



Midland Project
Company

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September 21, 1982

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MIDLAND PROJECT GWO 7020
PROOF LOAD JACKING OF FIVP
File: 0485.16 UFI: 42*05*22*04 Serial: CSC-6332

REFERENCE: Letter dated June 18, 1982, Serial No. 17889

As discussed in the exit interview at the plant site on September 17, 1982, we wish to modify our commitment on proof load jacking of the FIVP, as made in the referenced letter. The following is our justification for not doing the four point proof load jacking of the FIVP temporary support system.

The original temporary steel support system for the FIVP was installed in October 1979. The design of this existing support system was reviewed by the SEB of the NRC during their audit of January 18, 1982 and they concurred with the adequacy of the design.

As part of the original design for the temporary support system, the drawing called for the steel frame to be jacked to 2400 Kips. This was accomplished by individual jacking loads being introduced at the 4 support locations. This original "four point" jacking was accomplished in the spring of 1981.

Subsequently, the underpinning contractor required a proof load test of the FIVP before excavation would be performed under the FIVP. As a result a drawing was prepared to accomplish this proof load testing by jacking the FIVP from four support points of the steel beams.

It was later decided to reinforce the temporary support system to provide additional factor of safety. The details of this reinforcing were submitted to the NRC by reference 1, and were also discussed at a meeting with NRC at Bethesda on June 25, 1982. The reinforcement consisted of additional rock bolts and replacement of certain existing rods. The NRC staff concurred with these modifications.

Subsequently, the details were finalized and the design drawings were completed and called for proof load testing by performing lift off of each rock anchor and rod after their installation. The installation is currently being performed.

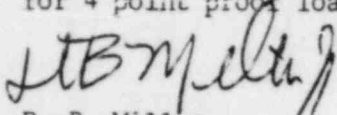
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PROOF LOAD JACKING OF FIVP
September 21, 1982
Page 2

Since the proof load jacking is done by the individual lift off of rock bolts and rods, there is no necessity of performing a four point jacking of the temporary support system of FIVP. Furthermore, performing a four point jacking will change the tensions in the rock anchors and rods required by design.

In conclusion, based on the justification provided, we request the requirement for 4 point proof load jacking of the FIVP be deleted.



D. B. Miller
Site Manager

DBM/RMW/dmw

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Site Mgr.
Midland Project

James W Cook
Vice President - Projects, Engineering
and Construction

General Offices: 1945 West Parnall Road, Jackson, MI 49201 • (517) 788-0453
June 18, 1982

Harold R Denton, Director
Office of Nuclear Reactor Regulation
Division of Licensing
US Nuclear Regulatory Commission
Washington, DC 20555

MIDLAND PROJECT
MIDLAND DOCKET NO 50-329, 50-330
FEEDWATER ISOLATION VALVE PIT (FIVP)
LOAD VERIFICATION
FILE: 0485.16. / SERIAL: 17889

- REFERENCES:
- (1) AUDIT OF JANUARY 18 AND 19, 1982
NRC MEETINGS MINUTES DATED MARCH 10, 1982
 - (2) AUDIT OF FEBRUARY 2-5, 1982 NRC MEETING
MINUTES DATED MAY 19, 1982
 - (3) CONFERENCE CALL OF MAY 7, 1982 SUMMARY
DATED MAY 19, 1982
 - (4) NRC LETTER DATED MAY 25, 1982 "COMPLETION
OF SOILS REMEDIAL ACTIVITIES REVIEW"

ENCLOSURE: SUPPLEMENTAL INFORMATION ON THE FEEDWATER ISOLATION VALVE PITS

During the January and February audits (References 1 and 2 above) the design of the FIVP load transfer structure was reviewed and approved (subject to certain open items) by the NRC Staff. References 3 and 4 above provide additional discussion of the FIVP in an attempt to resolve the remaining items. The enclosed submittal further clarifies these items relative to the FIVP.

The design of the load transfer mechanism remains as discussed during the audits, except that the temporary code allowance, which was reviewed and approved in January, is no longer being used; thus, resulting in even higher margins of safety. This is achieved by the use of additional bolts in the design, as shown in the enclosure.

Many of our recent documents have referred to a "Proof Load Test." This change in nomenclature from the previously discussed "load transfer" may have inadvertently resulted in some confusion. No new activity is planned; however, the complete load transfer to the support structure will still be verified prior to excavation under the FIVP.

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The load transfer steel was originally installed as a non-Q item. We are presently working with Region III on reviewing the as-built condition of the structure and will make any adjustments necessary to ensure its consistency with the design. The activities associated with this load verification will be completed as a Q-activity under our quality procedure MPQP-1 and will proceed when Region III concurrence is obtained.

James W. Cook

JWC/JRS/mkh

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 GHarstead, Harstead Engineering, w/a
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 DFJudd, B&W, w/o
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 JPMatra, Naval Surface Weapons Center, w/a
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 SJPoulos, Geotechnical Engineers, w/a
 FRinaldi, NRC, w/a
 HSingh, Army Corps of Engineers, w/a
 BSTamiris, w/o

BCC RCBauman, P-14-312B, w/o
AJBoos, Bechtel, w/a
JEBrunner, M-1079, w/a
WJCloutier, P-24-611, w/a
BDhar, Bechtel, w/a
PJGriffin, P-24-513, w/o
EMHughes, Bechtel, w/a
RWHuston, Washington, w/a
JKMeisenheimer, P-14-100, w/a
JAMooney, P-14-115A, w/a
DBMiller, Midland, w/a
MIMiller, IL&B, w/a
NRRamanujam, P-14-100, w/a
KBRazdan, P-14-419, w/a
JARutgers, Bechtel, w/a
JRSchaub, P-14-305, w/a
PPSteptoe, IL&B, w/a
TJSullivan/DMBudzik, P-24-624A, w/o
RLTeuteberg, P-24-505, w/a
TRThiruvengadam, P-14-400, w/a
DJVandeWalle, P-24-414, w/a
FVillalta, P-14-419, w/a
FCWilliams, IL&B, w/a
NRC Correspondence File

SUPPLEMENTAL INFORMATION ON FEEDWATER ISOLATION VALVE PITS

To provide access to electrical penetration areas and control tower underpinning, the feedwater isolation valve pits (FIVP) have been supported temporarily from a steel structure resting on buttress access shaft and turbine building (see Bechtel Drawing C-2020, Rev 3, attached). As the support structure is to be used during construction condition only, the allowable stresses for the supporting structure were increased by one-third in the present design. This design concept, methodology, details of support structure, and applicable calculations were made available to the NRC staff at the audit conducted during the week of January 18, 1982.

To ensure additional safety during construction on a conservative basis, the following modifications to existing structural support systems are being undertaken:

- (a) Install additional rock anchors in the walls and floor of the FIVP and connect them to existing support structure. Rock anchors are the only structural element where the one-third increase in allowable stresses was utilized. With the addition of these rock anchors, the calculated stresses will be within the allowable stress limits, thereby increasing the conservatism in design.

(b) Provide new brackets on the FIVP walls at selected rod hanger locations and transmit the FIVP wall loads directly to the structural support system. This modification will not stress the roof slab for these hanger loads. The shear capacity at the interface of roof slab and the FIVP walls was computed based on the strength of concrete and the vertical wall rebar with available embedment at that section. This method of the shear capacity computation was also presented to the NRC staff at the audit conducted during the week of January 18, 1982. This modification will only utilize the shear capacity of concrete without any contribution from wall rebar and will increase conservatism in design.

The conceptual details of these modifications are presented in the Bechtel Sketch SK-C-790, Rev. A, attached.

To ensure predicted behavior of the FIVP support structure, it is necessary to ensure that dead load of FIVP has been properly transferred to support structure. For this purpose, all supporting hanger rods and rock anchors will be tensioned and locked off to ensure the desired predetermined tension load exists in these bolts during this modification.

Prior to excavating beneath the FIVP, verification of the adequacy of the temporary support is required by the subcontractor. Support adequacy will be established by proof load jacking of the FIVP temporary support structure at the four support points. The total jacking load

will be at least equal to the calculated weight of the FIVP or a lower load at which the FIVP reaches an upward movement of 1/4". After the proof load has been maintained for at least 6 hours, the support structure system will be locked off at the calculated weight of FIVP or at the load where the structure has moved upwards. This proof load jacking will be performed after the modifications described earlier are completed.

BCC RCBauman, P-14-312B, w/o
AJBoos, Bechtel, w/a
JEBrunner, M-1079, w/a
WJCloutier, P-24-611, w/a
BDhar, Bechtel, w/a
PJGriffin, P-24-513, w/o
EMHughes, Bechtel, w/a
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NRC Correspondence File



Consumers
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September 17, 1982

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MIDLAND NUCLEAR COGENERATION PLANT
MIDLAND DOCKET NOS 50-329, 50-330
QUALITY ASSURANCE PROGRAM IMPLEMENTATION FOR SOILS REMEDIAL WORK
FILE: 0485.16 SERIAL: 18845

This letter summarizes recent discussions with NRC management regarding implementation of soils remedial construction and presents the Company's documentation of those discussions.

BACKGROUND

The 1980/1981 SALP Report, presented to Consumers in late April of this year, indicated that activities in the soils area should receive more inspection effort on the part of both the NRC and CP Co. Follow-up discussions with the NRR staff and Region III Inspectors led to the conclusion that the Quality Assurance Program and its definition was adequate; however, there was concern that certain aspects were not being or might not be satisfactorily implemented.

Consumers Power has performed an in-depth review of the implementation plans for the Midland soils work activities. This review included the areas of design and construction requirements and plans, organization and personnel, project controls and management involvement. The results of this review and the proposed steps to assure the successful implementation of all aspects of the work were discussed with the NRC management in a meeting held in Chicago on September 2, 1982.

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STEPS TO IMPROVE IMPLEMENTATION

A number of new steps have or are being taken by Consumers Power Co to enhance the implementation of the quality program with regard to the soils remedial work. These measures touch upon all aspects of the work, from design to post-construction verification and include the following:

- (1) Retaining a third party to independently assess the implementation of the auxiliary building underpinning work;
- (2) Integrating the soils QA and QC functions under the direction of MPQAD;
- (3) Creating a "Soils" project organization with dedicated employees and single-point accountability to accomplish all work covered by the ASLB order;
- (4) Establishing new and upgraded training activities, including a special quality indoctrination program, specific training in underpinning activities, and the use of a mock-up test pit for underpinning construction training;
- (5) Developing a quality improvement program (QIP), specifically for soils remedial work;
- (6) Increasing senior management involvement in the soils remedial project through weekly, on-site management meetings wherein both work progress and quality activities are reviewed;
- (7) Improving systems for tracking of and accounting for design commitments.

What follows is a description of the soils implementation plan, as it will be carried out using the new approaches outlined above, together with other specific aspects which we believe will be critical to the successful performance of the job. The discussion is limited to the implementation features specific to soils, is divided into areas roughly describing the progression of the job from design to completion and ends with a description of organizations, management involvement and NRC overview.

DESIGN ADEQUACY AND IMPLEMENTATION

The design for the required remedial activities is in an advanced state; design details and adequacy have been reviewed by numerous organizations. A special ACRS Subcommittee reviewed the soils activities and commented favorably on the thoroughness and conservatism of the review and remedial approaches. Numerous submittals to the NRC have been presented to clarify the design intent. It is our understanding that the Staff is completing its detailed review of all design aspects and is in the process of issuing an SSER. This advanced state of design has permitted the early development of a thorough planning effort and assisted in the organization and development of a detailed training effort. Following-up on design activities, the Project has assigned to the site a design team comprised of experienced structural and geotechnical engineers under the Resident Engineer. This team will monitor

and review the field implementation as specified in design documents, resolve on a timely basis routine construction questions requiring engineering response and administer the specific contingency plans immediately if any problem should arise during the underpinning work. Additional engineering resources for the soils work will continue to be located in Ann Arbor.

IMPLEMENTATION OF DESIGN FEATURES AND COMMITMENTS

All soils activities covered by the ASLB Order of April 30, 1982 are covered under soils-specific QA plans. These plans require that appropriate procedures are in place to accomplish the work in a quality manner and that detailed inspection plans be developed and utilized. Additionally, a Work Authorization Procedure and Work Permit System insure that the NRC and CP Co have specifically authorized and released the work. Under this system, the NRC reviews proposed work details, asks for additional information when necessary and authorizes construction activities in advance. CPCo then authorizes the work to proceed.

To further assure that commitments made to the NRC are properly accounted for in design documents, Consumers Power and Bechtel review the written records of commitments and insure that they are being incorporated into design documents. The Project is currently undertaking an additional review of past correspondence to create a computer listing of commitments. This computer list will be periodically reviewed to insure that commitments are incorporated in design or construction documents in a timely fashion.

PERFORMANCE OF PROJECT CONSTRUCTION, QUALITY ASSURANCE AND QUALITY CONTROL ACTIVITIES

To assure that project construction, quality assurance and quality control personnel correctly carry out their appointed tasks, a number of measures have been taken, including a reorganization of quality control, upgraded training programs, direct Company involvement in construction scheduling and control, and utilization of a contract format to minimize any cutting of corners by contractors. These elements of enhanced performance are described more specifically below.

First, the project has reorganized the Soils QA-QC effort, creating an integrated organization with single-point quality accountability under the MPQAD. This new organization is expected to improve QC performance, increase CPCo involvement in the management of the quality control function and improve QA-QC interfaces.

Second, extensive training programs for the soils underpinning work have been developed. This overall training program, which includes the major Construction and Quality organizations involved in soils work, covers both general training in quality and specific training relative to the construction procedures.

The majority of the personnel associated with Remedial Soils work have attended a special Quality Assurance Indoctrination Session. The QA indoctrination has been provided to Bechtel Remedial Soils Group, CPCo

Construction, QC, QA, Mergentime and Spencer, White and Prentis (SW&P) personnel down to the craft foreman level. This training consists of one three-hour session covering Federal Nuclear Regulations, the NRC, Quality Programs in general and the Remedial Soils Quality Plan in detail.

With regard to the work procedures, a requirement on both Mergentime and SW&P is that specific training on the procedures be provided prior to initiating any quality related construction activity. The identification of individuals to receive this training is spelled out in each procedure pertaining to a specific construction activity. Completion of the specific training requirements is a QA hold point which must be satisfied before work can proceed.

In further recognition of the importance of training to the underpinning work, the Company is utilizing a mock-up test pit as part of its training program for underpinning construction. The purpose of this test pit is to provide specific training in the construction of a pier, bell and grillage assembly from initial issuance of design drawings through completion of construction. This allows supervisory and craft personnel to perform work under the conditions, requirements and restraints which will be encountered when the actual underpinning starts. It also allows the various quality organizations to inspect the work and insure that their concerns and requirements are properly reflected in the procedures.

Third, to further enhance the performance of key project organizations, Consumers Power will maintain control over scheduling, both through the construction authorization process and by frequent meetings with the involved contractors and subcontractors. Each week, underpinning subcontractors will present proposed construction work to the Company. In addition, to assure the best quality work, the major subcontracts were entered into on a time-material basis. This should improve subcontractor attention to detail and acceptance of owner direction in the performance of specific construction activities.

Last, the Company is establishing a separate Quality Improvement Program (QIP) for the soils project. Although not part of the formal Quality Assurance program, the QIP is a management system that should be helpful in communicating and reinforcing project policies and expectations to all project participants. To launch this effort, an indoctrination program will be presented to all individuals, stressing the absolutes of Quality and the concept of "Doing it right the first time." Measurements specific to soils will be developed for those critical areas which are indicative of a "quality product". Tracking these activities will provide an indication of the effectiveness of the program. The QIP will provide mechanisms for individual "feedback" from all individuals involved, including the craft personnel.

INDEPENDENT ASSESSMENT

A third party will be retained to independently appraise the initial phases of the construction of the auxiliary building underpinning. This consultant will be mobilized as soon as possible and, after familiarizing itself with the design, will evaluate the auxiliary building underpinning construction work at

the site. If significant problems or adverse trends are observed, the third party assessment program will be extended in both scope and duration until a satisfactory conclusion can be drawn. The initial evaluation will be carried out over a three-month period.

The independent assessment will be conducted by a team of nuclear plant construction and quality assurance experts. This team will be supplemented by the addition of an underpinning consultant who will review the soils design documents, construction plans and construction itself to assure not only that the design intent is being implemented but also that the construction is consistent with industry standards. The assessment will further assure that the QA Program is being implemented satisfactorily and that the construction is being implemented in accordance with the construction documents. Arrangements are being made with Stone and Webster Engineering Corp to assume the lead role in this appraisal. They will be assisted by Parsons, Brinkerhoff, Quade and Douglas, Inc who will provide underpinning expertise. The NRC will be apprised of all findings of this independent assessment in a timely manner.

ORGANIZATION, MANAGEMENT INVOLVEMENT AND NRC OVERVIEW

The project organization formed for the performance of the soils remedial work incorporates single-point accountability, dedicated personnel to the extent practical, minimum interfaces-particularly at the working level, and a quality organization integrating QA and QC. The soils project organization is tailored to the task at hand. The entire organization, including quality assurance and quality control are staffed with well qualified, experienced personnel, augmented by design consultants and construction subcontractors nationally recognized in the underpinning field.

The soils remedial effort will also include a high level of senior management involvement. Project senior management will conduct weekly in-depth reviews on site of all aspects of the work including quality and implementation of commitments. In addition, the reporting chains to the senior project personnel have been shortened. The Company's CEO is briefed on a regular basis and schedules bi-monthly briefings on all aspects of the project including soils. During the bi-monthly briefings, the CEO normally tours the Midland site.

Complementing the CPCo management role, NRC Region Management overview of the construction process will be enhanced by monthly meetings, agreed upon by the Region, to overview the results of the quality program and the progress of the soils project. These meetings will cover any or all aspects of the project of general or special interest to the NRC management.

CONCLUSION

Based on the discussion outlined above, CP Co believes that the soils program has been thoroughly and critically evaluated and that all prerequisites for successful implementation have been or are being accomplished. The Company's program, with the initial overview from the independent implementation assessment, and the continuing overview by the NRC staff and management should

provide adequate assurance that the remedial soils activities will be successfully completed.

James W. Cook

JWC/JAM/bjw

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- RSDecker, ASLB
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- HSingh, Army Corps of Engineers
- BStamiris

CONSUMERS POWER COMPANY
Midland Units 1 and 2
Docket No 50-329, 50-330

Letter Serial 18845 Dated September 17, 1982

At the request of the Commission and pursuant to the Atomic Energy Act of 1954, and the Energy Reorganization Act of 1974, as amended and the Commission's Rules and Regulations thereunder, Consumers Power Company submits information regarding the implementation of the Consumers Power Company Quality Program for the Midland Plant soils remedial work.

CONSUMERS POWER COMPANY

By J W Cook
J W Cook, Vice President
Projects, Engineering and Construction

Sworn and subscribed before me this 17th day of Sept 1982.

[Signature]
Notary Public
Bay County, Michigan

My Commission Expires 3-4-86



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September 17, 1982

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MIDLAND NUCLEAR COGENERATION PLANT
MIDLAND DOCKET NOS 50-329, 50-330
QUALITY ASSURANCE PROGRAM IMPLEMENTATION
FILE: 0485.16 SERIAL: 18850

REFERENCE: CPCo Letter Serial 18845, 9/17/82, "Quality Assurance Program Implementation for Soils Remedial Work"

The referenced letter summarized Consumers Power Company's discussions with the NRC management regarding the implementation of the Quality Assurance Program for the Midland soils remedial work. In addition to the discussions specifically related to soils, the total Midland Quality Assurance Program implementation was reviewed and areas were identified where additional efforts should be directed to insure successful overall project implementation and the performance of the primary inspection function (QC) on site. In response to these concerns Consumers Power made two significant new commitments which are conceptually described in the following paragraphs. Additional documentation will be provided as the details of these commitments are worked out.

Quality Control Function

In order to improve the performance of the Quality Control function and to make it more responsive to direction from the Quality Assurance organization, the responsibility for directing the entire Quality Control function will be assumed by Consumers Power. The Quality Control group will functionally report to MPQAD. The programmatic aspects now in place will continue to be used and the combined inspection resources of both Bechtel and CPCo will be integrated. This reorganization will be fully implemented as soon as the appropriate procedural changes are finalized. The integration of the QC resources for soils into MPQAD has already been accomplished as a separate action.

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Independent Verification - Total Project

Consumers Power proposes a new and expanded approach for verifying the overall quality of the project. This approach will give a broader overview than the assessments currently being recommended by the NRC for other NTOL plants. The assessment which is suggested for Midland is to combine an INPO type construction project evaluation, which is a broad "horizontal" type review of many aspects of current project operations with the detailed "vertical slice" review of all aspects, current and historical of a critical plant system or subsystem. The entire review will be performed by one or more independent contractors who are currently being selected. With the assistance of the selected contractors, the detailed plans for this extensive independent assessment will be finalized and presented to NRC management shortly for their concurrence prior to initiating the major work activities.

The INPO portion of the program will be initiated immediately at least through the planning phase to comply with the INPO schedule and industry commitments to the NRC. The INPO construction program evaluation for Midland will differ from the majority of the industry's self-initiated evaluations in that an independent contractor rather than utility personnel will carry out the INPO evaluation. The results will then be overviewed by the INPO staff to assure adequacy and consistency with other evaluations.

Additional Assessment Programs

In addition to the above, Consumers Power has proposed to retain a qualified third party for an assessment of the underpinning activities as detailed in the referenced letter.

Consumers Power Company has also initiated other appraisals to assess the adequacy of the Quality Assurance Program. Two major recent examples of this practice that have occurred are as follows.

In 1981, Management Analysis Company (MAC) conducted an assessment which focused on performance in three major areas as follows:

1. Adequacy and timeliness of both part and process corrective actions taken on a sample of the historical hardware problems that have been identified at Midland over its lifetime.
2. The degree to which the physical characteristics of selected supplied components and parts meet their respective quality requirements.
3. The overall adequacy of the Quality Assurance Program with particular emphasis in corrective actions, effectiveness of the supplier documentation review efforts and personnel qualifications.

This assessment has been completed, the results were positive and all open items have been resolved and closed. The final report has been previously submitted to the NPC.

A Bechtel Corporate Staff project evaluation was initiated in April 1982. A report on the results of this assessment is being finalized at this time. The

purpose of this evaluation was to review the Midland engineering activities to determine if design criteria have been implemented and if the design assumptions, design methods, and the design processes are satisfactory. Bechtel Corporate Management was asked to initiate this assessment in order to certify that the Midland project met all the standards expected of any Bechtel project. To carry out this assignment the assessment team was specifically chosen to be independent from the Bechtel Ann Arbor Power Division. The team consisted of senior experienced personnel with appropriate expertise having previously performed similar work on other projects. A Consumers Power representative was a direct participant on the assessment team. The final report will be sent to the NRC upon completion and whatever other documentation or discussion as may be requested will be provided.

Conclusion

Based on the discussion outlined above and in the reference letter, Consumers Power believes that steps have been taken to insure both the successful implementation of the remaining work to complete the plant and a verification program, including quality records, test program results, and third party assessments, that will certify the adequacy of the plant as constructed.

James W. Cook

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CONSUMERS POWER COMPANY
Midland Units 1 and 2
Docket No 50-329, 50-330

Letter Serial 18850 Dated September 17, 1982

At the request of the Commission and pursuant to the Atomic Energy Act of 1954, and the Energy Reorganization Act of 1974, as amended and the Commission's Rules and Regulations thereunder, Consumers Power Company submits information regarding the implementation of the Consumers Power Company Quality Program for the Midland Plant.

CONSUMERS POWER COMPANY

By J W Cook
J W Cook, Vice President
Projects, Engineering and Construction

Sworn and subscribed before me this 17th day of September.

[Signature]
Notary Public
Bay County, Michigan

My Commission Expires 2-11-84