIC/Tera
NRR Reading
LB#3 Reading
H. Denton
E. Case
D. Eisenhut
R. Purple
B. J. Youngblood
A. Schwencer
F. Miraglia
J. Miller
G. Lainas
R. Vollmer
J. P. Knight
R. Bosnak
F. Schauer
R. E. Jackson
Project Manager D. Hood
Attorney, OELD
J. Lee
OIE (3)
ACRS (16)
R. Tedesco

NRC Participants:

F. Rinaldi
J. Kane
G. Lear
L. Reiter
J. Kimball
R. Jackson
D. C. Gupta

G. Lear
V. Noonan
S. Pawlicki
V. Benaroya
Z. Rosztoczy
W. Haass
D. Muller
R. Ballard
W. Regan
D. Ross
P. Check
R. Satterfield
O. Parr
F. Rosa
W. Butler
W. Kreger
R. Houston
T. Murphy
L. Rubenstein
T. Speis
W. Johnston
J. Stolz
S. Hanauer
W. Gammill
T. Murley
F. Schroeder
D. Skovholt
M. Ernst
R. Baer
C. Berlinger
K. Kniel
G. Knighton
A. Thadani
D. Tondi
J. Kramer
D. Vassallo
P. Collins
D. Ziemann

bcc: Applicant & Service List

DEC 2 2 1980

The NRC staff caucused briefly after the presentations and then requested that the applicant document the presentations presented for the docket record. The staff also recommended the following to the applicant and its consultants, to be considered in the submittal to be reviewed by the staff:

1. The submittal should indicate to what degree Consumers Power intends for the staff to use the probability study (i.e., to a limited extent such as was the case for Sequoyah, or to some broader application?). If this is intended to be used with some weight in the staff review, then considerably more emphasis will need to be placed on sensitivity studies.

2. The staff suggested that the applicant perform theoretical studies on possible ground motion amplification through the plant fill to compare with the proposed site specific response spectra for the Diesel Generator Building.

3. The staff raised concerns that the consultants site specific response spectra for a soil site matches the Livermore rock data set for the same magnitude and distance range. Weston Geophysical noted its intent to look into this further.

4. The applicant was asked to discuss the choice of both site stations and specific earthquakes used for the real time histories with the NRC staff.

Mr. R. Jackson of the NRC staff expressed his belief that the studies presented by the applicant represent a significant step forward in resolving this matter and that the additional work suggested during this meeting is needed to conclude this open item. He further suggested that a follow-up meeting one month after receipt of the above submittal would be appropriate.

Darl Hood, Project Manager
Licensing Branch #3
Division of Licensing

Enclosures:
As stated

Mr. Holt presented figures showing the regional seismic picture both in the Central U. S. and the Michigan area in particular. Mr. Holt stated that he feels strongly that the Midland site could easily be characterized by a magnitude 5.0 earthquake; however for conservatism, a 5.3 magnitude will be used as suggested by the NRC staff. Mr. Holt also noted that a magnitude 5.3 earthquake is larger than any which has occurred within 300 miles of the Midland site. He then introduced other Weston personnel who presented various stages of Weston's work as discussed below.

The site specific response spectra approach was discussed in terms of recording site conditions and applicable earthquake records. Weston attempted to match the shear velocity profile at the Midland site to accelerograph recording sites in the U. S. and Italy. Weston showed tables of collected earthquake data matching the requested magnitude and epicentral distance. Two sets of site specific data were collected, one for the Diesel Generator Building and one for seismic Category I structures founded partially upon the glacial till. Both the mean and 84th percentile real time history response spectra were shown compared to the modified Housner spectra. The staff raised the following questions and concerns about Weston's work:

1. Are there enough recording sites and earthquakes to developed different real time response spectra for different buildings at the Midland site?

2. Do the sites which were used in the real time collection have similar impedance contrasts to the Midland site?

3. Has Weston used all available data, and should not certain records used be left out?

4. Why does the 84th percentile for a soil site match the collected Livermore rock data set at the 84th percentiles for the same magnitude and distance range? Particular interest is on the approximate resonant frequency of the upper 30 to 50 feet of the glacial till.

5. What response spectra are intended for seismic Category I structures and components other than the Diesel Generator Building, Containments, Auxiliary Building and Service Water Pump Structure?

Weston Geophysical also presented a probabilistic seismic hazards assessment (i.e., probability study) for the Midland site. Input parameters included various earthquake source zones, upper magnitude cutoff for each zone, ground motion attenuation relationships and earthquake recurrence rates for each source zone. The results indicated that the annual probability of a Modified Mercalli Intensity MMI-VII seismic event was approximately within the range of 10^{-3} to 10^{-4}.