Docket Nos.: 50-155
50-255
50-329, 330

FEB 16 1978

MEMORANDUM FOR: DISTRIBUTION

FROM: W. L. Belke, Quality Assurance Branch

SUBJECT SUMMARY OF MEETING HELD FEB 13, 1978 RE: CONSUMERS POWER COMPANY'S (CPC) QA PROGRAM TOPICAL REPORT FOR DESIGN, CONSTRUCTION & OPERATIONS

On February 13, 1978 representatives of CPC met with the NRC staff in Bethesda. CPC's changes to their quality assurance program topical report were discussed. A list of attendees is attached.

Following are the significant points discussed at the meeting:

1. CPC explained the purpose and benefits of recent organizational changes relative to the design, construction and operating quality assurance organizations. These changes were to provide for more direct management involvement and strengthen site quality activities by increasing inspection coverage.

2. NRC discussed some comments resulting from their review of Revision 6 (dated December 12, 1977) to the CPC QA Topical Report.

At the conclusion of the meeting, NRC staff stated they will review the December 12, 1977 and February 10, 1978 changes to the CPC QA Topical Report, document the results and request any additional information and/or clarifications from CPC, if necessary.

Original signed by:
C. J. Heltemes, Jr.

W. L. Belke
Quality Assurance Branch
Division of Project Management

DISTRIBUTION
LPDR
Central File
QAB Projects
RCDeYoung, PM
DJSkovholt, PM
CJHeltemes, PM

Meeting Attendees
JWGilray, PM
WLBelke

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07741	QPM:QAB					
SURNAME	WLBelke					
DATE	2/16/78					

FORM 318 (9-76) NRCM 0240

☆ U.S. GOVERNMENT PRINTING OFFICE: 1976

MEETING ATTENDEES

Meeting with Consumers Power Company - February 13, 1978

Consumers Power Company

Dave Bixel - Nuclear Licensing Administrator

Jack Fremeau - QA Operations

Ben Marguglio - QA Design and Construction

NRC Staff

J. Gilray - Quality Assurance, DPM

W. Belke - Quality Assurance, DPM

D. Hood - Project Manager, LWR #4, DPM

Central File

March 7, 1978

Docket No. 50-329/330

MEMORANDUM FOR: James R. Tourtellotte, Assistant Chief Hearing Counsel, ELD

FROM: Roger S. Boyd, Director, DPM

SUBJECT: ESTIMATED CONSTRUCTION COMPLETION DATES FOR MIDLAND UNIT 2

I should like to advise you of internally-generated information which potentially could be relevant and material to the Midland proceeding. The subject relates to our estimates of when Midland Unit 2 (the first of the Midland units scheduled for completion of construction) can be expected to be completed in accordance with the application, and otherwise ready for fuel loading. The latest estimate, presently under study by the staff, is not yet developed completely. When it has been we should provide the Board with our assessment of the significance of the information in accordance with our evolving Board Notification procedures.

As you will recall, the staff testified in February 1977 that, at that time, November 1980 was a reasonable date for completion of Unit 2. Amendment 33 (FSAR) to the application, docketed November 18, 1977 gives the applicants' earliest and latest dates for completion as October 1, 1980, and October 1, 1981, respectively. The "rainbow books" published by NUPC (Blue Book and Yellow Book) carry an estimated fuel load date of November 1980 for Unit 2.

In late 1975 the NRC established a Caseload Forecasting Panel to provide estimates of incoming CP and OL applications, and when individual facilities would be ready for operation, for budget and workload planning purposes. On November 15, 1977 the Executive Director for Operations instructed the Caseload Forecasting Panel to develop and refine a consistent forecasting methodology and to provide periodic caseload forecasts that could serve as the single source for internal and external users. Although this activity is not directed to the Midland units, or any other particular facility, the studies and the results of the Panel's efforts will provide construction completion estimates on all facilities under construction, based on a set of standard assumptions that can be applied to all facilities.

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In the course of the Panel's present study, the NRR project staff was asked to comment on the Panel's most recent projections. The Midland project staff identified two estimates of construction completion for the Midland units generated by MIPC which differ from the staff testimony in the proceeding and from the information carried in the rainbow books. In April 1977, based on February 1977 data and assuming the plant was 23% complete at that time, the MIPC made a generic estimate for budget planning purposes that Unit 2 would be ready to load fuel in August 1983. A second generic estimate was made in January 1978, assuming 38% completion of construction, with the conclusion that May 1982 should be used for budget planning purposes. During this time, MIPC's monthly Construction Status Report on Nuclear Power Plants (Yellow Book) continued to carry the November 1980 data.

The Forecast Panel, using a standard model for average plant construction duration, has established initially a May 1982 fuel load date for Unit 2. It is in the process of refining this estimate, as well as estimates for other plants, taking into account plant-specific factors that would provide a more precise estimate.

Recognizing the variations of these general estimates with the dates provided in Amendment 33, and the fact that these estimates potentially affect certain issues in the Midland proceeding, we plan to do a more detailed plant-specific analysis of the best estimate fuel load data for Midland Unit 2 and will provide the results to the Forecast Panel, the utility, and to you.

Original Signed By
Roger S. Boyd

Roger S. Boyd
Director
Division of Project Management

Distribution
Central File
NRR Rdg.
RSBoyd Rdg.
BD Notification File
E. Case
N. Moseley
R. DeYoung
D. Vassallo
S. Varga
D. Hood
M. Grossman
W. Olmstead
S. Kari
M. Berkow
A. Abell
L. Crocker

OFFICE ▶	PM:D					
SURNAME ▶	RSBoyd:lm					
DATE ▶	3/7/78					

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

MAR 16 1978

Docket Nos.: 50-329/330

MEMORANDUM FOR: Steven A. Varga, Chief, Light Water Reactors Branch No. 4, Division of Project Management

FROM: Darl Hood, Project Manager, Light Water Reactors Branch No. 4, Division of Project Management

SUBJECT: FORTHCOMING MEETING TO REVIEW MIDLAND PLANT UNIT 2 CONSTRUCTION COMPLETION SCHEDULE

Date & Time: March 21 & 22, 1978 (Tuesday & Wednesday) 9:00 a.m.

Location: Midland, Michigan

Purpose: To evaluate the schedule for completion of construction and fuel load dates for Midland Unit 2.

Participants:

NRC - L. Crocker, DPM; D. Hood, DPM; M. Reinmuth, I&E; J. Lovelace, MIPC; T. Vandel, I&E; et al.

Consumers Power Co. - G. Keeley; Others as may be requested during the review.

Darl Hood

Darl Hood, Project Manager
Light Water Reactors Branch No. 4
Division of Project Management

Enclosure: Agenda

cc: See Next Page

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AGENDA

The meeting is part of an evaluation being performed by the NRC to determine best estimate dates for completion of construction and fuel loading for Midland Unit 2, the earlier of two units being constructed. On Mar. 8, 1978, the NRC advised the Atomic Safety and Licensing Board of variations in estimates by the NRC's Caseload Forecasting Panel, previous estimates carried by the staff in its "Yellow Book", and estimates by Consumers Power Company in Amendment 33 to the application. Recognizing the variations of these estimates and the fact that these estimates potentially affect certain issues in the Midland hearing, the staff is performing a more detailed plant-specific analysis. The staff also views the evaluation to be relevant to the request by Consumers Power Company for extension of Construction Permits CPPR-81 and CPPR-82 as requested by Amendment 33 to the application.

ccs:
Michael I. Miller, Esq.
Isham, Lincoln & Beale
Suite 4200
One First National Plaza
Chicago, Illinois 60670

Judd L. Bacon, Esq.
Managing Attorney
Consumers Power Company
212 West Michigan Avenue
Jackson, Michigan 49201

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

Howard J. Vogel, Esq.
Knittle & Vogel
814 Flour Exchange Building
Minneapolis, Minnesota 554[illegible]

Myron M. Cherry, Esq.
One IBM Plaza
Chicago, Illinois 6[illegible]11

Honorable Curt Schneider
Attorney General
State of Kansas
Topeka, Kansas 66612

Irving Like, Esq.
Reilly, Like and Schneider
200 West Main Street
Babylon, New York 11702

James A. Kendall, Esq.
Currie and Kendall
135 North Saginaw [illegible]
Midland, Michigan 48640

Louis W. Pralle, Esq.
Michigan Division Legal Department
47 Building
Dow Chemical USA
Midland, Michigan 48640

ccs (continued)
Lee Rute, Esq.
Michigan Division
The Dow Chemical Compar
47 Building
Midland, Michigan 48640

ATTENDANCE LIST

March 21-22, 1978

Midland Site Meeting

Licensee

	G. S. Keeley	Consumers Power Company, Project Manager
*	T. C. Cooke	Consumers Power Company, Project Superintendant
	K. R. Kline	Consumers Power Company, Project Control Supervisor
	D. D. Johnson	Consumers Power Company, Construction Control Supervisor
	W. G. Jones	Bechtel, Project Cost & Schedule Supervisor

NRC

	W. H. Lovelace	MIPC
	D. S. Hood	NRR, Midland Project Manager
	L. P. Crocker	NRR, Technical Assistant to DPM
	T. E. Vandel	R:III, Project Inspector
	R. J. Cook	R:III, On-site Inspector (designee)
**	E. W. K. Lee	R:III, Inspector
**	K. P. Naidu	R:III, Inspector

* March 21 only
** Contacted, but did not participate in meeting

ATTACHMENT A

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
CONSUMERS POWER COMPANY	)	Docket Nos. 50-329
	)	50-330
(Midland Plant, Units 1 and 2)	)	

REPORT PREPARED BY S. FELD AND W. GUNDERSEN FOR THE ATOMIC SAFETY AND LICENSING BOARD ON ALLEGED DISCREPANCIES BETWEEN CONSUMERS POWER'S RATE FILING OF JANUARY 31, 1977 AND TESTIMONY PRESENTED TO THE ATOMIC SAFETY AND LICENSING BOARD IN THE MIDLAND PROCEEDING

Introduction

The Staff, as directed by the Atomic Safety and Licensing Board, has reviewed the rate filing of Consumers Power Company (Licensee) before the Michigan Public Service Commission of January 31, 1977. This rate filing is essentially a detailed justification for rate revision on the Consumers Power's system. Counsel for All Intervenors Except Dow (Intervenors) has charged that significant contradictions exist between testimony provided to the Atomic Safety and Licensing Board by the Licensee and representations made before the Michigan Public Service Commission in the rate filing.[1/] Clearly, similar information and analyses do appear in the information filed in both proceedings and certain differences in treatment can be observed. However, the Staff review concludes that:

1/ The allegations were made at the March 24, 1977 hearing session in this proceeding at Tr. pages 5038 through 5045.

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1. The discrepancies have a negligible effect on the conclusions reached by the Licensee in this NRC proceeding and in no way would alter those conclusions;

2. The discrepancies do not produce any systematic bias, i.e., where differences were observed, the different treatment in the NRC proceeding was not always beneficial to the Licensee's case relative to the treatment used in the rate filing;

3. The discrepancies, with the exception of a few minor errors, are fully explainable in that they either reflect (a) a basic philosophical difference in the intent of the information presented, or (b) differences in the cut-off data used to prepare the analyses which precluded the input of more recent information and management decisions.

I. Staff Review of the January 31, 1977 Rate Filing

The Staff has identified those areas in the rate filing that contain material relevant to testimony presented by the Licensee in the NRC proceeding and has reviewed them for consistency. This review included meetings and discussions with the Licensee in order to obtain additional information.[2/] In all, five areas for review have been identified:

2/ A meeting was held between the Licensee and the NRC Staff in Chicago on April 5, 1977. The Licensee has provided the Staff with information it requested in letters of April 13, 1977 and May 10, 1977 (distributed at hearing on that date) from the Licensee to the Board with copies to all parties in this proceeding.

1. Need for Power - Forecasted energy and power loads, and capacity planning, specifically treatment of sales to co-ops and municipalities, and plans to temporarily derate Palisades;

2. Alternative Energy Sources - Coal fired generating plants, specifically projected coal prices;

3. System Reliability and Reserve Margin Analysis - specifically random outage rates;

4. Cost of Replacement Power (delay costs) - specifically planned capacity, fossil fuel costs, outage rates, scheduled maintenance, heat rate, sales to co-ops and municipalities, nuclear fuel costs, and use of different models.

5. Treatment of Decommissioning Costs.

1. NEED FOR POWER - Forecasted Energy and Power Loads and Capacity Planning

The material in the rate filing pertinent to these issues appear in the direct testimony of Mr. E. H. Kaiser, Mr. J. M. Brager, and Mr. P. L. Bickel.

A. FORECASTED ENERGY AND POWER LOADS

In Mr. J. M. Brager's testimony there is a discussion of projected load factors, energy sales, energy requirements, efficiency factors,

and peak load demands through 1986. These values, as well as the discussion of them, are totally consistent with the Consumers presentation at the NRC hearing.

In Mr. P. L. Bickel's testimony there is a discussion of forecast methodology and projected growth through 1986 by major customer class. This presentation is totally consistent with the March 15, 1977 Amendment to the Environmental Report and the direct testimony of P. L. Bickel at the NRC hearing.

In Mr. E. H. Kaiser's testimony, peak load demand forecasts are used in his Exhibit F2 to develop projected reserve margins. The peak load forecast is identical to that used by Mr. Brager and in the NRC proceeding.

B. CAPACITY PLANNING

With respect to capacity planning, Mr. Kaiser's Schedule F1 appearing in the rate application reports major capacity additions, changes, and retirements through 1986.

The planned sale of 50 MW of Campbell 3, 172 MW of Midland 2, and 98 MW of Midland 1 are identical as between the rate filing and CP's capacity planning as described at the NRC hearing.

Mr. Kaiser's Schedule F1 reports the retirement of Morrow 1 and 2 in 1983. This results in a reduction in capacity of 66 MW. This decision was reached after the Licensee filed its testimony in the NRC proceeding[3/] and is not incorporated in the Licensee's case before the NRC. However, if it had been, it would have resulted in a greater need for Midland than was presented by the Licensee.

Mr. Kaiser's Schedule F2 presents CP's net capability through 1986 - the following differences are noted between this exhibit and values used in the NRC proceeding:

1. Rate filing indicates an additional 11 MW derating on Palisades from 1977 through 1980 due to cooling tower requirements.

2. Rate filing indicates a 10 MW derating at Big Rock from 1977 through 1984 due to ECCS limitations.

3. Rate filing indicates retirement of Morrow 1 and 2 commencing in 1983 of 66 MW.

3/ The testimony of the Licensee and the NRC Staff were filed in this proceeding on November 5, 1976. Final decisions with regard to the rate case application were not reached by the Licensee until mid to end December 1976. Updated material was not presented in the NRC proceeding as its effects were judged by the Licensee to be insignificant. The Staff concurs in this conclusion reached by the Licensee.

The above three items are not considered by the Licensee in the NRC proceeding because they were decisions made after the testimony in the NRC proceeding was filed. (See footnote 3). However, if they had been incorporated into the NRC proceeding, each item would have enhanced the Licensee's need for the Midland units.

Two additional discrepancies exist because the rate filing is estimating winter net capability whereas the NRC proceeding is concerned with the summer net capability. They are: 160 MW summer derate; and a 183 MW reduction in net capability in 1983 because that portion of the Luddington sale terminates in August of 1983. Thus, the rate filing shows higher capabilities because the summer derate is not applicable to winter estimates and whereas the additional Luddington capacity will be available for the winter peak of 1983, it will not be available for that year's summer peak. The Staff agrees that the summer peak is the relevant peak to use in the NRC proceeding to determine reliability and that these differences are fully justified. A discussion of the summer derate and termination of Luddington sale appear in the Licensee's Environmental Report, p. 1.1-20, and Table 1.1-8, respectively. In all other respects, including the proposed derating of the Palisades Unit due to steam generator tubing problems (77 MW in 1978, 35 MW additional in 1979 and 1980, and a complete outage in 1981 and 1982), the rate filing and CP's position at the NRC hearing are identical with respect to capacity planning relevant to need for power.

2. ALTERNATIVE ENERGY SOURCES - Projected Coal Prices

Projected coal prices are important to the NRC case in two major respects: coal prices impact on the cost of Midland vs. coal fired alternatives, and coal prices impact on the cost of delay as used in the production cost runs. This discussion is limited solely to the treatment of coal prices in the rate filing as they relate to the alternatives analysis. A more detailed discussion on coal prices as they impact on the costs of delay will be presented in Section 4 of this report.

For the alternatives analysis, the cost of newly contracted coal is the relevant consideration and the testimony by Mr. R. Wilkenson in the NRC hearing provides the basis for these projected values.

The discussion on coal prices in the rate filing appears in the direct testimony of Mr. J. M. Brager and Mr. J. E. Van Reenen. Their concern is to project the expected average cost of coal for each coal fired unit on the CP system. These data are necessary to estimate revenue requirements which are, of course, critical to a decision on rate relief. They are not, however, comparable to the estimates developed by R. Wilkenson. Clearly, the average cost reflects a myriad of factors in addition to the cost of newly contracted coal. For example, the values presented by Brager and Van Reenen must consider the mix between existing and new contract coal, the point in time at which new contracts replace old ones,

shifts from high sulfur to low sulfur coal, and shifts in coal supplies from one plant to another.

Each of these factors will cause the average price and resulting escalation rate to vary from those used by Wilkenson in his testimony. Table I presents the forecasted coal prices by generating plant for the period 1977 through 1982 as depicted in the rate filing.[1] The effect of these factors can be seen by reviewing several of the data points.

For example, the price of delivered coal to Karn 1 & 2 is forecasted to increase by almost 55% between 1977 and 1978. If an existing contract were to be in force between these two years, one would expect escalation of 12% based on Wilkenson's testimony. However, in actuality these units will begin switching to low sulfur coal in 1977 with complete conversion by 1980. Thus, the resulting value of $1.81 which appears in the rate filing reflects that portion of Karn's coal supply subject to the higher price of this new low sulfur coal.

Alternatively, the rate filing shows less than a 4% escalation rate in coal deliveries to Campbell 1 & 2 in 1978. This escalation is well below Wilkenson's assumed 12% escalation because lower priced coal from Weadock 7 & 8 will be diverted to Campbell 1 & 2 in 1978.

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[1] Testimony of J.M. Brager of Consumers Power Co. before the Michican Public Service Commission, January 18, 1977, Exhibit JMB 9.

Table 1 - Coal Prices Report in Rate Filing

	1977	1978	1979	1980	1981	1982
	(COST IN CENTS PER MILLION B.T.U)					
Meadock 1-2	100	145	162	179	206	227
Karn 1-2	117	181	199	218	241	265
Whiting 1-3	132	160	166	220	242	268
Campbell 1-2	106	110	121	134	147	162
Cobb 1-3	100	137	151	194	213	241
Cobb 4-5	100	137	154	194	218	241
Campbell 3	-	-	-	232	256	302

For these reasons, it is not possible to completely reconcile Wilkerson's estimates on new source coal with the coal data presented in the rate filing. Such a reconciliation is not achievable as the purposes for which the coal cost data are being used are different in the two proceedings. For the rate filing, average coal cost data for each CP unit is required. These coal costs reflect the many factors discussed above. For the NRC proceeding, the appropriate coal costs for an alternatives analysis is the cost of newly contracted coal. So while the coal costs differ in the two proceedings, the application of each is correct.

It should be further pointed out that there is an explicit statement in Van Peenen's testimony that in developing his estimates, he assumed real price increases of 6% annually for 1977 and 1978, and 4% annually for 1979-1982. These real price increases represent the exact real price increases used by Wilkinson in his testimony before the NRC. Thus, while absolute coal costs in the two proceedings may differ, the treatment of escalation is consistent.

3 - SYSTEM RELIABILITY AND RESERVE MARGIN ANALYSIS

Investigation revealed that the use of random outage rates[5/] by Consumers Power Company for the development of required reserve margins was essentially consistent in both the NRC hearings and the January 31, 1977 rate filing. In both cases, the impact of historic outage rates and projected outage rates was evaluated to reflect the sensitivity of random outage rate variations as related to the reliability of the system. The only random outage rate variation between data employed for the rate filing as compared to the Midland case was the assigned historic random outage rate of the Big Rock (71 MW) unit. The random outage rate for Big Rock used for the Midland hearings was 29.8% as compared to 18.6% in the January 31, 1977 rate filing. This historic rate of 18.6% is the correct number and its application in the Midland proceeding testimony would favor the delay of

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5/ Random outage rates include forced outages and short-term maintenance outages. Short-term maintenance outages are, in effect, forced outages that can be postponed beyond the next weekend if necessary and, therefore, do not affect operating reserve requirements but must be factored into required installed reserve calculations.

the Midland Units but would be negligable adjustment resulting in a decrease in reserve margin requirements of only 0.2%.

Other minor variations in input parameters for the loss of load probability studies were:

1. Slight variations in the planned maintenance schedule
2. Retirement date of Morrow Units 1 and 2.

Maintenance schedules are revised frequently in most power systems. One reason is the impact of unforeseen forced outages that occur and, while the unit is shut down during the forced outage, certain routine maintenance functions will be performed that will effectively reduce or delay the scheduled outage at the later date. This prudent practice is widely used because of the obvious economic benefits. Another reason for revised maintenance schedules is the revised delivery dates of replacement parts needed during the scheduled overhaul. The maintenance schedules used in the NRC hearings vary slightly from those used in the rate filing for the years 1981, 1982, and 1983. These minor variations would not affect the required reserve margins.

Morrow units 1 and 2 were assumed to be in service through 1986 in the Midland proceeding LOLP evaluations while, in the rate filing, these two units were retired in 1983. Since the total capability of the two units is only 66 MW, the resultant affect is negligible. However, the retirement

of the Marrow Units would favor continued construction of the Midland units and, therefore, was a conservative application in determining the need for power in the Midland proceeding.

Statements made by Mr. E. H. Kaiser[6/] before the Michigan Public Service Commission on January 31, 1977, in regard to the application of random outage rates as they affect required reserve margin are consistent with the methodology employed by Mr. Gordon L. Heins[7/] before the Licensing Board at the Midland hearings and also consistent with the information contained in the Environmental Report Supplement.[8/]

1 - COST OF REPLACEMENT POWER (DELAY COSTS)

Although the rate filing not concern itself with the costs of delay, it does provide much information that is pertinent to the Licensee's analysis of this subject as presented at the NRC proceeding. Clearly, there are certain discrepancies between the two cases. However, as this review will attempt to demonstrate, all of the differences are fully explainable. Furthermore, even if the rate filing data had been used instead of the data actually used at the NRC hearing, the effect on delay costs would have been negligible. In fact, the Licensee has adjusted for most of the inconsistencies and the end result is only about a 2% reduction in delay costs.

6/ Page 5, Direct Testimony of E.H. Kaiser
7/ Paragraph II, pp. 8 and 9, Testimony of Gordon L. Heins.
8/ Table 1.1-10, Figure 1.1-2, paragraph 1.1.3.

A. TREATMENT OF THE SALE OF PORTIONS OF MIDLAND AND CAMPBELL 3 CAPACITY

Both the rate filing and the NRC proceeding acknowledge identical sales and buy-backs of portions of Midland Units 1 and 2 and Campbell 3 to municipalities and co-ops. This consistent treatment was already discussed in Section I of this report. However, when Consumers Power calculated the costs of delaying Midland 1 and 2, it did so with respect to the full capability of these units, independent of these sales. The Staff agrees, that in order to assess the impact of delaying the operation of Midland, total output of the plant must be considered, because the delay of Midland will affect the total output of these units and the effects will extend beyond the CP system. Therefore, what appears to be a discrepancy is, in the Staff's opinion, a basic philosophical difference in the purpose of the information presented.

B. RANDOM OUTAGE RATES

Both the rate filing, and the production cost runs used in the NRC proceeding rely on projected random outage rates. Of the 27 fossil units on the CP system, the outage rates from both sets of data are perfectly consistent with respect to 18 units. However, for the remaining 9 units, slight discrepancies are noted. A typical difference can be observed by reviewing the outage rates reported for Karn 2. These values are reproduced below:

	Rate Case				NRC Proceeding Production Cost Run			
	1981	1982	1983	1984	1981	1982	1983	1984
Karn 2	.0744	.0744	.0744	.0744	.0676	.0744	.0744	.0744

The values reported in the rate case are constant over the 1981-84 period whereas in the production cost runs the 1981 value is lower by .0068. Where differences are noted, the difference reflects the fact that for the production cost runs the random outage rates as developed by CP's operations division were used whereas for the rate filing a constant value was used.

In any event, the effect of differences of such small magnitude on delay costs is truely minimal. In fact, even if the differences were more significant the effect on delay costs would still be of minor importance. This is so because the delay costs are calculated as the difference between production costs incurred with Midland on line as scheduled vs. Midland delayed. Since the same random outage rates would be used in each case, the effect of using a different set of outage rates in calculating delay costs would essentially cancel out.

C. SCHEDULED MAINTENANCE

Both the rate filing, and the production cost runs used in the NRC proceeding provide estimates of scheduled maintenance. Of the 27 fossil units on the CP system, the scheduled maintenance from both sets of data are perfectly consistant with respect to 23 units. For the remaining 4 units slight discrepancies are noted. For three of these cases the total number of weeks of scheduled maintenance are the same over the 1981-84 period with the discrepancy only occurring in the assignment of scheduled maintenance to a specific year. In the case of Meadock 8, 4 additional weeks of scheduled maintenance were planned under the production cost runs. For clarification, the differences are reproduced below:

	Rate Case				NRC Proceeding Production Cost Run			
	1981	1982	1983	1984	1981	1982	1983	1984
Camp 1	4	4	4	8	8	4	4	4
Mead 8	4	4	4	4	4	8	4	4
Whit 1	2	2	2	6	6	2	2	2
Whit 3	2	2	2	6	2	2	6	2

The explanation for these differences rests on the availability of updated information. (See footnote 3). The new schedules were available when the rate case was being prepared but were not available at the time the Midland case was prepared. The Staff recognizes that scheduled maintenance is an item constantly subject to revision and up-date. In any event, the differences are very minor and because the same scheduled maintenance would be used in the Midland on line and Midland delay cases, the effect of using different scheduled maintenance values in calculating delay costs would be negligible.

D. HEAT RATES

Both the rate filing, and the production cost runs used in the NRC proceeding provide estimates of projected heat rates. In the rate case, a model using actual 1973 heat rates was used to develop the projected heat rates whereas in the NRC proceeding a different model which utilized actual heat rates over the 1971-74 period was used. The results of the two approaches produce a number of inconsistencies. In all, heat rates between the two models are identical for only 2 units, the heat rates are higher in the rate case for 4 units, and lower for all other units. Although the differences are many, the size of the differences are small. In all but two cases, values vary by less than 5%, with most of these being in the 1 to 2% range. The largest differences tend to occur among those units for which the rate case resulted in higher values for the heat rates.

An important reason for the differences is that each model assumes different operating levels for the units and the heat rate will vary as a function of unit use. In addition, the models themselves have certain limitations with respect to plotting the heat rate curves.

The fact that heat rates appear to be higher in the NRC proceeding produces higher production costs than would have occurred if the data from the rate filing had been used. However, once again because the data are used in both the Midland as scheduled and Midland delay cases, and differences are the focus of the cost of delay analysis, the net effect is minimized.

E. MWH OUTPUT FOR PALISADES AND BIG ROCK

The rate filing and the NRC proceeding contain forecasts of the MWh output of Palisades and Big Rock in the 1982-84 time period. The estimates in the production cost runs overstate these outputs relative to the rate case. For Palisades, the difference is minor, on the order of less than 0.5%. For Big Rock the difference is approximately 8%. To the extent these outputs are overstated in the NRC proceeding, the costs of delay are understated.

With respect to Palisades the difference is due solely to the manner in which Palisades output is entered. In the rate case, Palisades MWh output is a given, provided by the nuclear production people at CP. In the production cost runs this value must be calculated as a part of the computer run. The programmer cannot exactly duplicate the desired number because the computer rules him.

In the case of Big Rock, the same problem must be overcome. However, that adjustment does not fully explain the much larger discrepancy which exists here. Referring back to Section I of this report it is noted that the rate filing has taken account of a 10 MW derating on Big Rock that is not reflected in the NRC proceeding. This discrepancy exists because the decision to derate occurred after the NRC case was prepared. This coupled with the minor inaccuracy produced by the computer fully explains the apparent discrepancy.

F. NUCLEAR FUEL COSTS - PALISADES, BIG ROCK, AND MIDLAND

1 - Palisades - The nuclear fuel costs for Palisades are approximately 4% higher in 1981 and 7% lower in 1983 and 1984 than those reported in the rate filing. The discrepancies are due to different MWh outputs assumed in the two cases and the fact that these values are continually updated and the rate filing which was produced at a later date reflected more recent data. However, adjusting for these differences will not affect the estimate of cost of delay.

Palisades will operate at its maximum level possible independent of whether Midland is delayed or not. Consequently, Palisades cannot contribute to the incremental cost of delay.

ii - Big Rock - The nuclear fuel costs for Big Rock are significantly lower in the NRC proceeding than those reported in the rate filing. For example, in 1984 the estimated cost is less than one-third that reported in the rate filing. The explanation is that the cost of Big Rock generation has not been up dated in the production cost runs. This is justifiable because this data is unnecessary input to the cost of delay. The output of Big Rock is fixed for the as scheduled and delay cases and thus, when the difference is taken, the costs will wash out.

iii - Midland - The Midland fuel costs for 1981-84, expressed in mills/Kwh are significantly higher in the production cost run than those reported in the rate filing. This is so, because the production cost runs reflect the updated nuclear fuel estimates of February 4, 1977 that was submitted at the NRC hearing whereas the rate filing is predicated on the earlier estimates of November 1976. If the values reported in the rate filing were used in the production cost run, the cost of delay would increase. Thus, relative to the rate filing, these values are conservative in their estimation of delay costs.

G. PROJECTED FOSSIL FUEL COSTS

The cost of delaying Midland is a direct function of the estimated fossil fuel costs on the Consumers Power system in the 1981-84 time period. That is, the higher the fossil fuel cost estimates, the greater will be the delay costs. However, because the same values are applied to both the as scheduled and delay cases, the effect of using a different set of values will be minimized.

Estimated fuel costs are reported in the Licensee's production cost runs used in the NRC proceeding and in the licensee's rate filing before the MPSC. Discrepancies between the two sets of data can be observed. However, in all but five instances the differences are extremely minor, on the order of 1% or less. These differences are due to round off errors and a slight variation in how inflation and real price increases were handled:

e.g., rate case - assuming $1.00 per MBTU price, a 12% price increase representing 6% inflation was calculated as --

$1.00 (1.06) (1.06) = $1.1236

whereas in the production cost run, with the very same assumptions it was calculated as --

$1.00 (1.12) = $1.12

In any event, because of these factors, the production cost runs produce slightly lower estimates than those appearing in the rate filing and thus, are conservative.

More significant fuel cost differences are noted for Karn 1 and 2, Campbell 3, Weadock 1-6, Karn 3 and 4, and Gaylord Oil & Gas.

With respect to Karn 1 and 2, the production cost runs have about a 26% higher coal cost for the 1981-84 period which tends to overstate delay costs. The lower value used in the rate case reflects a management decision, made after the NRC testimony was prepared. (See footnote 3). to contract for these units' coal supply now at a lower cost rather than wait until a later date. The production costs runs on which the Heins delay costs are based are in error as they do not use the coal cost data for the Karn 1 & 2 Units presented in the rate filing.

With respect to Campbell 3, the production cost runs have about a 10% higher coal estimate for the year 1984 which also overstates delay costs. The lower value, used in the rate case, represents the estimated cost of coal to Campbell 3 based on a more recent management decision (See footnote 3) to begin contracting for it now. In the production cost runs, the estimate was based on an earlier management decision to contract for deliveries at a later date. In addition, included within this estimate is the higher cost of coal to Campbell 4 which was scheduled to come on line in 1984. This plant had been indefinitely delayed prior to the filing of Consumers testimony in the Midland proceeding. The production cost runs on which the Heins delay costs are based are therefore in error as they do not use the coal cost data for the Campbell 3 unit presented in the rate filing.

With respect to Meadock 1-6, and Karn 3 & 4, the rate filing has about a 30% higher fuel cost estimate for the year 1982 which tends to understate the costs of delay. In the production cost runs, the Morrow fuel costs were incorrectly imputed for these units whereas in the rate filing the correct values were used.

With respect to Gaylord Gas and Oil, the rate filing assumes that for the years 1981 to 1982 these units will operate 11 months on gas and 1 month on oil, whereas in the production cost runs gas is assumed for the entire period. Since oil results in higher fuel costs, the production cost run is conservative relative to the rate filing with respect to delay costs.

H. CONCLUSION - COST OF DELAY

The production cost runs which support the Heins testimony contain two errors in coal costs which produce a non-conservative effect on delay costs. These are the coal costs for the Karn 1 & 2 and the Campbell 3 units. The Licensee indicates that it examined the effects of these coal cost increases and certain other rate case assumptions and found the effects to be negligible.

A production cost run was made on February 16, 1977. It incorporated the rate case assumptions on Big Rock cutout, Campbell 3 and Karn 1 & 2 fuel costs, the retirement of Morrow, and Palisades fuel costs. On a 1981 present worth basis, these adjustments resulted in about a 2%

reduction in delay costs over those reported to the Atomic Safety and Licensing Board in revised Exhibit 14 (Testimony of G.L. Heins). Based on this analysis, the Licensee concluded that the effects were not significant and for this reason, it did not update the Heins testimony in this area. The Staff has reviewed the February 16, 1977 production cost run and has concluded that the impact of the various adjustments, including reduced coal costs for Campbell 3 and Karn 1 & 2 is minimal.

This computer run did not correct the following differences:

(1) Treatment of Midland capacity

(2) Random outage rates

(3) Scheduled maintenance

(4) Heat rates

(5) Big Rock fuel costs

(6) Fossil fuel costs

a. handling of escalation and round off errors

b. Meadock 1-6, and Karn 3 & 4.

The Staff concludes that adjustments are not required in these instances because: (a) with respect to item (1) it would be inconsistent with the desired purpose of the production cost run; (b) with respect to items (2), (3), (4), and (5), the effect would be negligible; and (c) with respect to 6a and 6b, it would only tend to bring the estimated delay costs back towards their initial values.

8. TREATMENT OF DECOMMISSIONING COSTS

The material in the rate filing pertinent to this issue appears in the direct testimony of Mr. J. S. Ferguson.

Mr. Ferguson estimates the cost for entombment at the end of life, and the annual cost of surveillance, beginning at that time, for all nuclear power plants already in operation on the CP system. Thus, his estimate is applicable to the Palisades and Big Rock Point Nuclear Plants. The value he arrives at is 34% of the total capital cost of these plants. This translates to an estimated cost of $67 million for both units. However, since these costs are not incurred until the year 2000 for Big Rock Point and 2007 for Palisades, because that is when their operating licenses expire, this estimate reflects the cost in dollars approximately 30 years off into the future.

In the Midland proceeding, the licensee has estimated the cost of decommissioning the Midland Nuclear Power Plant, Units 1 & 2 at $83 million. There is however, one important difference between this estimate and that developed by Ferguson. The Midland estimate is the 1981 cost of decommissioning in 1981 dollars. If one wished to compare it with Ferguson's value, one would have to calculate the cost at the end of Midland's useful life. Applying the same escalation rates used by Ferguson (6-1/2% per annum out through 1984 and 5% per annum thereafter) results in a future cost of about $460 million in the year 2015.

This value is significantly larger than the Ferguson estimate and suggests that in the Midland proceeding the decommissioning estimate is high relative to what would have been the case had the Ferguson analysis been used. Consequently, in the NRC proceeding the decommissioning cost used does not bias the analysis in favor of Midland.

However, there are other important differences between the two estimates that bear mentioning. For example, the Midland decommissioning cost assumes complete dismantling which is a higher level of decommissioning than that assumed by Ferguson. Also, when the Midland estimate is future worthed for comparative purposes, it is future valued between 8 and 13 years more than Big Rock Point and Palisades. Correcting for each of these factors tends to bring the Midland estimate closer in line with the Ferguson value.

II. Staff Response to the Allegations of Dr. Richard J. Timm

At the hearings conducted in Chicago the week of May 9, 1977, testimony was presented by Dr. Richard J. Timm which identified the following alleged inconsistencies between the rate filing materials and the Consumer's testimony presented in the Midland proceeding:

1. Differences in Campbell 3 Coal Prices (Midland Intervenors' Exhibits 50 and 51).

2. Differing Treatment of Capacity Sales of Midland Units 1 and 2 and Campbell 3 (Midland Intervenors' Exhibits 52 and 53).

3. Differences in Plant Capacity Factors (Midland Intervenors' Exhibits 54 and 55).

In addition, Dr. Timm alleged at the hearing that Consumers Power Company was forcing bulk purchases of power in the Midland delay cases and thereby distorting delay costs. This contention is also examined in this portion of the report.

1. DIFFERENCES IN CAMPBELL 3 COAL PRICES

At the hearing, Dr. Timm expressed concern that the Campbell 3 coal costs were being inflated for delay cost purposes. (Tr. 5995). On pages 20-21, Section 4, Item G), the Staff identified the discrepancy in the 1984 fuel prices for coal delivered to the Campbell 3 unit and presented the bases for the higher price as reported in the production cost runs. Furthermore, on pages 22-23, (Section 4, Item H), the Staff reported the effect of adjusting for this difference, as well as other discrepancies, and noted that delay costs would be reduced by approximately 2%.

As reported in Midland Intervenors' Exhibits 50 and 51 and during cross-examination, Dr. Timm also expressed concern over the 1981 through 1983 coal prices for Campbell 3. The Staff contends that Dr. Timm is in error in this regard. First, when Dr. Timm calculated the current dollar Campbell 3 coal costs from the Van Reenen Exhibit, he assumed the real dollar estimates reflected 1977 base values rather than 1976 base values. Thus, he ignored an additional year's escalation that should have been added to the Van Reenen values. Correcting for this results in the rate filing values being slightly higher than those reported for the Midland proceeding which if anything would result in lower delay costs in the Midland case than would have occurred had the correct Van Reenen values been used.

Furthermore, rather than use the Van Reenen testimony which required certain calculations on Dr. Timm's part, he could have used Mr. Brager's Exhibit GMB-9 from the rate filing which already reported these values in current dollars. Had Dr. Timm used these data he may have realized that his Van Reenen calculations were in error and that, relative to the rate filing values, the Midland case treatment of Campbell 3 coal prices between 1981-83 is conservative as to their impact on delay costs.

2. DIFFERING TREATMENT OF CAPACITY SALES OF MIDLAND UNITS 1 AND 2 AND CAMPBELL 3

Midland Intervenors' Exhibits 52 and 53 were initially prepared for the rate filing by E. H. Kaiser of Consumers Power. Dr. Timm asserts that the treatment of delaying Campbell 3 on these Exhibits supports his contention that,

in delaying a facility a portion of which has been sold to a third party, it is appropriate to reduce the plant's capability by that portion being sold to the third party. Consequently, Dr. Timm questions the correctness of CP's position that if Midland is delayed, the effect should be judged in terms of the total capacity of these units independent of sales to third parties. (Tr. 8996).

It is the Staff's position that the purpose of CP's analysis must be fully understood and examined. CP is attempting to calculate the costs of delaying the Midland Units and in fact these costs would be spread over 100% of Midland's capacity and not just that portion owned by the Licensee.

As explained on page 13 of this report, (Section 4, Item A), the Staff's view is that the approach taken by Consumers is correct and that what appears to be a discrepancy is a basic philosophical difference in the purpose of the information presented.

Under cross-examination Dr. Timm was asked to comment on the merits of CP's position as stated on page 4 of its April 13, 1977 letter to the Licensing Board and set out below.

> The rate filing is concerned only with the cost of service and rates of charges to Consumers Power customers and therefore looks only at Consumers Power's system; as such, it only considers the portion of jointly owned units which Consumers power is projected to own. On the other hand, this proceeding must consider the total cost or effect of a potential delay of the Midland units, and, as such, must consider their total energy output, not just that portion which Consumers Power is expected to own. It should be noted that the buy-back provisions for jointly owned units are treated the same in both cases. Consequently, since the studies were made with different objectives in mind, their results cannot be directly compared;

Dr. Timm did agree (Tr. 6006-6010) with the fundamental distinction being made in this quote and thus the Staff believes that the Licensee, the NRC Staff, and the Midland Intervenors' all agree that a difference is warranted, although Dr. Tim believes that the underlying analysis in the Midland proceeding was not adequate.

In summary, the issue appears not to be the existance of a discrepancy but rather the extent of the analysis required in the Midland proceeding in calculating delay costs. In the Staff's view, the correct approach is the one taken by the Licensee.

3. DIFFERENCES IN PLANT CAPACITY FACTORS

Dr. Timm testified (Tr. 6019-6020) that substantial differences were evidence in the capacity factors of given generating units for a given year when comparing data developed for the Consumers Power Company rate

filing data develcped for the Midland hearings. Dr. Timm did not attempt to suggest which, if any, of the capacity factors were most representative, but expressed concern that the existence of such differences established that inputs to the different computer models used for the rate filing and Midland proceedings also had to differ considerably. This comparison was presented by Dr. Timm at the hearing in Midland Intervenors' Exhibits 54 and 55.

The Staff disagrees with Dr. Timm's conclusion that the differences in capacity factors can only be explained in terms of different inputs to the two computer models under consideration. As the first portion of this report makes clear at pages 22-23, (Section 4, Item H), the input differences to the two computer models under consideration are negligible and have an effect of approximately 2% on costs.

The prime reason for the capacity factor differences is a difference in computer modeling. The rate case model dispatches Consumers' own generating units against only the Consumers' load. Purchase and Interchange energy are treated on a historic basis. This type of approach has been consistently used in Consumer's rate applications to the Michigan Public Service Commission. Such an approach would not be correct for the delay costs analysis presented by Consumers in this proceeding. To accurately develop those costs, a computer model is required which dispatches the combined Michigan Electric Coordinated System (MECS) generation against the MECS load.

This is what Consumers has actually done in performing its delay cost calculations with its production cost program. The capacity factors for the Consumers facilities should decrease as low cost generation available from other MECS members would displace the higher cost generation of those units. This is the behavior seen on Midland Intervenors' Exhibit No. 55 with two exceptions.

First, Campbell Units 1 and 2 have increased capacity factors. This is explainable as these are Consumers' lowest cost units and would be run harder to supply the combined MECS load.

Second, the Morrow 1-4 units have a sharp increase in capacity factor. This is due to the fact that in the rate case, Weadock Units 7 through 8 and Karn Units 3 and 4 are run harder than the Morrow Units since the Karn and Weadock Units are subject to a "take or pay" clause in their No. 6 fuel oil contract. Failing to run these units would produce economic penalties so they are run in the rate case model thereby lowering the Morrow capacity factors. The "take or pay" provision expires in 1981 and so would not influence the 1984 production cost runs which show a correspondingly higher capacity factor for the Morrow Units.[9/]

9/ The modeling of the "take or pay" provision was not changed in the rate case program for 1984 as that year, as well as all years beyond 1980 are of no consequence in a rate case application. The modeling in the production cost run for the Midland delay cost calculations is correct.

One other difference on Midland Intervenors' Exhibit No. 88 requires explanation and this is the capacity factor related to Big Rock.

The capability rating of Big Rock was assumed to be 61 MW in the rate case study as compared to the 71 MW rating used in the Midland hearings. The assumed energy produced in the rate case study in 1984 was 409,000 MWHrs. as compared to 444,027 MWHrs. used in the Midland study. The Staff has calculated the capacity factors for Big Rock under the two different assumptions and found the capacity factors set forth in Columns C and D to be correct for the assumptions made. So the Big Rock capacity factor difference is readily explainable as related to differences in generating rating. These differences are negligible in terms of their cost impact as was elaborated on in the first portion of this report.

In summary, the differences in capacity factors are mainly attributable to the use of two different computer models. The production cost computer model was the correct model to apply for the Midland delay costs. The rate case model is the one which has been historically used in Consumers' rate filings. The Morrow 1-4 and Big Rock capacity factors cannot be related to model differences. Rather different input assumptions were made which are readily explainable and have negligible impact on delay costs.

FORCED PURCHASES CONTENTION

Dr. Tirm alleged at the hearing that Consumers Power was forcing purchases of bulk power in their production cost runs thereby distorting the costs of replacement power associated with a delay of the Midland Units. (Tr. 5998-6004). In his testimony, Dr. Tirm referred to a production cost computer run numbered C4-043 which did not include the "Purchase 10" category.[10/] In Dr. Tirm's view, the lack of any "Purchase 10" in this computer run supports his argument that Consumers inappropriately included "Purchase 10" in the delay cases analyzed in this proceeding.

The Staff has reviewed the allegations of Dr. Tirm and concludes that they are unfounded. The particular computer run referred to by Dr. Tirm, C4-043, was only one of a large number of production cost computer runs used by Consumers Power to conduct sensitivity studies. Its use would not have been appropriate in examining the Midland delay cases. Rather, that run and others would have been used to determine the appropriate level of "Purchase 10" for use in the Midland delay cases.

10/ "Purchase 10" refers to bulk power purchases which Consumers Power schedules to maintain a 20% installed reserve margin in the event that the Midland units are delayed.

A production cost computer program attempts to model the actual operation of a power system under given assumed conditions of: demand, energy for load, generation availability, purchase power options, incremental heat rates, fuel costs, fuel availability, contractual constraints, regulatory constraints, and transmission limitations. At present, no computer model has been developed that can duplicate the actual operation of a power system under this series of given conditions.

Despite the limitations of modeling, the production cost computer programs available to the utility industry today contribute greatly to the decision-making process. Various techniques are used to compensate for the limitations. The iteration method is one such technique used by the utility industry to tailor the computer outputs of specific parameters, such as "Purchase of" power. By this method, an assumed capacity factor is assigned to the firm capacity purchase to establish the impact, if any, on the output of generating units having known costs that are lower than the projected purchased energy cost. If the results show a reduction in such low cost generation, another capacity factor is assigned in an iterative process until the proper capacity factor for the purchased firm capacity is established. With good judgement and experience, the proper value can be established in a limited number of iterations.

This is the procedure that Consumers Power Company used to determine the proper capacity factor to assign to the "Purchase 10" power required in the Midland delay case production cost computer runs. Computer runs were made using three different capacity factors for the "Purchase 10" power. A zero percent capacity factor case was run to establish the maximum generation that could be expected from the low cost generating units. A 80 percent capacity factor was then used to establish the sensitivity and provide a base from which interpolation could minimize the number of interations required to establish the proper value. A 70 percent capacity factor was found to be the proper assignment since the impact on the low cost units was negligible.

The use of a 70 percent capacity factor by Consumers Power to develop the quantities of "Purchase 10" required was reasonable and did not result in forcing any unnecessary purchases. This can be verified by examining the several computer runs used in the iterative process to develop the 70 percent figure.

The follow-ng tabulation details the 1982 reduction in gereration from relatively lower cost units wren the "Purchase IC" power is assigned a 70% capacity factor as compared to a zero percent capacity factor: (Listing lowest cost units first).

Generating Unit	Unit Rating-MW	Total Generation-MWhrs x 1,000		
		Zero%	70%	Decrease
Campbell #1	267	1,345	1,345	0
Campbell #2	372	2,396	2,396	0
Weadock #3	159	962	957	5
Weadock #7	159	997	993	4
Cobb #5	167	1,072	1,072	0
Cobb #4	156	969	968	1
Whiting #1	106	590	585	5
Whiting #3	133	792	788	4
Whiting #2	106	676	671	5
Campbell #3	742	4,579	4,548	31
Cobb #2	68	347	343	4
Cobb #3	68	347	341	6
Cobb #1	68	345	340	5
Karn #2	264	1,641	1,618	23
Karn #1	265	1,458	1,441	17
			Total Reduction =	110

The above data is extracted from the 12/31 delay case where 190 MW of "Purchase 10" power was required to maintain the 20% reserve margin.

The total energy purchased under the "Purchase 10" demand of 190 MW for 1982 was 896,216 MWhrs. The 170,000 MWhr. cutback on the relatively low cost units represents approximately 12.3 percent of the energy purchased. Standing alone, the above figures may suggest that a lower capacity factor than 70% could be justified to avoid forced purchases. However, other elements must be factored into the ultimate conclusion. For example, when "Purchase 10" power is available during the peak hours (as it was), there is less need for pumped storage capacity to meet the peak demands. It follows that less pumping power will be required during the off peak hours to provide this peaking energy and a corresponding reduction in generation from the lower cost unit results.

Generating units that are more competitive (economically) with 'Purchase 10" energy at a given hour, may not be competitive when the substitution must go through the pumping process. The penalty factor for a given unit to provide pumping power is about 1.4. For example, assuming purchased power at 20 mills per kilowatt hour, a generator with an incremental production cost of 18 mills/KWHr is the economic choice between the two sources. However, if the energy must be generated off-peak to supply pumping power to be used the following day on-peak, then the generation will cost 18 x 1.4 or 25.2 mills/kwhr compared to 'Purchase 10" at 20 mills/kwhr.

Naturally, the "Purchase 10" power is cheaper and should be used even though the initial cost of the generation is only 18 mills/kwhr.

In summary, the Staff does not concur with Dr. Timm's conclusion that Consumers Power Company was forcing "Purchase 10" power. Rather, Consumers assigned reasonable values to the bulk power capacity required as well as the capacity factor assigned, and thus the delay costs were properly calculated.

Conclusion

The Staff has found no discrepancies between the rate filing and the Consumers Power testimony to warrant further consideration by this Board. In general, the allegations made by Dr. Timm are either unfounded or constitute a difference of opinion as to the appropriate model to use for calculating delay costs. In certain instances, the Staff has detected inconsistencies and errors in the materials reviewed. These inconsistencies and errors appear random in nature and do not reflect any intent on the part of the Licensee to introduce a systematic bias. The impact of these items on the conclusions presented by the Licensee to this Board is minimal.

ATTACHMENT 8

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
CONSUMERS POWER COMPANY	)	Docket Nos. 50-329
	)	50-330
(Midland Plants, Units 1 and 2)	)	

AFFIDAVIT OF SIDNEY E. FELD

Sidney E. Feld deposes and says under oath as follows:

1. I am a Regional/Environmental Economist in the Division of Site Safety and Environmental Analysis, U.S. Nuclear Regulatory Commission. My professional qualifications were admitted into evidence in this proceeding on February 16, 1977 following Tr.

2. I assisted in the preparation of the "Report Prepared by S. Feld and M. Sundersen for the Atomic Safety and Licensing Board on Alleged Discrepancies Between Consumers Power's Rate Filing of January 31, 1977 and Testimony Presented to the Atomic Safety and Licensing Board in the Midland Proceeding" consisting of 38 pages. I hereby certify that this report is true and correct to the best of my knowledge and belief.

Sidney E. Feld

Subscribed and sworn to before
me this 19th day of May, 1977.

Notary Public

My Commission expires: 1 Sept, 1978.

ATTACHMENT C

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
CONSUMERS POWER COMPANY	)	Docket Nos. 50-329
	)	50-330
(Midland Plants, Units 1 and 2)	)	

AFFIDAVIT OF WALTER J. GUNDERSEN

Walter J. Gundersen deposes and says under oath as follows:

1. I am employed by the Federal Power Commission as Assistant to the Chief of Division of Power Supply and Reliability. My professional qualifications are attached to my testimony and were admitted into evidence in this proceeding on March 24, 1977 following Tr. 5101.

2. I assisted in the preparation of the "Report Prepared by S. Feld and W. Gundersen for the Atomic Safety and Licensing Board on Alleged Discrepancies Between Consumers Power's Rate Filing of January 31, 1977 and Testimony Presented to the Atomic Safety and Licensing Board in the Midland Proceeding" consisting of 38 pages. I hereby certify that this report is true and correct to the best of my knowledge and belief.

Walter J. Gundersen

Subscribed and sworn to before
me this 13th day of May, 1977.

Notary Public

My Commission expires: July 1, 1978.