



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
799 ROOSEVELT ROAD
GLEN ELLYN, ILLINOIS 60137

① RFW
② Jeli

August 23, 1983

MEMORANDUM FOR: James G. Keppler
Regional Administrator

FROM: R. L. Spessard, Director
Division of Engineering

SUBJECT: LETTER FROM TERA REGARDING MIDLAND IDCVP PROGRAM
(F03038183)

I reviewed the TERA "white paper", since there were no other cognizant DE personnel available, and I have no significant comments to offer. This paper is very difficult to understand, especially without a detailed knowledge of the various programs (IDCV, CCP, etc.) being implemented at Midland; however, it appears to me that Option 1 would satisfy the NRC's needs to have information on "process reviews" without significantly impacting the scope of IDCVP as it presently exists.

I discussed this subject with J. Taylor (IE) since that office has the responsibility and resources to manage the NRC's efforts concerning the QA Initiatives.

I believe that my views, as described, are consistent with IE's, and IE will be present at the upcoming meeting on this subject.

R. L. Spessard, Director
Division of Engineering

cc: R. F. Warnick ✓

TERA

PRINCIPAL STAFF	
RA	ENR I
D/RA	SCS
A/RA	PAO
DPRP	SLO
DRMA	RC
DRMSP	
DE.	
ML	FILE <i>ins</i>
OL	

August 15, 1983

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

Mr. J. G. Keppler
 Administrator, Region III
 Office of Inspection and Enforcement
 U.S. Nuclear Regulatory Commission
 799 Roosevelt Road
 Glen Ellyn, IL 60137

Mr. D. G. Eisenhut
 Director, Division of Licensing
 Office of Nuclear Reactor Regulation
 U.S. Nuclear Regulatory Commission
 Washington, D.C. 20555

Re: Docket Nos. 50-329 OM, OL and 50-033 OM, OL
 Midland Nuclear Plant - Units 1 and 2
 Independent Design and Construction Verification (IDCV) Program
 Conceptual Options for Independent Quality Verification Program
 Methodologies

In accordance with direction provided during the August 5, 1983 meeting to discuss options for modification of the Midland IDCV program with respect to initiatives associated with Section 13 of Public Law 97-415 (Ford Amendment), TERA has identified several conceptual methodologies considering input provided by Consumers Power Company and NRC representatives. T

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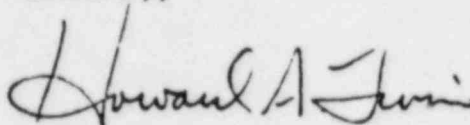
Mr. J. W. Cook
Mr. J. G. Keppler
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August 15, 1983

It is envisioned that future discussions between CPC, NRC, and TERA will enable a definition of what reprogramming, if any, is required to make the Midland IDCV program responsive to the Ford Amendment legislation.

Sincerely,



Howard A. Levin
Project Manager
Midland IDCV Program

cc: L. Gibson, CPC
F. Buckman, CPC
D. Miller, CPC (site)
B. Palmer, CPC (site)
J. Taylor, NRC, I&E HQ
D. Hood, NRC
P. Keshishian, NRC, I&E HQ
G. Gower, NRC, I&E HQ
Midland IDCVP Service List

Attachment

HAL/djb



SERVICE LIST FOR MIDLAND INDEPENDENT DESIGN
AND CONSTRUCTION VERIFICATION PROGRAM

cc: Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

James G. Keppler, Regional Administrator
U.S. Nuclear Regulatory Commission,
Region III
799 Roosevelt Road
Glen Ellyn, Illinois 60137

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

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

Michael I. Miller, Esq.
Isham, Lincoln & Beale
Three First National Plaza,
51st floor
Chicago, Illinois 60602

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

Ms. Mary Sinclair
5711 Summerset Drive
Midland, Michigan 48640

Cherry & Flynn
Suite 3700
Three First National Plaza
Chicago, Illinois 60602

Ms. Lynne Bernabei
Government Accountability Project
1901 Q Street, NW
Washington, D.C. 20009

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

Mr. Wendell Marshall
Route 10
Midland, Michigan 48440

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

Ms. Billie Pirner Garde
Director, Citizens Clinic
for Accountable Government
Government Accountability Project
Institute for Policy Studies
1901 Que Street, N.W.
Washington, D.C. 20009

Charles Bechhoefer, Esq.
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

Jerry Harbour, Esq.
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Mr. Ron Callen
Michigan Public Service Commission
6545 Mercantile Way
P.O. Box 30221
Lansing, Michigan 48909

Mr. Paul Rau
Midland Daily News
124 McDonald Street
Midland, Michigan 48640

CONCEPTUAL OPTIONS FOR INDEPENDENT QUALITY VERIFICATION PROGRAM METHODOLOGIES

The Independent Design and Construction Verification (IDV, ICV) components of the Midland IDCV program focus on an engineering evaluation of the quality of end products of the design and construction processes. Due to the focus on end products, process reviews were not intended to be a part of the IDV and ICV programs. The NRC has expressed a desire to modify the Midland IDCV program to include a review of these processes. Several conceptual options have been identified for the potential addition of an Independent Quality Verification (IQV) program as an integral part of the Midland IDCV program to selectively evaluate the implementation of the design control, construction control and QA/QC processes. The melding of the IQV and IDV/ICV components potentially provides enhanced capability to evaluate overall quality through the combination of a limited "horizontal slice" process review with a "vertical slice" three-system test of these processes. The relative benefits of such an approach versus the existing approach is subject to a degree of speculation in view of the fact that the nature of the Midland IDCV program Findings and the depth of penetration into process reviews is indeterminate at this time. Added assurance may be gained in extrapolating the conclusions (i.e., to other safety systems provided that these other systems were designed and constructed by similar processes) reached through a combined horizontal and vertical review; however, such benefit has not as yet been quantified through industry experience.

Design and Construction control processes and the parallel QA/QC verification are important in producing a quality constructed facility. For the evaluation of a facility in later stages of construction, a review of process issues is of lesser significance in reaching conclusions. A more direct approach is an engineering evaluation of completed products (e.g., the existing Midland IDCV program "vertical slice") provided the quality is readily measurable by physical or other means. Process reviews become potentially more useful when evaluating inaccessible items or items where quality is otherwise difficult to measure.



As specific design or construction related deficiencies are identified within either the IDV or ICV programs, process related questions are potentially raised as part of the evaluations associated with root cause determination. Decisions may be made at any time to initiate focused reviews as circumstances warrant. In view of the substance of such matters, these decisions are generally by consensus of CPC, NRC, and TERA. Clearly, option 1 may be to retain this element of the existing IDCV program and wait until later stages of the program to make decisions relative to the need for expansion of scope to systematically review process related issues.

Option 2 may be not to initiate process reviews within the specific scope of the IDCV program; however, utilize the program as a mechanism to assimilate the outputs of various other ongoing programs that address process related issues to provide a broader perspective.

A third optional approach for an IQV program may be a focused review of process issues biased towards items that evolve from:

- o IDV and ICV program Findings;
- o An evaluation of project experience and noted process related deficiencies;
- o Process related issues known to have presented problems within the nuclear industry.

The implementation of all design/construction control and QA/QC processes relative to criteria of 10 CFR 50, Appendix B will not be evaluated under this option for an IQV program. The selection of specific issues within scope would be based upon the judgement of senior reviewers on the IDCV and IQV project teams. The objective would be to devote resources on a priority basis in areas that warrant greater attention, recognizing that certain process issues are more significant and have a greater potential to compromise quality. An attempt would be made to identify potential areas where identified root causes may also have manifested in problems (however, as yet unidentified) in the same or similar form. This approach is supported by the fact that industry experience dictates that undetected problem areas (which are of greatest concern) are likely to be the result of similar root causes as detected problems.



The identification of the portion of the IQV scope that is derived from the IDV and ICV program Findings would be ongoing and subject to change as the IDCV program progresses. This subset would be supplemented, as necessary, by additional areas determined through an evaluation of project experience. Sources of information such as NRC inspection reports, SCREs, MCARs, 50.55e reports, quality assurance and inspection reports, etc. would be reviewed for this purpose.

It is contemplated that the following issues would be reviewed on an a priori basis in view of their importance to complex projects and general impact within the industry.

- o NSSS/BOP interface control (i.e., B&W and Bechtel);
- o Interface control between disciplines (e.g., civil/structural and mechanical groups within Bechtel);
- o Vendor interface control (e.g., between Terry Turbine and Bechtel for the AFW turbine);
- o Control of design changes;
- o Document control (i.e., at site and design office);
- o Control of field changes;
- o Translation and interpretation of design requirements into procedures;
- o Development of QA/QC inspection procedures and implementation.

This listing would constitute the initial scope of the IQV for option 3. As discussed, a potential exists that these areas of review may have to be supplemented subject to the project experience evaluation and IDCV Findings.

As with option 2, an important element of the option 3 IQV program would be the review and evaluation of the overall adequacy of the implementation of the Construction Completion Program (CCP) and its effectiveness in identifying and correcting potential undetected problems associated with past activities and for completion of the remainder of work. The IQV objective would be to determine



whether the CCP remedial measures adequately attend to the issues for which the CCP was created. The review would verify that the CCP process which is now the primary construction process, as supplemented with additional verification activities, adequately addresses potential quality concerns. Outputs from the Construction Implementation Overview (CIO) of the CCP would be assimilated into this assessment. Accordingly, TERA's review would not duplicate the CIO efforts, but complement it through integrating its outputs into the IDCV evaluation process. Selected areas outside the CCP scope could also be selected such as Babcock and Wilcox and Zack HVAC activities; however, the specific organizations or programs to be evaluated should be determined based upon the involvement in the design or construction of the three systems within the IDCV program scope.

Option 4 may be consideration of a program that is similar to a common quality assurance audit. The quality assurance manuals, procedures and records would be reviewed against applicable requirements of 10 CFR 50, Appendix B and other industry standards. The audit would include a review of objective evidence that the QA program was adequately implemented and documented. Given the status of the Midland project and various other considerations, this option may not be technically viable and is most costly.

Options 1 through 3 are all technically feasible. There may be cost-benefit trade-offs associated with the selection of any of these options, including the more obvious schedular considerations. Option 2 would appear to be the least resource intensive effort. Options 1 and 3 may very well be equivalently cost-effective. If the IDCV program identifies few process related Findings, then option 1 may be most effective; otherwise, option 3 may provide for a more systematic and efficient review process.



TERA

*Jay Harrison,
RTII*

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

Mr. J. G. Keppler
Administrator, Region III
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
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*Greg G...
Midland T... 310-665...
Earl...
210-5201234*

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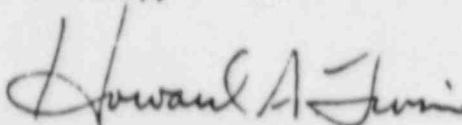
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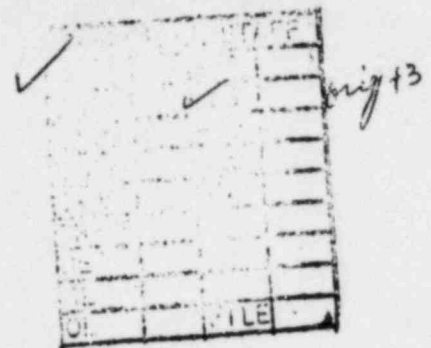
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TERA



August 9, 1983

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

Mr. J. G. Keppler
Administrator, Region III
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, IL 60137

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Director, Division of Licensing
Office of Nuclear Reactor Regulation
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Re: Docket Nos. 50-329 OM, OL and 50-033 OM, OL
Midland Nuclear Plant - Units 1 and 2
Independent Design and Construction Verification (IDCV) Program
Meeting Summary

A meeting was held on August 5, 1983 at TERA Corporation's Bethesda, Maryland offices to discuss options for modification of the Midland IDCV program with respect to initiatives associated with Section 13 of Public Law 97-415, NRC Authorization Act for Fiscal Year 1983 (Ford Amendment). A list of participants is provided in Enclosure 1.

The meeting opened with a discussion of elements of the Ford Amendment (Enclosure 2) and specifically, NRC's plans and logistics for responding to the legislation. Darl Hood, NRC Midland Project Manager, presented an overview, pointing out that the NRC is studying six pilot programs in addition to the Midland IDCV program (Marble Hill, Millstone 3, Palo Verde, Limerick, South Texas, Beaver Valley) in an effort to report back to Congress in April 1984 on the efficacy of certain approaches to assuring and verifying the quality of nuclear power plants under construction. The headquarters of the NRC's Office of Inspection and Enforcement under the direction of James Taylor has lead for this effort. Paul Keshishian and George Gower have been assigned responsibility for implementing the NRC's activities. Mr. Hood pointed out that he felt certain minor modifications of the Midland IDCV program were necessary to make the

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program fully responsive to the intent of the Ford Amendment legislation. These "enhancements" would be to include a "horizontal slice" component in the areas of design/construction control and QA/QC implementation.

Billy Garde, Government Accountability Project, voiced her organization's concurrence that these reviews are required to be responsive to the Ford Amendment legislation and that she felt that the IDCV program should be studied as part of the NRC's response to the Ford Amendment legislation.

Louis Gibson, Consumers Power Company (CPC), reiterated CPC's agreement to provide for TERA resources to support NRC's observation of the Midland IDCV program implementation and a review of its outputs; however, he pointed out that expansions of scope were not contemplated under the agreement. He further pointed to the numerous efforts that were ongoing, and questioned the need for expansion of the program to include "process" reviews when it was considered in the overall context of these other programs which include similar elements.

Paul Keshishian, NRC, I&E, indicated that process or "horizontal slice" elements were necessary; however, he wanted a better understanding of the degree to which the current Midland IDCV program would address these so that a determination could be made relative to the need for program modifications.

Howard Levin, TERA Project Manager, indicated that the Midland IDCV program principally focused on a review of the quality of the end products of the design or construction processes rather than the processes by which these products were created. Generally, process related issues are considered only as the need arises as dictated by Findings whose root causes may potentially be related to deficiencies in the implementation of various processes. When questioned on the degree to which process issues would be reviewed, he indicated that at this point in the program certain issues were under review; however, the full set of issues would be indeterminate in view of the fact that the nature of any future Findings is unknown.

The NRC representatives asked questions relative to the ability of the Midland IDCV program to draw conclusions about the implementation of the QA plan and the degree of compliance to 10 CFR 50, Appendix B. There was general agreement of all participants that the QA plan itself meets 10 CFR 50, Appendix B and that its implementation was of interest. Levin commented that by the end of the IDCV program, TERA would at least be able to infer a conclusion relative to the implementation of QA/QC programs and conformance to 10 CFR 50, Appendix B. In certain cases, this would be more than an inference in view of the fact that objective process reviews would be undertaken as follow-up to any Findings.

All participants generally conceded that the design and construction control processes and the parallel QA/QC verification are important in producing a



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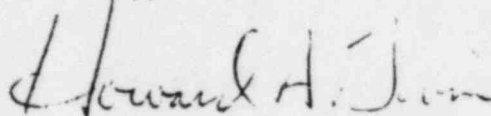
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quality constructed facility. Levin pointed out that for the evaluation of a facility in later stages of construction, a review of process issues is of lesser significance in reaching conclusions and that a more direct approach is the "vertical slice", provided quality is readily measurable by physical or other means. He further observed that "quality facilities have been attained with weaker QA/QC programs and vice versa." Levin indicated that process reviews become potentially more useful when evaluating inaccessible items or items where quality is otherwise difficult to measure.

The subject of other independent QA/QC reviews was discussed relative to their merits and cost effectiveness. It was generally concluded that a detailed point-by-point comparison to 10 CFR 50, Appendix B was not warranted. There was a general agreement that a focused review of selected issues would potentially be most effective from all accounts. A consensus was reached that TERA should develop a "white paper" for consideration by CPC and NRC as a potential option. The paper should address perspectives identified in the meeting tempered by TERA's experience to identify an option that is complementary to the existing IDCV program. The decided turn-around time was approximately one week.

Sincerely,



Howard A. Levin
Project Manager
Midland IDCV Program

cc: Participants
F. Buckman, CP
D. Miller, CPC (site)
B. Palmer, CPC (site)
Midland IDCVP Service List
J. Taylor, NRC, I&E HQ



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6125 N. Verde Trail
Boca Raton, Florida 33433

Jerry Harbour, Esq.
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Mr. Ron Callen
Michigan Public Service Commission
6545 Mercantile Way
P.O. Box 30221
Lansing, Michigan 48909

Mr. Paul Rau
Midland Daily News
124 McDonald Street
Midland, Michigan 48640

ENCLOSURE I

List of Participants

Meeting to Discuss Options for Modification of the Midland IDCV Program with Respect to Initiatives Associated with Section 13 of Public Law 97-415 (Ford Amendment)

Nuclear Regulatory Commission

D. Hood, NRR
P. Keshishian, I&E
G. Gower, I&E

Consumers Power Company

L. Gibson

TERA

H. Levin
D. Tulodieski
R. Snaider
H. George (partial)
J. Martore
J. Richardson

Government Accountability Project

B. Garde



13(b) The Commission shall conduct a study of existing and alternative programs for improving quality assurance and quality control in the construction of commercial nuclear powerplants. In conducting the study, the Commission shall obtain the comments of the public, licensees of nuclear powerplants, the Advisory Committee on Reactor Safeguards, and organizations comprised of professionals having expertise in appropriate fields. The study shall include an analysis of the following:

(1) providing a basis for quality assurance and quality control, inspection, and enforcement actions through the adoption of an approach which is more prescriptive than that currently in practice for defining principal architectural and engineering criteria for the construction of commercial nuclear powerplants;

(2) conditioning the issuance of construction permits for commercial nuclear powerplants on a demonstration by the licensee that the licensee is capable of independently managing the effective performance of all quality assurance and quality control responsibilities for the powerplant;

(3) evaluations, inspections, or audits of commercial nuclear powerplant construction by organizations comprised of professionals having expertise in appropriate fields which evaluations, inspections, or audits are more effective than those under current practice;

(4) improvement of the Commission's organization, methods, and programs for quality assurance development, review, and inspection; and

(5) conditioning the issuance of construction permits for commercial nuclear powerplants on the permittee entering into contracts or other arrangements with an independent inspector to audit the quality assurance program to verify quality assurance performance.

For purposes of paragraph (5), the term 'independent inspector' means a person or other entity having no responsibility for the design or construction of the plant involved. The study shall also include an analysis of quality assurance and quality control programs at representative sites at which such programs are operating satisfactorily and an assessment of the reasons therefor.

13(c) For purposes of -

(1) determining the best means of assuring that commercial nuclear powerplants are constructed in accordance with the applicable safety requirements in effect pursuant to the Atomic Energy Act of 1954; and

(2) assessing the feasibility and benefits of the various means listed in subsection (b);

the Commission shall undertake a pilot program to review and evaluate programs that include one or more of the alternative concepts identified in subsection (b) for the purposes of assessing the feasibility and benefits of their implementation. The pilot program shall include programs that use independent inspectors for auditing quality assurance responsibilities of the licensee for the construction of commercial nuclear powerplants, as described in paragraph (5) of subsection (b). The pilot program shall include at least three sites at which commercial nuclear powerplants are under construction. The Commission shall select at least one site at which quality assurance and quality control programs have operated satisfactorily, and at least two sites with remedial programs underway at which major construction, quality assurance, or quality control deficiencies (or any combination thereof) have been identified in the past. The Commission may require any changes in existing quality assurance and quality control organizations and relationships that may be necessary at the selected sites to implement the pilot program.

13(d) Not later than fifteen months after the date of the enactment of this Act, the Commission shall complete the study required under subsection (b) and submit to the United States Senate and House of Representatives a report setting forth the results of the study. The report shall include a brief summary of the information received

from the public and from other persons referred to in subsection (b) and a statement of the Commission's response to the significant comments received. The report shall also set forth an analysis of the results of the pilot program required under subsection (c). The report shall be accompanied by the recommendations of the Commission, including any legislative recommendations, and a description of any administrative actions that the Commission has undertaken or intends to undertake, for improving quality assurance and quality control programs that are applicable during the construction of nuclear powerplants."

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

August 8, 1983

Docket Nos. 50-329
50-330

PRINCIPAL STAFF	
RA	ENF
D/RA	SCS
A/RA	PAO
DRP	SLO
DRMA	RC
DRMSP	
DE	
ML	
OL	FILE <i>ls</i>

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

Dear Mr. Cook:

Subject: Clarification of July 22, 1983
Acceptance of TERA Corporation

Some questions have been raised recently regarding our July 22, 1983, acceptance letter to you. This is to clarify our position.

The staff finds TERA Corporation to be both independently and technically qualified to conduct the revised and expanded IDCV program for Midland. The staff further finds the program scope in the May 18, 1983 Engineering Program Plan and Project Quality Assurance Plan to be acceptable.

Sincerely,

Thomas M. Novak, Assistant Director
for Licensing
Division of Licensing

Enclosure:
As stated

cc: See next page

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AUG 15 1983

MIDLAND

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
Three First National Plaza,
51st floor
Chicago, Illinois 60602

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

Ms. Mary Sinclair
5711 Summerset Drive
Midland, Michigan 48640

Stewart H. Freeman
Assistant Attorney General
State of Michigan Environmental
Protection Division
720 Law Building
Lansing, Michigan 48913

Mr. Wendell Marshall
Route 10
Midland, Michigan 48640

Mr. R. B. Borsum
Nuclear Power Generation Division
Babcock & Wilcox
7910 Woodmont Avenue, Suite 220
Bethesda, Maryland 20814

Cherry & Flynn
Suite 3700
Three First National Plaza
Chicago, Illinois 60602

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

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

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

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

Mr. Paul A. Perry, Secretary
Consumers Power Company
212 W. Michigan Avenue
Jackson, Michigan 49201

Mr. Walt Apley
c/o Mr. Max Clausen
Battelle Pacific North West Labs (PNWL)
Battelle Blvd.
SIGMA IV Building
Richland, Washington 99352

Mr. I. Charak, Manager
NRC Assistance Project
Argonne National Laboratory
9700 South Cass Avenue
Argonne, Illinois 60439

James G. Keppler, Regional Administrator
U.S. Nuclear Regulatory Commission,
Region III
799 Roosevelt Road
Glen Ellyn, Illinois 60137

cc: Mr. Ron Callen
Michigan Public Service Commission
6545 Mercantile Way
P.O. Box 30221
Lansing, Michigan 48909

Mr. Paul Rau
Midland Daily News
124 McDonald Street
Midland, Michigan 48640

Billie Pirner Garde
Director, Citizens Clinic
for Accountable Government
Government Accountability Project
Institute for Policy Studies
1901 Que Street, N.W.
Washington, D. C. 20009

Mr. Howard Levin, Project Manager
TERA Corporation
7101 Wisconsin Avenue
Bethesda, Maryland 20814

Ms. Lynne Bernabei
Government Accountability Project
1901 Q Street, N.W.
Washington, D. C. 20009

Mr. J. W. Cook

- 3 -

cc: Commander, Naval Surface Weapons Center
ATTN: P. C. Huang
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. Neil Gehring
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

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

Jerry Harbour, Esq.
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory Commission
Washington, D. C. 20555

Geotechnical Engineers, Inc.
ATTN: Dr. Steve J. Poulos
1017 Main Street
Winchester, Massachusetts 01890