

EXHIBIT____, PPAW-1

Statistical Analysis of Capacity Factor Data Base

A Study of Nuclear Power Plant Performance
Through 1983

Power Plant Analysts

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Statistical Analysis of Capacity Factor Data Base

1. Introduction

The Nuclear Power Plant Capacity Factor Data Base supplied by Komanoff Energy Associates consists of 392 observations on 69 nuclear power plants. The variables measured for each plant are:

- PNUMB - Plant Number
- MFRNUM - Manufacturer Indicator (Choices: Babcock & Wilcox, Combustion Engineering, General Electric, Westinghouse)
- MW - Plant Capacity in Megawatts
- PROT - Prototype Indicator (This variable equals one if the unit is the first of a set of multiple units and equals zero otherwise)
- DUPE - Duplicate Indicator (This variable equals one if the unit is a duplicate of a prototype unit and equals zero otherwise)
- AGE - Age of Plant in Years
- YEAR - Year of Operation
- SALT - Salt Water Cooling Indicator
- POSTSG - Indicator for Westinghouse plants that operated for a full year with new steam generators
- NEWSG - Indicator for Westinghouse plants during a year in which steam generators were being replaced
- TWOLOOP - Westinghouse plants of approximately 500MW
- TRIOLOOP - Westinghouse plants of approximately 300MW
- FOURLOOP - Westinghouse plants approximately 1000MW plus both Indian Point plants
- WQUAKE - Indicator for Westinghouse plants for years shutdowns occurred related to checking earthquake design factors
- GELARG - General Electric plants approximately 1000MW
- GESMAL - General Electric plants approximately 600MW
- BFFIRE - Indicator for years of General Electric operation that were disrupted because of the 1975-1976 Browns Ferry fire
- POSTTMI - Post Three Mile Island Indicator
- CAPFAC - Capacity Factor for the given plant operation year

From the above variables, the following variables may be formed:

- AGE2 - The value of AGE squared
- CODA - Commercial Operation Date (YEAR-AGE+1, or YEAR when AGE=1)
- BW,CE,GE,WH - Reactor Vendor Indicator for the four Reactor Manufacturers
- OVER800 - Plants over 800MW
- OLDER12 - Plants older than twelve years old

Using the Nuclear Power Plant Capacity Factor Data Base, two statistical analyses were performed: a descriptive analysis indicating the past and present relationships existing between capacity factor and the variables MW, MFRNUM, AGE, and CODA; and an inferential analysis attempting to model the relationship between capacity factor and the measured explanatory variables listed above.

2. Descriptive Analysis

Table 1 summarizes various descriptive statistics for the entire Nuclear Power Plant Capacity Factor Data Base and for selected subsets of the data base. Table 2 summarizes various descriptive statistics for capacity factors in the data base through 1977 to indicate changes that have occurred since the 1979 PPA study.

1. Descriptive Statistics for Capacity Factor Data

Plant Description	No. of Obs.	Mean	Standard Deviation
All Plants	592	58.77	17.62
Plant sizes in Megawatts:			
450-599	137	69.26	16.40
600-799	116	59.78	14.55
800-999	245	53.33	19.79
1000+	94	56.41	17.01
Reactor Manufacturer:			
Babcock & Wilcox	71	49.27	23.42
Combustion Eng.	64	61.93	18.56
General Electric	213	58.15	16.10
Westinghouse	244	61.24	18.45

2. Descriptive Statistics for Capacity Factor Data through 1977

Plant Description	No. of Obs.	Mean	Standard Deviation
All Plants	210	59.84	13.99
Plant Sizes in Megawatts:			
450-599	65	68.89	13.03
600-799	52	60.60	11.84
800-999	71	54.50	15.34
1000+	22	48.50	17.46
Reactor Manufacturer:			
Babcock & Wilcox	18	60.17	12.14
Combustion Eng.	19	55.58	21.77
General Electric	83	55.81	14.72
Westinghouse	90	64.38	14.51

A descriptive analysis was also carried out to help determine typical peak performance years for existing nuclear power plants. Table

3 contains summary statistics from this analysis.

3. Descriptive Statistics Related to Peak Plant Performance

Statistics for Age of Peak Performance

Reactor Manufacturer	No. of Obs.	Median	Mean	St. Dev.
All Plants	69	5	5.38	3.20
Babcock & Wilcox	9	5	5.11	2.93
Combustion Eng.	8	4.5	4.25	1.83
General Electric	22	7	6.45	3.36
Westinghouse	30	4.5	4.97	3.36
Plants >7 years old:				
All Plants	48	6	6.46	3.07
Babcock & Wilcox	6	4.5	5.67	3.14
Combustion Eng.	5	5	4.4	2.07
General Electric	19	8	7.16	3.04
Westinghouse	18	6	6.56	3.20
Plants >7 years old				
Peaks in last year deleted:				
All Plants	43	6	6	2.89
Babcock & Wilcox	4	4	3.75	1.26
Combustion Eng.	5	5	4.4	2.07
General Electric	17	7	6.65	2.78
Westinghouse	17	6	6.35	3.18

We have also included some graphical displays of the data in the appendix. The inferences obtained in the next section do not appear to contradict the observations made above related to the statistics obtained.

3. Inferential Analysis

We performed a comprehensive multiple regression analysis on the Nuclear Power Plant Capacity Factor Data Base. We began by using a stepwise regression algorithm on the Statistical Analysis System (SAS) based upon the MAXR procedure. This analysis allowed us to narrow the field of potential statistical models to be considered for predicting capacity factors for nuclear power plants. Table 4 below summarizes two of the better models found.

3. Regression Models for Capacity Factor

13 Variable Model

15 Variable Model

Variable	Reg Coef	p-value	Tol	Reg Coef	p-value	Tol
Intercept	40.743	0.0001	.	48.761	0.0001	.
AGE	3.938	0.0001	0.074	2.429	0.0047	0.054
AGE2	-0.258	0.0001	0.080	-0.119	0.0843	0.047
CE	14.508	0.0001	0.684	13.137	0.0001	0.670
WH	5.606	0.0031	0.508	4.526	0.0165	0.496
PROT	6.991	0.0001	0.693	7.314	0.0001	0.684
DUPE	11.311	0.0001	0.689	11.531	0.0001	0.680
POSTTMI	-6.312	0.0003	0.579	-5.646	0.0012	0.569
SALT	-4.021	0.0124	0.805	-3.911	0.0137	0.803
NEWSG	-29.219	0.0001	0.937	-28.594	0.0001	0.932
TWQLOOP	12.856	0.0001	0.559	9.050	0.0013	0.398
BFFIRE	-39.325	0.0001	0.970	-39.719	0.0001	0.969
WQUAKE	-30.095	0.0001	0.961	-28.569	0.0001	0.957
GESMAL	13.864	0.0001	0.589	8.567	0.0042	0.401
OLDER12				-18.357	0.0027	0.463
OVER800				-6.178	0.0039	0.383

Summary	13 Variable Model	15 Variable Model
F Value	16.827	16.212
p-value	0.0001	0.0001
R-square	0.2746	0.2969
Adjusted R-square	0.2582	0.2785

Using the thirteen variable model, we obtain a prediction equation for Palo Verde as

$$\text{CAPFAC} = 58.784 + 3.938(\text{AGE}) - 0.258(\text{AGE}^2),$$

and using the fifteen variable model, we obtain

$$\text{CAPFAC} = 61.6063 + 2.429(\text{AGE}) - 0.119(\text{AGE}^2) - 18.357(\text{OLDER12}).$$

These models are formed by applying the appropriate values for the three Palo Verde units and averaging over the three equations produced. Because of the rather drastic drop after age twelve for the second model, we use the first model in our capacity factor projections for Palo Verde for the anticipated 28 years of plant life. Using available knowledge in the area, we project a linear decline after year 16. Unfortunately, there are not enough observations in the data base to substantiate this theory. Table 5 provides the estimates for Palo Verde. These estimates are also illustrated in a figure in the appendix.

5. Capacity Factor Projections for Palo Verde

Age	Quadratic Model	Quadratic Model with Linear Decline
1	62.46	62.46
2	65.63	65.63
3	68.28	68.28
4	70.41	70.41
5	72.03	72.03
6	73.13	73.13
7	73.72	73.72
8	73.79	73.79
9	73.35	73.35
10	72.39	72.39
11	70.91	70.91
12	68.93	68.93
13	66.42	66.42
14	63.40	63.40
15	59.86	59.86
16	55.81	55.81
17	51.25	53.25
18	46.16	50.68
19	40.57	48.11
20	34.45	45.54
21	27.83	42.97
22	20.68	40.41
23	13.02	37.84
24	4.85	35.27
25	0.00	32.70
26	0.00	30.14
27	0.00	27.57
28	0.00	25.00

4. Conclusion

While capacity factors have improved somewhat for larger reactors in the last five years, there is still strong empirical evidence that large reactors cannot maintain the high capacity factors obtained by some smaller reactors. Furthermore, mean capacity factors in the 70's projected by some utility companies have yet to materialize.

The estimates by the NRC and others that plants will have years of peak performance around year fifteen of commercial operation have also not been substantiated by empirical evidence. On the contrary, available data indicates that peak plant performance will occur on the average between years six and eight of commercial operation. We should note in the exploratory phase of our study, over fifty regression models were fit to the data in an attempt to detect (1) linear growth or decline patterns, (2) quadratic growth or decline patterns, (3) logarithmic or exponential growth or decline patterns, and (4) combinations of the first three patterns with respect to increasing

plant age. As we indicated, a quadratic model provided the only successful fit, however the tendency was for models forecasting a peak to forecast the peak performance age in the vicinity of year seven. Hence, there is a substantial amount of statistical evidence to support the hypothesis of peak plant performance averaging about age seven.

Using the data base to help make projection about the Palo Verde Nuclear Project being funded in part by Arizona Public Service, we have provided a reasonable set of forecasts for the first sixteen years of operation of Units 1-3 and have permitted two competing sets of forecasts for the remaining expected years of operation.

The purpose of this study has been to provide a realistic picture of nuclear power plant performance using available data through 1983. The authors are indebted to Charles Komanoff and John Plunkett of Komanoff Energy Associates for providing the data and for making useful suggestions pertaining to the statistical analysis of the data. However, any mistakes that may have been made in this study are solely the responsibility of Power Plant Analysts.

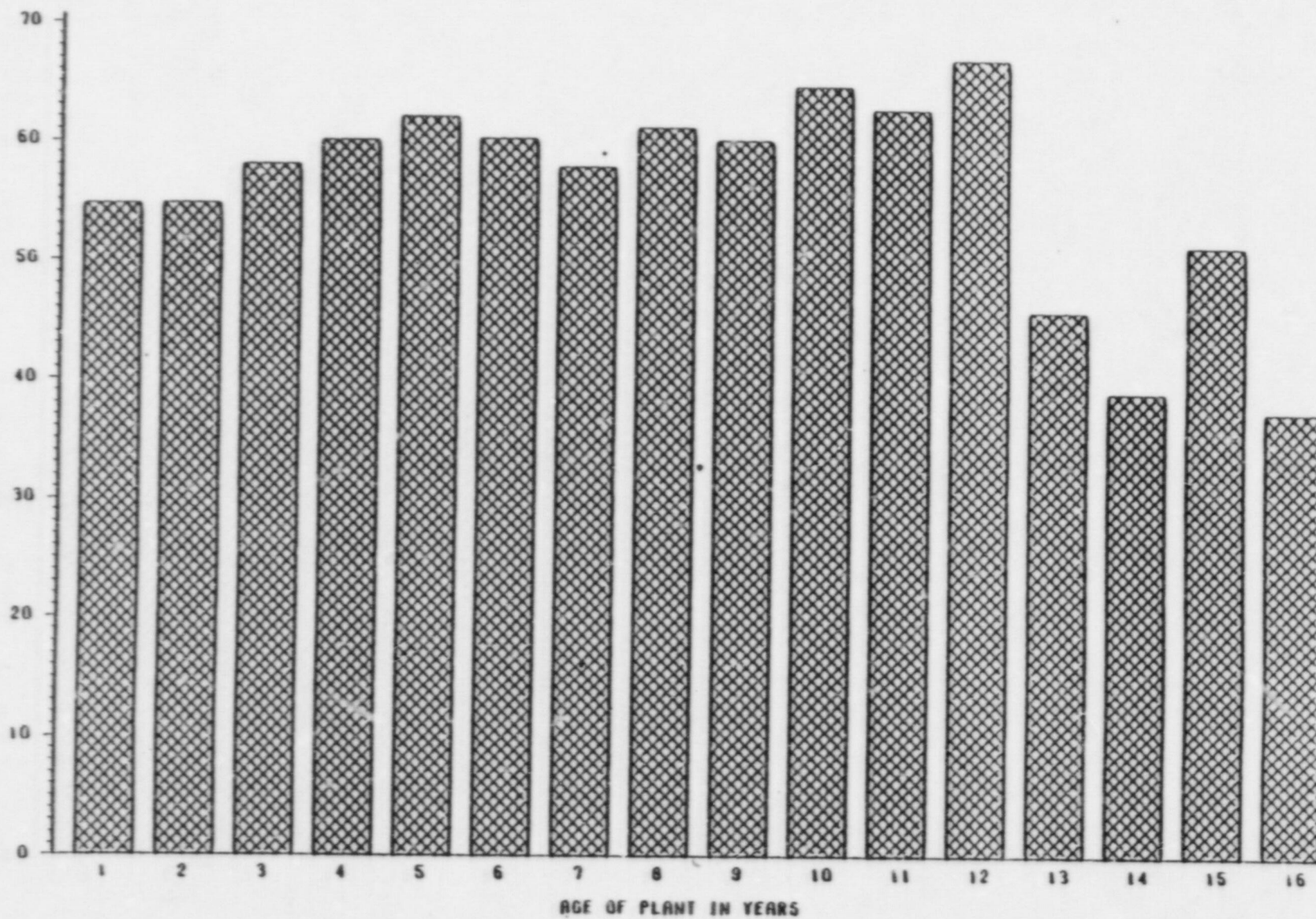
APPENDIX

List of Figures

1. Reactor Vendor Mean Capacity Factors
2. Reactor Vendor Mean Capacity Factors Prior to 1980
3. Reactor Vendor Mean Capacity Factors Prior to 1976
4. Capacity Factor Means by Size Classification
5. Capacity Factor Means by Size Prior to 1980
6. Capacity Factor Means by Size Prior to 1976
7. Capacity Factor Means by Age
8. Capacity Factor Means by Age Prior to 1980
9. Capacity Factor Means by Age Prior to 1976
10. Capacity Factor Mean by Age of Plant
11. Mean Capacity Factors by Year of Commercial Operation
12. Palo Verde Projected Capacity Factors

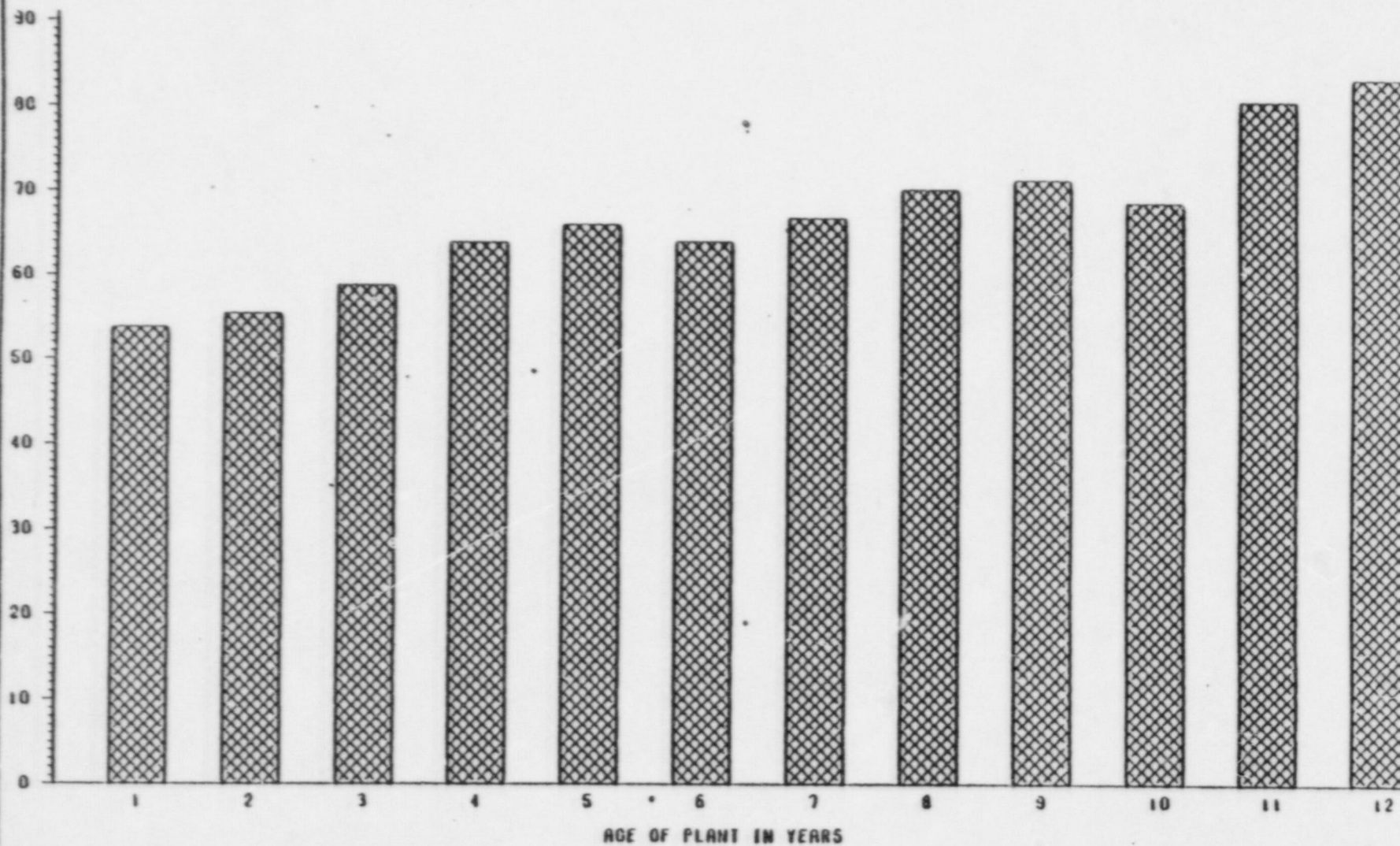
CAPACITY FACTOR MEANS BY AGE

CAPFAC MEAN



CAPACITY FACTOR MEANS BY AGE PRIOR TO 1980

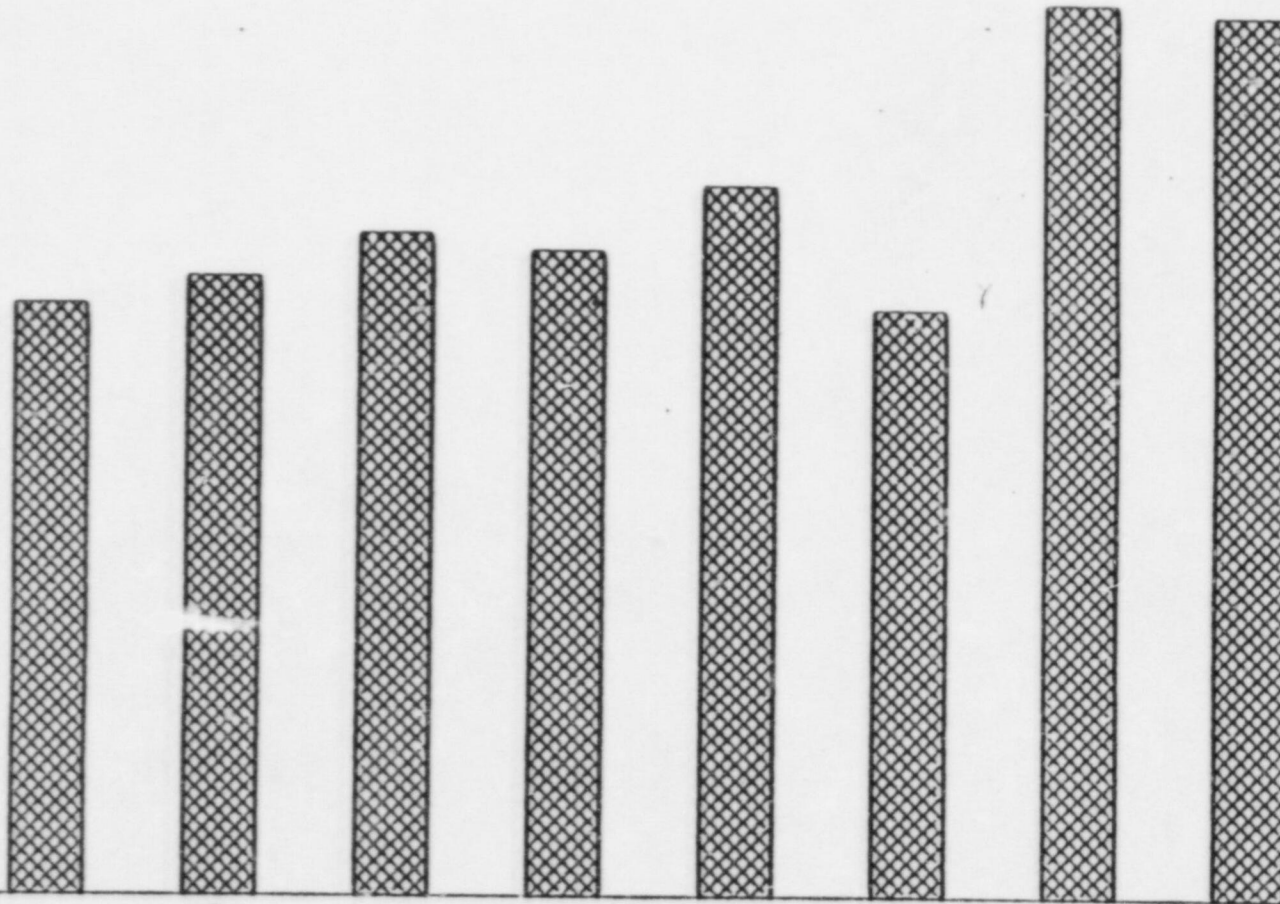
CAPFAC MEAN



CAPACITY FACTOR MEANS BY AGE PRIOR TO 1976

CAPFAC MEAN

90
80
70
60
50
40
30
20
10
0



AGE OF PLANT IN YEARS

CAPACITY FACTOR MEAN BY AGE OF PLANT

CF MEAN
100

90

80

70

60

50

40

30

20

10

0

0

1

2

3

4

5

6

7

8

9

10

11

12

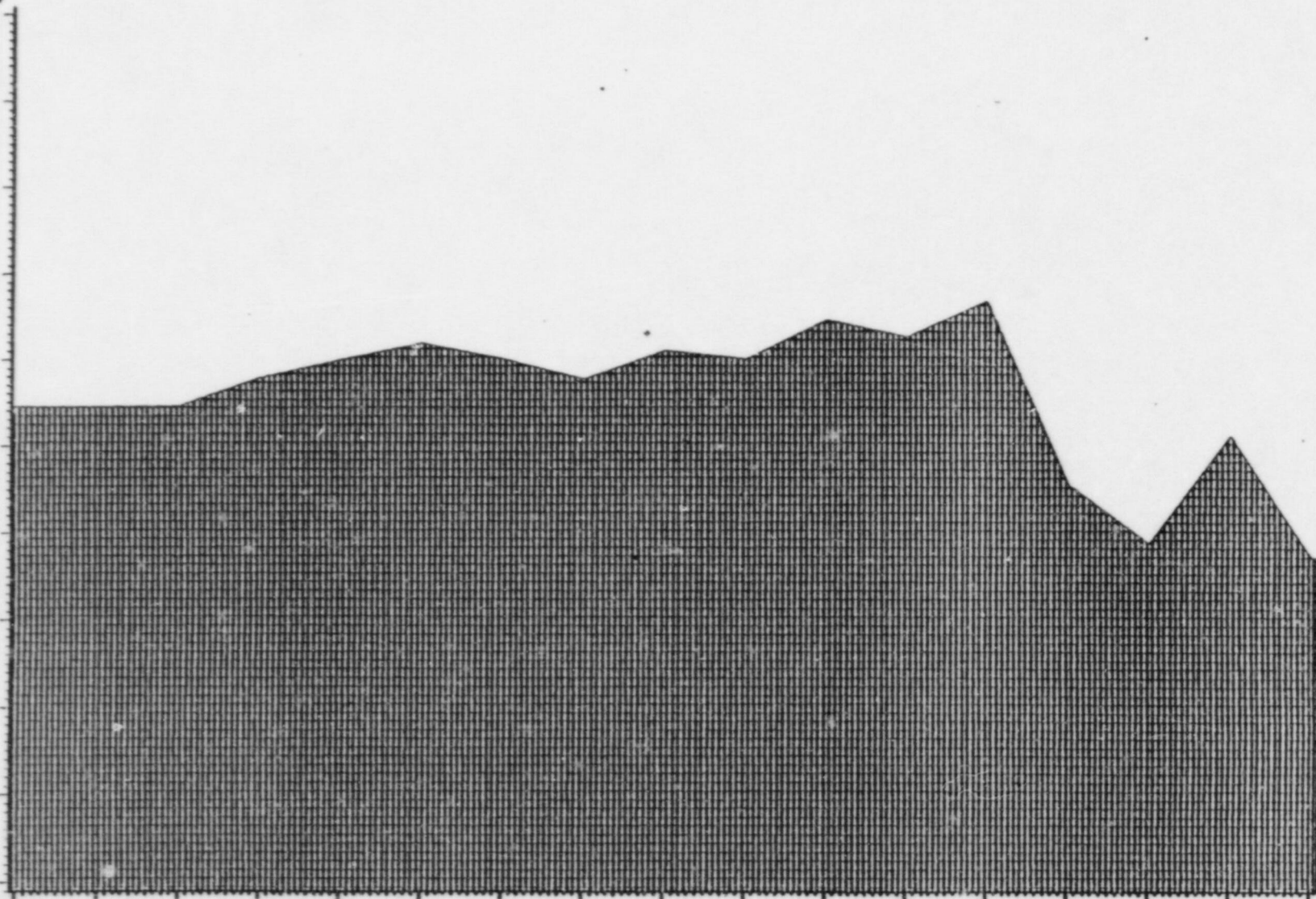
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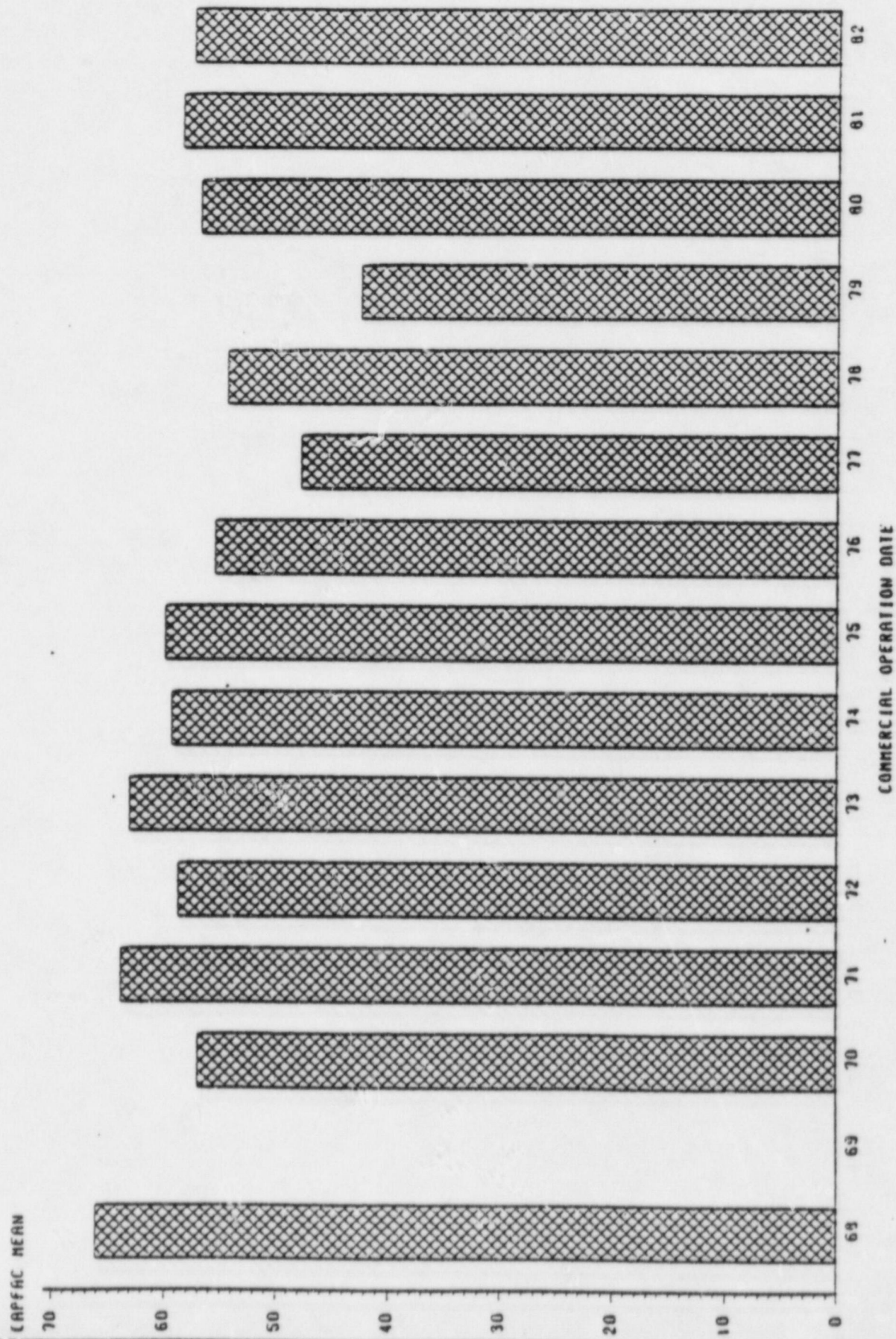
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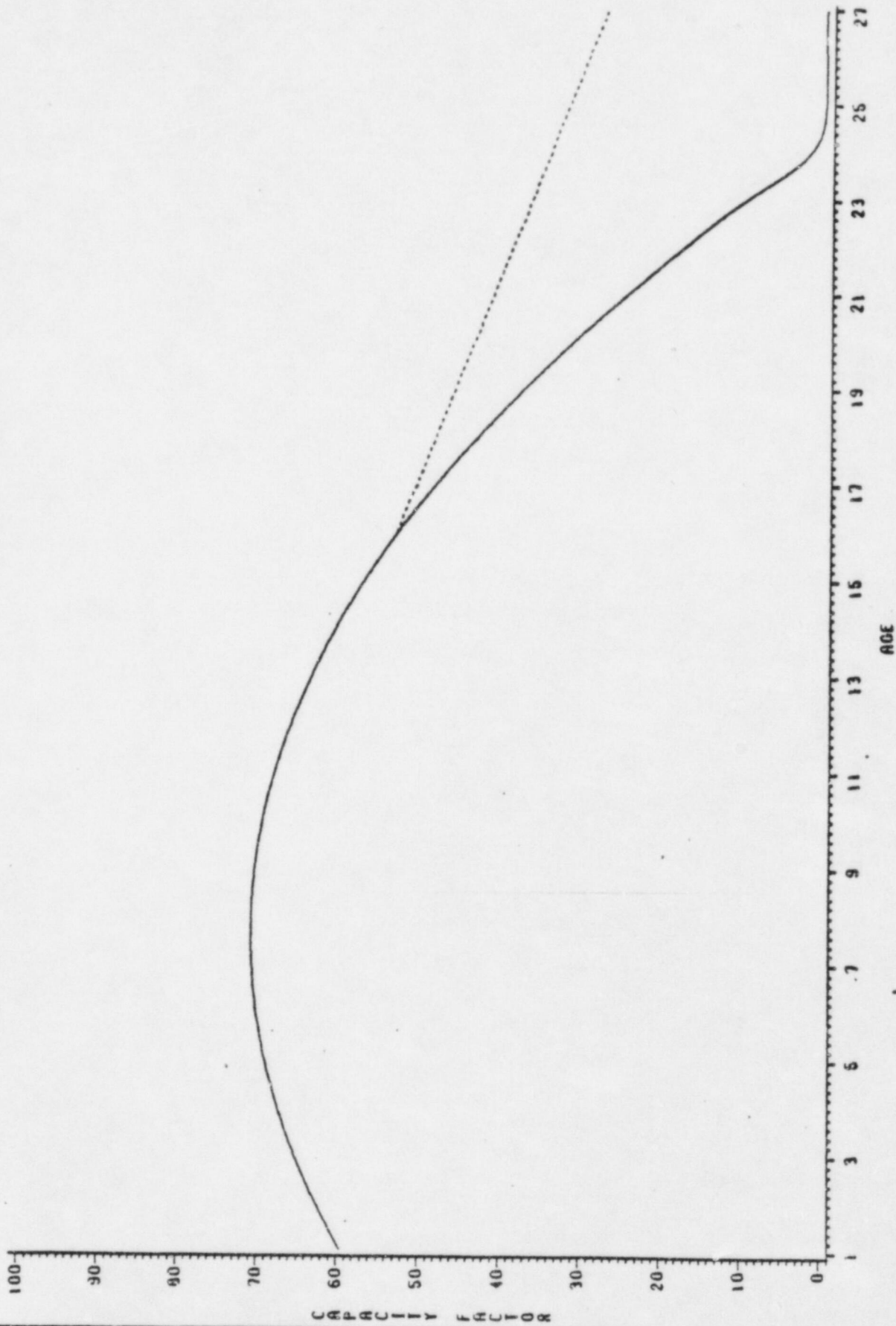
AGE OF PLANT IN YEARS



MEAN CAPACITY FACTORS



PALO VERDE PROJECTED CAPACITY FACTORS



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Palo Verde Safe If APS Pledges Kept, Report Says

"The Palo Verde Nuclear Generating Station can be operated safely and reliably if the project is completed as planned and commitments made by APS are fulfilled."

This is the main conclusion contained in the final report of a 14-member task force formed by Keith L. Turley, president and chief executive of Arizona Public Service Co.

The utility is project manager for the three-unit power plant under construction 50 miles west of Phoenix.

Highlights of the task force's findings include:

MANAGEMENT — APS and the other project participants have an effective organizational structure for the management of design, engineering, construction, quality assurance and operation of Palo Verde.

DESIGN — Review of plant design reveals no major deficiencies. While some modifications of the Palo Verde design were recommended as a result of the Three Mile Island investigation, it was concluded Palo Verde is less susceptible to the events that initiated and escalated the TMI accident.

OPERATIONS — No significant changes are required in APS staffing policies.

The task force recommended, among other things, that top APS management prepare a comprehensive policy statement on the safety and reliability of the Palo Verde plant for further dissemination.

Turley said, "we intend to follow up on the task force's recommendations for actions to be taken and further investigations to be made. I am sure that the result of (its) efforts will be an even safer power plant when the first Palo Verde unit goes into operation in 1983."

APS NUCLEAR VS APS CORPORATE
Policies and Procedures

I. History of Nuclear Procedure Development and Use

APS Corporate Policies and Procedures have been developing for a good number of years and dealt with subjects generally of broad company concern on an as needed basis. As activities became a problem of general concern they were written up in Policies and Procedures and distributed throughout the company to be used by those who felt it covered their needs. As time has passed the number of procedures has grown. These early policies and procedures dealt with activities such as accounting procedures, customer billing and information, stockholder records, transmission and distribution activities that were the bulk of APS business activity in earlier years.

As power plant construction, operation and maintenance became more significant, a need to cover those activities developed. The advent of participation projects lead to Engineering and Operating Committees. Practices and procedures were developed within those committees. E&O Committee Practices and Procedures were again developed to deal with problems as they arose, on an as needed basis. These E&O Committee Practices and Procedures did not attempt to pre-plan and document all manner of possible activities that might arise from plant operation. Power plant related policies and procedures dealing with administrative control of many activities including interfaces on technical activities were never heavily incorporated into the APS Corporate Policies and Procedures.

In 1972, APS began to develop the Palo Verde Project under one organizational unit called Nuclear Services. In 1973, Bechtel was hired to do most of the detailed nuclear project work under the direction of Ed Van Brunt and the Nuclear Services Organization. Bechtel had their policies and procedures and the Nuclear Services Department began developing their procedures for overseeing the Bechtel work. Little additional procedure development was necessary for the APS Corporate Policies and Procedures Manual except for a few related primarily to handling and accounting for money.

As the nuclear project developed further toward the start of construction phase activities, the APS nuclear related organization grew. Nuclear Construction Department and Quality Assurance (QA) Department came into existence. Nuclear Services became Construction Projects and then Nuclear Projects Management covering engineering, construction, QA, and eventually Records Management Departments. Each of these departments began to develop their own set of department procedures which were never reflected or fully recognized in the APS Corporate Policies and Procedures Manual.

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Policies and Procedures

I. History of Nuclear Procedure Development and Use (cont'd)

As the Nuclear Project went further toward completion of construction, the APS Nuclear Operations organization began to staff and develop with several internal departments within the Operations Group. As this new Operations Organization began to develop, almost independently of the existing Nuclear Projects Group, they began to see the need for a set of policies and procedures to document how the operation of the nuclear plant (now known as the Palo Verde Nuclear Generating Station) would be accomplished in compliance with NRC Regulations governing operating plants. This sort of documentation is required by federal regulation for nuclear plants in order to obtain an NRC Operating License(s) for the station.

Briefly the ~~APS Operational Procedure development history proceeded as follows:~~

- A. Little understanding was initially available at the corporate office of Administrative Controls, necessary to operate a nuclear station.
- B. "Decision" was made on perception allowed to exist that the station would have all needed support on site (including amplifying administrative controls).
- C. Palo Verde operating management developed controls and management philosophy over several years, that were to develop the ability to operate without support from the rest of Arizona Public Service.
- D. Operating organizations were developed and staffed with the "understanding" that they should be able to fulfill all the necessary actions to achieve their organizational function independent of other APS organizations.
- E. Administrative controls were developed (Station Manual) that communicated in an official manner that Palo Verde would be operated independent of other APS organizations.
- F. Concurrent with D. and E. the project organization grew and developed organization and "Administrative Controls" which supported project activities. Many of these project activities had a similar activity which will be needed during the operational phase.
- G. Organizational awareness and sense of urgency grew with regard to the fact that operations was making long term plans to take over control of functions which had been historically controlled by management within the project team.

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Policies and Procedures

- H. Corporate Nuclear operations "philosophy" changed with the hiring of G.C. Andognini. Basically, before the site people had felt they would be independent of offsite interfaces and after, they felt their role would require more accountability to offsite management.
- I. Offsite nuclear operations management did not feel it could control activities and administrative controls outside of nuclear operations. Administrative controls continued to be developed which were redundant to controls in the projects areas. Nuclear Operations Management developed controls which amplified APS Policies and Procedures and defined the mechanism for satisfying the needs to have accountable methods to meet Regulatory Requirements.
- J. Because of growing awareness of cost, political and regulatory climate, APS management began to more closely scrutinize the administrative and organizational redundancies and inefficiencies.
- K. To this point, individual third level division heads (Department Managers) have continued to develop and implement "Administrative Controls" which employees perceive as APS direction on how they should do their job. Since no guidance was issued clarifying organizational relationships between the third level division head level departments and the Corporate Policy and Procedure level the volume of guidance issued now would indicate to the employee that most guidance (with the exception of the Station Manual) is issued from the management level, two or three levels below the Executive Vice President, (that is at the Department Manager level).

II. Existing Manuals Related to APS Nuclear Activities

As the situation now exists on the nuclear side of APS, numerous Policy and Procedure Manuals of various types exist. Currently identified examples are (this list is not all inclusive):

1. Nuclear Projects Project Procedures Manual (Engineering).
2. Nuclear Construction Procedures Manual.
3. Records Management Procedures Manual.
4. APS Quality Assurance Manual for the Design, Procurement and Construction of the PVNGS.
5. Corporate QA Department Procedures Manual.
6. Construction QC/QA Department Procedures Manual.
7. Startup QC/QA Department Procedures Manual.
8. Quality Systems and Programs Department Procedures Manual.
9. Operations Quality Assurance Criteria Manual.

APS NUCLEAR VS APS CORPORATE
Policies and Procedures

II. Existing Manuals Related to APS Nuclear Activities (cont'd)

10. PVNGS Station Manual.
11. PVNGS Plant Policies and Plant Rules Manual.
12. Nuclear Operations Support Department Procedures Manual.
13. Nuclear Operations Licensing Department Procedures Manual.
14. PVNGS Emergency Plan and Implementing Procedures.
15. APS Security Plan - PVNGS.
16. APS Corporate Policies and Procedures Manual.
17. A list of some 14 manuals maintained with APS Accounting Department.
18. A set of procedures is in development for the Administrative and Technical Services (A&TS) departments.

This list could go on further.

III. Concerns that Now Exist Regarding Policies and Procedures

- A. Since there is no guidance (other than verbal) given regarding the relationships between administrative controls within the Station Manual and outside the Station Manual, room for error or controversy exists regarding what guidance takes precedence or represents APS Policy. Where the guidance is issued from two different groups outside the station this room for error is even greater. Error in consistency of execution in these administrative areas would result in fines or delays in receiving the operating licenses.
- B. Redundancy in administrative controls is indicative of the lack of management understanding of who has lead responsibility for activities. This lack of understanding has led to redundant staffing and unnecessarily exaggerated operating budget projections.
- C. As APS Corporate Personnel have gained understanding of the scope of the activities needed to support Palo Verde, there is less organizational willingness to decentralize these activities and therefore erode the existing relationships with regard to organizational responsibility.
- D. The Nuclear Operations organization does not have confidence that existing APS management systems outside the Station Manual will support the activities necessary to operate PVNGS.
- E. American National Standards Institute (ANSI) Standard N18.7-Revision of 1976, titled "Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants", paragraph 2.2 Glossary of Terms defines:
Administrative Controls - Rules, orders, instructions, procedures, policies, practices and designations of authority and responsibility.

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Policies and Procedures

III. Concerns that Now Exist Regarding Policies and Procedures (cont'd)

E. (cont'd)

That Standard in paragraph 3.2 states in part:
"Lines of authority, responsibility and communication shall be established from the highest management level through intermediate levels to and including the onsite operating organization (including those offsite organizational units assigned responsibility for procurement, design and construction, quality assurance, and technical support activities). These relationships shall be documented and updated as appropriate,..."

This paragraph further states:

"In structuring the organization and assigning responsibility, quality assurance should be recognized as an interdisciplinary function involving many organizational components and, therefore, should not be regarded as the sole domain of a single quality assurance group."

There is concern that APS documented Policies and Procedures do not separately or collectively meet the intended requirements of ANSI-N18.7. This relates further to other regulatory guidance and technical specifications.

- F. The NRC, Inspection and Enforcement Division has its own set of Procedures (called Inspection Modules) that identify concerns that their personnel should explore during their review for preparedness (offsite) for Operations. These identify a concern for clear cut definition of authority and responsibilities between support functions (departments). This includes reference to ANSI-N18.7 and other Standards and Regulations. There is concern about whether APS is ready to successfully pass such an inspection.
- G. Various issues have been identified concerning personnel policies and cost reporting policies at PVNGS that are not consistent with APS Corporate Policies. This is of great concern to other Palo Verde participants thru the Audit Committee.

IV. Benefits/Risks of a Separate APS Nuclear Policies and Procedures Manual vs APS Corporate Policies and Procedures Manual.

There would appear to be several options available to APS regarding Policies and Procedures (P&P) Manuals:

1. Continue as we are now with an APS Corporate P&P Manual and a collection of various other Department Manuals.

APS NUCLEAR VS APS CORPORATE
Policies and Procedures

IV. Benefits/Risks of a Separate APS Nuclear Policies and Procedures Manual vs APS Corporate Policies and Procedures Manual. (cont'd)

2. Upgrade the existing APS Corporate P&P Manual to cover all that's needed for APS Nuclear.
3. Develop a separate APS Nuclear P&P Manual that incorporates applicable APS Corporate P&P (project currently in early stages under the guidance of the A & TS Department).
4. Develop APS Nuclear Administrative Controls manual that is in addition to the APS Corporate P&P Manual.

After considering options 3 and 4, for a while it is concluded that within a moderate span of time and effort these two would become in effect, the same end result.

Considering the three options remaining:

1. Continue as we are now:

Benefits:

- a. Allows maximum organizational and functional flexibility for future growth since many issues and assigned roles are not defined.
- b. Probably promotes a perception of greatest possible future upward mobility and thus promotes a more subtle work force (less turnover).

Risks:

- a. Lack of overall control may cause inability to license PVNGS for operation or possibility of regulatory fines subsequent to licensing for inadvertent failure to meet specific detailed requirements.
- b. Redundant controls could result in higher operating costs, organizational inefficiency and possible fines and perhaps even shutdown of plant operations due to inconsistent management control.
- c. NRC might force APS in some dramatic way to change its administrative controls and thus APS would lose control of its own management process. (Recent regulatory actions are an example—such as Commonwealth Edison at its Byron Stations.)

APS NUCLEAR VS APS CORPORATE
Policies and Procedures

IV. Benefits/Risks of a Separate APS Nuclear Policies and Procedures Manual vs APS Corporate Policies and Procedures Manual. (cont'd)

Considering the three options remaining: (cont'd)

Comment:

There is no black and white definition of what precisely is needed to satisfy NRC Regulations and current concerns. They will not give a utility directions of how to do something but if they are dissatisfied they will just wait to react to problems as they occur. The past TMI concept appears to be that utility management must realize that operating a nuclear plant is not just business as usual (as it used to be in fossil).

2. Upgrade existing APS P&P Manual to cover all nuclear needs:

Benefits:

- a. The existing manual status is established and rather well accepted.
- b. The requirements established would be uniform for all APS including nuclear.

Risks:

- a. To revise existing P&P at a rate necessary to support PVNGS Operation could force dramatic upheaval in APS non-nuclear organization by forcing nuclear related changes across the board.
3. Develop separate APS Nuclear P&P incorporating Corporate APS P&P as applicable:

Benefits:

- a. We can proceed with a P&P Manual project that has a fairly definable scope and develop a clear, concise optimized product for APS Nuclear. This would appeal to nuclear regulators and probably present a better organized business image to Arizona's Corporation Commission.
- b. Changes to the APS Corporate P&P Manual are not needed immediately and could be done in an optimized and more logical and less disruptive manner.

APS NUCLEAR VS APS CORPORATE
Policies and Procedures

IV. Benefits/Risks of a Separate APS Nuclear Policies and Procedures Manual vs APS Corporate Policies and Procedures Manual. (cont'd)

3. Develop separate APS Nuclear P&P incorporating Corporate APS P&P as applicable: (cont'd)

- c. Unnecessary details regarding the controls that are needed to embrace the Nuclear Operation supporting activities are not communicated to non-nuclear APS organizational units and so will cause less disruption of normal existing activities.
- d. Having all of the APS Nuclear Departments closely involved with the creation of the new APS Nuclear P&P Manual will make them more familiar with its content and intent, resulting pride of authorship will help them relate to and identify with its concepts better and thus adherence to the new manual Policies and Procedures should be better than past performance.

The existing APS Corporate P&P has suffered from the reverse of the above because it is poorly controlled, poorly distributed and somewhat perceived as non-applicable trivia that someone is trying to shove down the Nuclear Organization's throat.

- e. A complete concise business and regulatory position for nuclear activities is developed.

Risks:

- a. Corporate APS (non-nuclear APS) people perceive that the nuclear organization and nuclear personnel are receiving special (better) treatment.
- b. It will take longer for Corporate (non-nuclear) APS to get any beneficial feedback from nuclear activities (up to seven years longer) because these groups will feel nuclear P&P are too complicated and they will not wish to identify with or learn the details of nuclear activities.

V. Conclusion

Due to legalistic regulatory laws, requirement and guidelines as well as regulatory agency undocumented concerns of an administrative, technical and even political nature; much more of a utilities nuclear activities must be controlled in a formal and documented fashion than has ever been the case for transmission, distribution or even fossil generation related activities.

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Policies and Procedures

V. Conclusion (cont'd)

Most of APS Nuclears staff's previous experience base is of a "pre-TMI mind set" orientation and perhaps does not readily identify with the degree of "Upper Management involvement in detailed decision process" concepts that have resulted from the Kemeny Commission and the "lessons learned" attitude that resulted from that accident. Because of these factors as well as the need to fully and clearly comply with the letter and intent of regulatory requirements and because Palo Verde will be under much closer review from a proper business practice and cost effective management point of view by the Arizona Corporation Commission as it approaches operation, we recommend that APS develop a separate APS Nuclear Administrative Policies and Procedures Manual to function in harmony with the PVNGS Station Manual

If we attempted to stay as we are with APS Corporate Policies and Procedures plus the Station Manual and a large array of separate Department Procedures Manuals representing collectively the APS Policies and Procedures for Palo Verde it is doubtful we can get an operating license or avoid with reasonable probability future regulatory fines.

-Re REP July 15, '83 p. A12

Babbitt testifies on nuclear-plant licensing

Careless reactor management, not design, 'chief source of risk'

By Anne Q. Hoy
Republic Washington Bureau

WASHINGTON — The federal government should verify that management of proposed nuclear-power plants and the teams chosen to operate them are competent before permitting the plants to operate, Arizona Gov. Bruce Babbitt told a Senate panel Thursday.

His testimony came before a subcommittee of the Environment and Public Works Committee, which is considering legislation that would authorize one-step licensing of nuclear-power plants.

Babbitt said legislation pending before the panel fails to distinguish the major differences between licensing the reactor and licensing the utility that will operate the reactor.

"The plain fact is that nuclear utilities have not

achieved a culture of technical excellence," he said. "Too many nuclear utilities still operate in an environment of technical indifference and careless management. It is the careless management, not reactor design, that is the chief source of risk in the nuclear industry."

The governor said one-step licensing would be reasonable for the design phase of a nuclear reactor. But, he added, the failure of the bill to address the level of management competence and the expertise of the personnel who run the reactor makes the legislation unacceptable.

Babbitt proposed that the legislation be altered to require the Nuclear Regulatory Commission at the beginning of the licensing process to determine whether the utility "has the management strength and technical competence to even enter into the nuclear-licensing arena."

In addition, Babbitt said, before the plant is allowed to operate, regulators should be certain that

the personnel operating the reactor know what they are doing.

Babbitt was called before the nuclear-regulation subcommittee because of his experience with a commission that examined the nuclear accident incident at Three Mile Island, near Harrisburg, Pa., and because he served as the former chairman of the Nuclear Safety Oversight Committee, a presidentially appointed panel.

Sen. Alan Simpson, R-Wyo., subcommittee chairman, told Babbitt that he would consider his recommendations when the panel reworked the legislation to reform the nuclear-licensing procedure.

After the hearing, Babbitt said the Palo Verde Nuclear Generating Station, which is under construction 50 miles west of downtown Phoenix, has received the "highest marks" from the Nuclear Regulatory Commission for the way it is being built and managed.

EXHIBIT O

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Arizona Nuclear Power Project

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August 29, 1985
ANPP-33277-EEVB/JGH
REGIONAL

Mr. John B. Martin, Regional Administrator
Office of Inspection & Enforcement
U. S. Nuclear Regulatory Commission, Region V
1450 Maria Lane, Suite 210
Walnut Creek, CA 94596-5368

50-528

Attn: Mr. Dennis Kirsch

Subject: Improvement of Palo Verde Unit 1 Operations
File: 85-008-419

Mr. Kirsch's letter to me dated August 14, 1985 identified the need to carefully review the results of the operational readiness review conducted between May 25 and June 5. Mr. Kirsch's letter also identified the need to devote greater attention and, if necessary, greater resources to improve the Technical Specification compliance record. The purpose of this letter is to describe to you action taken since the August 8 Enforcement Conference to improve Palo Verde Unit 1 operations, including the areas mentioned above.

Immediately following the Enforcement Conference, Mr. Haynes and I met with the ANPP managers to discuss in some detail the reason for the Enforcement Conference and the lessons learned and the need to improve the Technical Specification compliance record.

In addition, action plans addressing, but not limited to, items discussed in the Enforcement Conference were prepared and included assignment of responsibility and schedules for completion of each item. This includes action plans developed within the Quality Assurance organization to improve their involvement in verifying the accuracy of NRC submittals.

As to the need to devote greater attention and, if necessary, greater resources to improvement of compliance, we have temporarily assigned Mr. Karner, Assistant Vice President, to the site with his only responsibility being improvement of compliance with NRC requirements. The objective is to implement these improvements through both programmatic changes and managing resolution of specific issues. In this capacity Mr. Karner will continue to report to and receive direction from Mr. Haynes.

In summary, we have taken aggressive action to improve Palo Verde Unit 1 compliance and are committed to continuing improvement. We are confident you will see the results of our actions.

Sincerely,

E. E. Van Brunt, Jr.
Executive Vice President
Project Director

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cc: R. P. Zimmerman

IE-0110

COALITION FOR RESPONSIBLE ENERGY
EDUCATION
315 West Riviera Drive
Tempe, AZ 85282
January 20, 1986

1 Mr. Harold R. Denton,
2 Director
3 Office of Nuclear Reactor Regulation
4 U.S. Nuclear Regulatory Commission
5 Washington, D.C. 20555

6 RE: ADDENDUM TO Show Cause Petition (January 17, 1986) Pursuant to
7 10 CFR 2.206(a) In the Matter of Arizona Public Service, et al.
8 (Arizona Nuclear Power Project - Palo Verde Nuclear Generating
9 Station, Unit Nos. 1 and 2), Requesting Suspension of PVNGS No. 2
10 Operating License Pending Completion of Specified Regulatory and
11 Corrective Actions; Institution of Proceeding on Management
12 Competence and Financial Qualification of ANPP; and Institution of
13 Special Regulatory Actions Re: PVNGS Nos. 1 and 2. Docket Nos.
14 50-528, 50-529 (License No. NPF-34 and NPF-41)

15 1. This Addendum updates certain issues addressed in previously
16 filed Show Cause Petition by CREE, dated January 17, 1986, based
17 on material coming to the petitioner's attention after or coinci-
18 dent with the filing of said original Petition.

19 2. Said Petition addresses possible evidence of schedule
20 pressure affecting quality and management performance at Palo
21 Verde Nuclear Generating Station (PVNGS)(pp. 30; 47-52).
22 Additional evidence of schedule pressure and financial pressures
23 on Arizona Public Service Company (APS)/Arizona Nuclear Power
24 Project (ANPP) has come to light since filing.

25 3. On January 15, ANPP announced an estimated three-month
26 schedule delay in the projected commercial operation dates for
PVNGS-2 and -3. The estimated cost (primarily due to financing
costs) added to the project was put at \$60 million. ANPP
attributed the delays to failure to complete power ascension
testing of Unit 1 and receive the Unit 2 license. ANPP missed two
self-imposed target dates of November 1 and December 31 for
completion of Unit 1 power ascension and 100% power testing.

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1 (Exhibit A.)

2 4. Immediately following the announced schedule revisions, the
3 state Residential Utility Consumer Office (RUCO) filed a Motion
4 with the Arizona Corporation Commission (ACC) to dismiss "Phase
5 3" of a pending three-phase rate increase hearing for APS. The
6 third phase of the hearings is to address initial accounting
7 treatment and planned phase-in of rate increases necessary to
8 allow APS recovery of PVNGS-2 and -3 construction and financing
9 costs. RUCO's Motion was explicitly tied to the announced delay
10 in commercial operation of PVNGS-2 and -3, which in turn was
11 caused by ANPP's difficulty in meeting its established target
12 dates for Unit 1 testing and Unit 2 licensing. (Exhibit B)

13 5. RUCO's Motion follows closely upon its successful opposition
14 to an APS Motion to expedite the rate case hearing schedule
15 (Exhibit C.), and its also successful Motion to require
16 additional filings of the utility prior to establishment of a
17 hearings schedule for a new rate increase request to begin
18 recovery of Unit 2 costs (Exhibit D).

19 6. CREE contends that the net effect of these ACC decisions and
20 RUCO motions is to undercut any assumption that the utility and
21 Palo Verde plant manager, APS, is "guaranteed" recovery - either
22 timely or complete - of a substantial portion of its sunk costs.

23 7. Other factors can also be cited. RUCO, CREE and other rate
24 case intervenors have urged the ACC to subject PVNGS costs to
25 intensive prudence reviews before additional recovery is
26 authorized. Of course, such reviews have resulted in substantial

1 disallowances involving other plants, such as Wolf Creek, Shoreham
2 and Callaway. The utility regulatory commissions of Arizona, New
3 Mexico, Texas and California have initiated an extensive audit of
4 construction costs for PVNGS/ANPP, aimed, similarly, at identify-
5 ing potential areas for disallowance of construction cost recovery.
6 Estimates have indicated that the resulting disallowance may
7 exceed 10% of the entire plant cost. ("Investment prudence,"
8 "excess capacity" and other reviews requested by intervenors in
9 the current APS rate case could result in additional and still
10 larger disallowances.) (Exhibit E.) Other forms of economic
11 pressure currently being brought to bear upon APS include municipi-
12 pal condemnation proceedings and one inter-utility law suit,
13 (Exhibit F) as well as outstanding legal actions involving the
14 supply of effluent used at PVNGS for auxiliary cooling purposes.
15 Indeed, late last year, RUCO went so far as to urge the ACC to
16 consider, in the pending APS rate case, the economic feasibility
17 of Unit 3 abandonment (Exhibit E-2). Clearly, the customary
18 "assurances" of financial stability are lacking for APS/ANPP.
19 8. The seriousness of APS' situation is attested to by the
20 recent announcement by the utility that the utility may seek
21 interim rate relief related to PVNGS-1 costs, absent which it
22 may face a lowering of its bond ratings. (Exhibit G.) Despite
23 recent rate increases, due to as yet unrecovered Palo Verde
24 investment costs, 67% of APS net earnings (for the 12 months
25 ending September, 1985) remain tied up in Allowance for Funds
26 Used During Construction, earning the utility no return. (Exhibit

1 H; source: AZP Shareholders Association.) Other financial indica-
2 tors demonstrate similar Palo Verde cost strains. The utility
3 needs substantial and early cost recovery, or its financial
4 situation will deteriorate significantly. In fact, were no
5 additional permanent recovery of Palo Verde costs allowed, the
6 utility, on these figures, would be faced with insolvency. More-
7 over, as the on-going construction cost audit suggests, temporary
8 recovery may not prove permanent. Therefore, the future financial
9 stability of APS (and hence ANPP) is by no means assured. Moreover,
10 as the foregoing discussion of RUCO's recent response to new PVNGS
11 shedule delays demonstrates, the ability of APS/ANPP to meet its
12 Palo Verde timelines is a serious factor in the utility's future
13 financial outlook. Clearly, the stage is set for considerable
14 pressure to speed-up schedule performance.

15 9. As noted in CREE's original Petition (see above), some
16 suggestions of possible schedule pressure affecting ANPP performance
17 have arisen. In addition, the NRC has recently investigated an
18 allegation of schedule pressure in the HVAC subcontractor's
19 (Waldinger Corporation) Quality Assurance program, along with other
20 allegations from the same source. NRC Inspection Report No. 50-528
21 January 7, 1986, pp. 14-17 (Allegation No. RV-85-A-034). The NRC
22 Report states, in part:

23 Allegation: Welders do not return unused weld rod at the end
24 of their shift, as required.... The reason the weld rod is
25 not being returned is because engineering is pressuring
craft to meet schedule.

* * *

26 ...[T]he concern that welders were not returning their weld
rod because of schedular pressure does not appear to be
valid based on the Quality Control Inspector's aforemen-

1 tioned statements that welders were returning their weld
rod.

2 However, it should be noted that a related item within the same
3 allegation - that Waldinger had not adequately limited the number
4 of people authorized to issue weld rod - was substantiated. There-
5 fore, it appears questionable that NRC was prudent to limit its investigation
6 of the general allegation of schedule pressure being brought to
7 bear on craft to a broad statement by Waldinger Q.C. that one
8 specific incident of such pressure was not known to have occurred
9 or was not pervasive. In light of the other suggestions of
10 schedule pressure affecting ANPP as general Project Manager, as well
11 as Waldinger's prior history of unrelated problems, this item of
12 the allegation merited considerably more intensive investigation.

13 10. The thrust of CREE's original Petition was to set out the
14 prima facie case for questions regarding APS/ANPP's management
15 competence and character sufficient to justify the relief requested.
16 The issue of financial pressure is raised as one factor which may
17 be acting to undermine ANPP performance. Other recent incidents
18 have come to light which raise direct questions about ANPP manage-
19 ment competence and character.

20 11. On January 10, 1986, in what appears to be the first radiation
21 accident at PVNGS, two workers received doses as high as 50 milli-
22 rems while opening a pressurizer-isolation valve. (Exhibit I.)

23 12. On January 7, 1986, ANPP discovered evidence of possible
24 tampering with PVNGS-3 wiring. The incident was reported to NRC on
25 January 9. (Exhibit J.)

26

1 13. In both instances, information on the occurrences was with-
2 held from the media in excess of four days. In the case of the
3 worker contamination incident, the media first learned of the
4 occurrence through the NRC. In fact, ANPP spokesman Dan Canady
5 indicated on January 13, when the story was made public by the
6 Phoenix Gazette: "This is the first I've heard about it." (Exhibit
7 I-1.) Subsequently, Canady justified the failure to inform the
8 media as follows: "It just wasn't a big thing to them [ANPP site
9 management]." (Exhibit I-2.) (However, such incidents are
10 Reportable Events.) In a particularly memorable quote, Canady went
11 on to state: "We consider it a very minor contamination. If you
12 are working in an auto repair garage you're going to get greasy
13 from time to time." (Exhibit I-3. Emphasis added.)

14 14. As discussed in CREE's original Petition, the petitioner
15 regards such incidents of failure to inform the media and public
16 of negative news (whether or not required to do so by NRC regula-
17 tions) as evidence of lack of management integrity indicative of
18 poor management character. (CREE Petition pp. 36-40 for prior
19 instances and discussion.) In addition, the attitude toward worker
20 contamination evinced by Canady's statements (above), and attributed
21 by Canady to ANPP upper echelon management, reflects upon management
22 character - and, arguably, competence - negatively.

23 14. In the case of the most recent incident of possible tampering
24 at PVNGS, ANPP waited over a week to inform the media. In light
25 of considerable media attention accorded other possible tampering
26 incidents at PVNGS during 1985 and 1984, ANPP cannot plausibly

1 claim that media interest was not anticipated. Common sense
2 suggests that quite the opposite was, in fact, the case. Again,
3 failure to inform the media and, hence, the general public of
4 incidents of public interest reflects poorly on management
5 character.

6 15. CREE maintains that the incident also provides further
7 illustration of questionable management competence in the two
8 critical areas of communication, internally and to the NRC, and
9 prompt action on matters affecting plant security. (CREE Petition
10 pp. 42-45.)

11 16. In this instance, instrument problems which were found to
12 have been caused by the possible tampering were first identified
13 on January 4, 1986. The evidence of possible sabotage was
14 discovered by ANPP on January 7. Yet, the NRC was not notified
15 of the possible tampering until January 9.

16 17. The gap between the January 4, 1986, identification of a
17 systems problem and the January 7 identification of the cause
18 thereof is explained as the result of delayed attention due to
19 competing issues. (Exhibits J-1 and J-2.) The gap between the
20 January 7 discovery of possible sabotage and the January 9
21 notification to the NRC cannot be similarly justified, however,
22 particularly in light of concerns expressed by the NRC last year
23 over similar delays in reporting, and in initiating of ANPP
24 investigative activity. (CREE Petition, p. 43.) Such repetitive
25 patterns of poor management lies at the heart of CREE's contention
26 of management incompetence.

1 18. Moreover, it should be noted that claims of pressure from
2 competing issues begs the question of the likelihood, which lies
3 at the core of CREE's request for relief, that simultaneous
4 operation of PVNGS-2 and -3 will necessarily overtax ANPP
5 management resources at their present competence levels.

6 19. Initial NRC response was from Resident Inspector Roy Zimmer-
7 man, as follows, according to the Arizona Republic:

8 "It went up the management chain. Once it was identified
9 at a certain level of management, they flagged it.

10 "We would like to see the notification as quickly as
11 possible. I don't want to say its not a concern of our's,
12 but you need to differentiate between an operating unit
13 and one that's under construction."

14 Zimmerman said that because there is no nuclear fuel on
15 site for Unit 3, "they don't come under our security
16 requirements."

17 He said any concern he might have is over the delay
18 at lower levels of recognizing and classifying problems.

19 Arizona Republic, January 19, 1986, p. B-3 (Exhibit J-3).

20 20. Mr. Zimmerman's response is considered inadequate for
21 several reasons, and appears to indicate a lack of full apprecia-
22 tion of previous NRC concerns expressed to ANPP regarding their
23 responses to incidents of apparent sabotage at all three Units.
24 (CREE Petition, supra.)

25 21. It needs here to be pointed out that CREE spokespeople have
26 previously publicly expressed admiration for the manner in which
Mr. Zimmerman has conducted his responsibilities since being
assigned as Chief Resident Inspector at PVNGS. Accordingly, the
following criticisms are not intended to reflect generally upon
him, although they may be indicative of concerns addressed at

1 numerous points in CREE's original Petition questioning the
2 capability of routine NRC procedures and enforcement actions
3 (particularly their single-issue, often narrowly technical and/or
4 legalistic nature) to adequately identify and address system-wide
5 patterns of recurring deficient behavior by plant management, such
6 as are raised by CREE regarding ANPP's management competence.

7 22. First of all, to the extent that those remarks are premised
8 upon NRC regulations regarding security necessary for facilities
9 possessing special nuclear materials, they are merely narrowly
10 bureaucratic and legalistic. They fail to address the probability
11 that such recurring, similar and - indeed - threatened acts of
12 tampering as have apparently occurred at PVNGS pose a problem
13 of criminal investigation which requires that all evidence be
14 treated as of equal importance to the apprehension of the person
15 or persons responsible for such actions - at whatever PVNGS Unit
16 they may occur.

17 23. The same reasonable inference of a deliberate, continuing
18 sabotage effort reemphasizes the need, previously stressed by the
19 NRC, for prompt investigative activity by ANPP. It is not merely
20 a question of whether lower levels of plant operation know
21 probable sabotage when they see it and inform upper management;
22 i.e., a question of identification. It is, at least as crucially,
23 a question of the speed with which the information travels up the
24 management chain, management responds with investigative activity,
25 and the NRC is notified by management; i.e., a question of
26

1 investigation (and notification). Additional concerns are raised
2 by ANPP's failure to notify local law enforcement and seek their
3 professional investigative assistance, even in the face of two
4 subsequent and apparently related incidents. (Exhibit J-5.) To
5 put the matter in its simplest form, bloodhounds do less well if
6 asked to follow a cold trail. This appears to be the concern of
7 the original NRC cautions to ANPP (CREE Petition, supra), which
8 ANPP management appears not to have heeded.

9 24. As such, this recent incident provides yet another example
10 of ANPP's repetitive pattern of failure to take adequate manage-
11 ment action to prevent recurring deficiencies in crucial areas.
12 As such, it clearly raises the question of management competence
13 and supports the petitioner in its request for relief in the
14 form of an Order to Show Cause.

15 RESPECTFULLY SUBMITTED, THIS 21st DAY OF JANUARY, 1986, BY:

16
17 

18 MYRON L. SCOTT

19 Intervention Coordinator
20 Coalition for Responsible Energy
21 Education
22 315 West Riviera Drive
23 Tempe, AZ 85282
24 (602)968-2179
25
26

Palo Verde setbacks boost cost

1-15-86 By Victor Dricks 1-15-86
The Phoenix Gazette

Testing setbacks at Palo Verde have caused a three-month scheduling delay for Units 2 and 3, and could add \$60 million to the cost of the nuclear generating station west of Phoenix.

Arizona Nuclear Power Project executive vice president Ed Van Brunt Jr., announced Tuesday that Units 2 and 3 will not begin operating commercially until the third quarters of 1986 and 1987, respectively.

- It was the first major schedule revision for the project since officials encountered major difficulties with reactor coolant pumps more than two years ago during pre-operational testing for Unit 1.

The new schedule will not increase the construction cost of the project, but will add financing charges to individual participant's costs. The plant is owned by a consortium of seven Southwest utilities.

Project officials had estimated the plants could be built for \$9.3 billion. About \$5.9 billion of this is allocated for direct construction and \$3.4 billion in financing charges.

Arizona Public Service Co. spokesman Brad Parker said today the scheduling setback is forcing the 19th revision of the utility's share of participation in the Palo Verde project since 1972.

A new APS cost estimate will be released in early February, Parker said.

He added, however, that even with increased financing charges caused by the delay, APS should be able to keep its share of the project costs under the \$2.86 billion cap imposed by the Arizona Corporation Commission. Any costs above that figure will have to be absorbed by the utility.

Scheduling setbacks have traditionally added \$1 million a day in financing charges to the cost of the triple-reactor project, Parker said. But since only two of the three Palo Verde units will be affected, he said the scheduling delay may add about \$60 million to the Palo Verde price tag.

"You could figure since APS owns 29.1 percent of the project, its share of the increase could be about \$26 million," Parker said.

"I'm afraid this doesn't surprise me."

See • Reactors, A-4

● Reactors

From A-1

said Susan Williams, director of the state Residential Utility Consumers Office. "The long range fear is obviously that this is just the beginning of problems, and as a community we have to hope this plant works, works efficiently and soon.

According to Van Brunt, one of the key reasons for the rescheduling is that Unit 2's operating license was not received as soon as anticipated.

Earlier this summer, U.S. Nuclear Regulatory Commission officials expressed reluctance to allow Palo Verde technicians to begin a testing program for Unit 2 until Unit 1 testing was completed.

Federal regulators said they did not want Palo Verde technicians to split their expertise.

In addition, Unit 1, scheduled to enter commercial service in late December 1985, has encountered a spate of problems since it began splitting atoms May 25.

Project officials have said they have encountered more than the usual share of glitches because Palo Verde uses reactors of a first-of-a-kind design.

AZREP D-1 1-13-86
**Commercial operation put off
for Palo Verde Units 2 and 3**

Scheduled commercial operation of Units 2 and 3 of Palo Verde Nuclear Generating Station has been delayed about three months, a plant official said late Tuesday.

Ed Van Brunt, executive vice president for the plant, said Units 2 and 3 now are expected to go on line in the third quarters of 1986 and 1987, respectively.

Original schedules called for the commercial operation of Unit 2 in the middle of this year and in mid-1987 for Unit 3.

Van Brunt said one reason for the schedule change is that the operating license for Unit 2 was not received as soon as anticipated.

The new schedule "may affect the individual participant's cost," Van Brunt added.

Palo Verde is owned by a consortium of seven Southwestern utilities. Arizona Public Service Co. and the Salt River Project are the only participants in Arizona.

Kevin Mosley, an APS spokesman, said, "We don't expect the cost to go above the (\$2.36 billion) cap" agreed to by the state Corporation Commission.

Glitch-plagued Unit 1 is scheduled to be in commercial operation within the next three months. Operators of the plant missed

— Palo Verde, D2

Palo Verde

Continued from D1

previous self-imposed deadlines of Nov. 1 and Dec. 31 for commercial operation.

Unit 1 has been out of operation since Thursday, when it shut itself down after a failure during a test. Plant spokesman Dan Canady said data taken when the shutdown occurred are being analyzed and results should be available today.

He said he did not know when the unit's reactor will be restarted. The unit has until March 1 to be classified as commercial. If it misses that date, APS will face the possibility of penalties under a state Corporation Commission formula.

Phx Gaz 1-16-86 F-3

RUCO wants to delay Unit 2 rate hearing

Following an announced three-month delay in completion of the Palo Verde Nuclear Generating Station Units 1 and 2, RUCO has asked the Corporation Commission to drop consideration of Unit 2 costs from the upcoming Arizona Public Service Co. rate hearing.

In a motion filed late Wednesday, the Residential Utility Consumer Office said the issue is moot because of the completion delay.

The request will be considered by Tom Mumaw, the commission's chief hearing officer.

APS had asked the commission to set rates for Unit 2 as part of the case that is to go to a hearing before Mumaw Feb. 11.

The utility said it would not collect the money but would keep track of how much customers owed and charge them retroactively once Unit 2 became operational.

At that time, Unit 2 was scheduled to become operational in mid-1986 and the company said if the rates were not in effect at that time customers would face a hefty increase after the completion of a second rate hearing some time in 1987.

In its motion, RUCO argued that with the new Unit 2 completion date now set for late 1986, the lag between Unit 2 becoming operational and the commission deciding on rates in a future case will be cut considerably. The consumer agency said there is no need to consider Unit 2 costs now.

The Feb. 11 hearing will consider rate increases that would increase APS's annual revenues by \$78.6 million.

The addition of Unit 2 to the APS rate base would increase that figure by \$194 million annually.

F2 AZ REP 1-17-86

Utility group challenges need for Phase 3 of APS rate hearing

The final phase of a three-part hearing on a \$78.2 million rate increase sought by the Arizona Public Service Co. should be dismissed, the state's utility watchdog agency has suggested.

Susan Williams, director of the Residential Utility Consumer Office, said in a filing with the state Corporation Commission that the third phase no longer is necessary because of announced delays in the start-up of the Palo Verde Nuclear Generating Station.

APS, a part owner in the facility being built 50 miles west of downtown Phoenix, said on Tuesday that operation of Unit 2 and Unit 3 of the triple-reactor facility has been pushed back at least three months because of delays in federal licensing. Unit 2 had been scheduled to begin operation by mid-1986 and Unit 3 by mid-1987.

The third phase is scheduled to

deal with an accounting system proposed by APS that would allow the utility to eventually recover the costs of Unit 2 through phased-in rate increases that would be requested later.

The watchdog agency has been critical of the plan, saying it would assure the firm of including the cost of Unit 2 in its rate base and require APS customers to pay millions of additional dollars in carrying charges.

Williams said in her motion that a hearing on the accounting system now should be held later, when the commission takes up the actual rate increases for Unit 2.

The commission is scheduled to begin the first phase of the rate proceedings Feb. 11, with the second phase set for March 27 and the third immediately after the conclusion of the second.

Utility office wants
time to study data

State is asked to deny early hearing for APS

By JOHN STAGGS
Arizona Republic Staff

C-2
8-24-85

The state Residential Utility Consumers Office late Friday requested that the Arizona Corporation Commission not move up the hearing date for Arizona Public Service Co.'s proposed 8.6 percent rate increase.

APS is seeking to have the hearing date moved from Feb. 10 to Oct. 31.

The utility office said that the commission could not make an informed decision regarding the rate request because all necessary financial data would not be available. An 8.6 percent increase repre-

sents \$78.2 million annually.

An APS spokesman called the filing "unfortunate."

Susan Williams, director of the utility office, said her office needs "sufficient time" to review the APS financial data for the period at least through the end of the third quarter, which ends Sept. 30.

She said APS has made it clear that the data will not be available to anyone at least until 60 days after the end of the third quarter, "making an Oct. 30 hearing date impossible" to determine APS' needs.

The watchdog agency, in the same filing, also objected to an APS deferral plan by which, over a 10-year period, ratepayers would

pay back \$167.3 million in costs associated with Unit 2 of the Palo Verde Nuclear Generating Station.

Under the deferral plan, APS would, in effect, be guaranteed the highest authorized rate of return, 16.15 percent. RUCO says the plan really would cost consumers a total of about \$470 million.

Kevin Mosley, an APS spokesman, said, "We think it's unfortunate that they couldn't support us. The sooner we work on rate shock, the sooner we'll find a solution."

An official of the utility office claimed the \$167.3 million would, in effect, be a loan from APS to its customers to pay for costs associated with all three units of Palo Verde.

State consumer office opposes APS rate bid

By FRANK TURCO
Arizona Republic Staff

12-20-85
H-7

A \$194 million rate increase sought by the Arizona Public Service Co. should be turned down by state utility regulators because it does not contain financial information from all of 1985, the head of the state Residential Utility Consumer Office said Thursday.

Susan Williams said the rate application the company filed with the Arizona Corporation Commission on Wednesday contains data that end in June, which will handicap her office and others that may want to file objections to the proposal.

The hearing on the request won't be held until sometime in 1986, so all of 1985's data should be included in the application, she contended.

Williams said RUCO, the state agency that represents consumers in utility rate-hike cases, will file a request with the commission asking that the application be sent back to APS with instructions that it not be refiled until all 1985 financial information is available.

The application seeks either a 19.36 percent rate increase in a single year or three annual increases of 6.15 percent each. Electricity rates would increase \$15.94 a month under the single-year plan and \$16.17 over three years under the phase-in plan.

The added revenues are needed by the utility to help it pay for its share of Unit 2 of the Palo Verde Nuclear Generating Station, which is being built west of Phoenix by a consortium of utilities.

APS also has a request for an 8.6 percent increase pending before the

commission. That request is scheduled to be heard by the panel beginning in February.

Williams said APS filed its latest request without enough data because it was rushing in an effort to force the commission into starting hearings on the proposal before a final decision is reached on the earlier request.

"This kind of jockeying of the schedule is totally unfair," she said.

Williams maintained that a fair review of the latest request cannot be held without a full year of test data and without knowing how much of the earlier proposal will be approved.

She also claimed the amount of new revenues sought under the latest filing appears to be out of line with earlier cost estimates made by APS.

Williams said a 1984 request by the company that later was withdrawn asked the commission for \$124 million for its share of Unit 2.

"This latest request is \$70 million more than their earlier one, and they haven't even explained why they now need more," she said. "I think we finally are beginning to see the true costs of Palo Verde."

Meanwhile, another consumer organization said it supports the attempt by APS to phase in its rate increases.

"The phase-in plan softens the economic impact on customers, especially low-and fixed-income customers," said the Arizona Association of Community Organizations for Reform Now.

The group, however, said it would not take a position on the amount of money being sought by the utility, leaving that instead to the rate hearings.

RUCO seeks Palo Verde probe

By Anthony Sommer
The Phoenix Gazette

An investigation into the "hidden costs" of the Palo Verde Nuclear Generating Station should be a part of the next Arizona Public Service Co. rate case, the Residential Utility Consumer Office has told the state Corporation Commission.

RUCO Director Susan Williams' request was made at a prehearing conference conducted by the commission Tuesday.

"This is the only occasion to ask how much Palo Verde ultimately will cost Arizona," Williams said. "It is an opportunity to explore what has been, up until now, the hidden costs of a massive plant."

A similar, although less detailed, request was submitted by the Committee on Responsible Energy Education.

APS attorneys expressed no objection to the requests to expand the scope of the hearing.

"This is not going to be an easy case to get one's arms around," APS counsel Jaron Norberg said.

The hearing into APS's request for an 8.6 percent rate increase that would give the company \$78.2

million in new annual revenues is scheduled to begin Jan. 6.

It promises to be the longest in commission history and last well into the summer.

Among the issues RUCO asked to have included in the hearing are:

- Whether ratepayers should be charged for Palo Verde capacity that is capable of generating more electricity than APS needs. Part of the question is aimed at the need for Unit 3.

- An analysis of the corporate restructuring of APS last year, which has removed several of the company's subsidiaries from the commission's jurisdiction.

- An analysis of federal income tax credits received by APS but not deducted from the company's rate base when the commission determines the value of the company.

- A determination of how much of the Cholla 4 coal-fired generating plant should be in the APS rate base. Power from the plant is being sold to a utility in Southern California at rates lower than APS customers will pay for Palo Verde electricity.

- How the company should be penalized for extended power plant outages.

- Costs of decommissioning the Palo Verde plant and how they should be paid.

- Whether APS should be able to include the cost of buying, shipping and disposing of nuclear fuels when those services are provided by APS subsidiaries.

- Whether APS should be allowed to charge its customers for extra costs found at Palo Verde but not at coal fired plants, including extra security, extra operating personnel and low-level radioactive waste disposal.

Wednesday, October 16, 1985

AZ REP C-3

The Arizona

Consumer agency urges regulators to extend scope of APS rate hearing

The scope of the Arizona Public Service Co. rate hearing now pending before the state Corporation Commission needs to be expanded so that the full costs of the Palo Verde Nuclear Generating Station can be learned, it was suggested Tuesday.

"This is the time, this is the place to truly assess what Palo Verde is going to cost," said Susan Williams, director of the state Residential Utility Consumer Office.

She told the utility regulatory panel during a pre-hearing conference that all facets of the nuclear plant, including the prudence of building a third reactor, need to be explored at the proceedings.

"We must be able to ask if it is prudent to continue building Unit 3 or will it be more cost effective for the community to abandon Unit 3," she added.

APS owns 29.1 percent of the \$9.3 billion three-reactor plant that is being built 50 miles west of downtown Phoenix by a consortium of seven utilities from four states.

Unit 1, which is in the testing phase, is scheduled to be in full operation by the end of the year.

Unit 2 is due to be operating by the middle of next year and Unit 3 by mid-1987.

The commission, which will begin the APS hearings on Jan. 6, called the pre-hearing conference to allow intervenors to suggest issues that they would like to see discussed during the proceedings.

Currently, the agenda involves discussions on proposals by APS to increase its electricity revenues by \$78.2 million a year to pay for its share of Unit 1 of Palo Verde and to begin using a new accounting approach for Unit 2 when the reactor begins operating.

Additionally, the commission plans to review its fuel-adjustment procedures, which allow APS to adjust its rates when the prices it pays for fuel and power increase.

Williams, whose agency has taken part in the past several APS rate hearings, said the proceedings should include reviews of the AZP Group, the holding company formed last year by APS; decisions by APS to sell power from one of its coal-fired plants to a California utility; planning for power pur-

chases for other utilities; and possible "lifeline," or reduced, rates for the needy.

She also urged the commission to use caution when deciding the accounting proposal advanced by APS for Unit 2 because it will have a far-reaching affect.

"All future rate proceedings will accept the pattern set in this case," she maintained.

Under the plan, APS would delay placing in its rate base the maintenance and operating costs of Unit 2 until 1987 and then, after additional rate hearings, the costs would be phased in over a five-year period.

The company said the plan would avoid "rate shock" or a large, single rate increase, for customers.

Williams, however, said APS also wants to add carrying charges, which would boost the total amount raters eventually would have to pay to \$471 million from \$167 million.

"There are other ways to phase in rates," she said.

Jaron Norberg, APS vice president and chief counsel, said that if all of the suggestions made by the consumer agency and other intervenors were accepted by the panel, the rate case could be expanded so much that it could get out of hand.

"This is not going to be an easy rate case for any of us to put our arms around," he said.

Commission Chairman Renz Jennings cautioned, too, that he hopes the case does not get too complicated.

However, he urged APS to cooperate with the intervenors in their effort to obtain information from the utility as they prepare their cases.

— FRANK TURCO

Full costs of Palo Verde sought

The scope of the Arizona Public Service Co. rate hearing pending before the state Corporation Commission needs to be expanded so that the full costs of the Palo Verde Nuclear Generating Station can be learned, according to Susan Williams, director of the state Residential Utility Consumer Office. C3.

Audit details cost overruns at Palo Verde

11-27-85 By Anthony Sommer and Victor Dricks A-1
The Phoenix Gazette

A four-state audit of the construction costs of the Palo Verde Nuclear Generating Station has blamed massive cost overruns on factors ranging from poor quality control to unexpected labor costs.

The first phase of the \$2.5 million audit was released today by the utility regulatory commissions in Arizona, Texas, California and New Mexico.

The study details the reasons Palo Verde costs more than doubled — to \$5.9 billion from initial estimates of \$2.8 billion — since planning began in the early 1970s.

Some of the increased costs were blamed on delays in the project. Completion of Unit 1 is 43 months behind schedule, while Unit 2 is expected to come on line 24 months late and Unit 3 is forecast to be 14 months late.

Problems began to arise virtually from the time work began in 1976, according to the study. At that time, there were delays in the awarding of purchase orders and in processing bid evaluations.

By early the next year, the study said, significant delays in engineering for the plant began to appear. They were attributed to holdups caused by the contractor, Bechtel Corp., and major

See • Audit, A-4

● Audit

suppliers, including General Electric and Southern Boiler.

The problem became so severe that a "design freeze" was implemented in February 1977 because project engineers were unable to keep up with changes.

The report also was critical of quality control throughout the project and recommended it be given high priority in the second phase of the study, which was scheduled to be completed by July.

The report cited a series of violations for which the project was fined by the federal Nuclear Regulatory Commission, and 60 others for which Palo Verde was cited but not fined.

"If senior management control was appropriate, these problems may have been diagnosed earlier and the NRC violation possibly avoided," the report said.

Construction boosts made up more than 48 percent of the entire cost overrun, the study said. The actual cost to build Palo Verde originally was pegged at \$2.2 billion and now is estimated at \$3.7 billion. This does not take into consideration management or other costs.

The largest single component of the construction cost overrun was attributed to labor, which made up 32 percent of the increase. Labor costs initially were estimated at \$462 million and are now expected to reach \$938 million.

That figure is more than the cost of the average nuclear power plant now operating in the United States.

The construction delays added \$410 million in interest costs alone, the report said.

Management costs for the Arizona

From A-1

Nuclear Power Project, a consortium of seven Southwest utilities participating in the project, have increased substantially since work on Palo Verde began, according to the study.

Staff costs are up 199 percent over the original estimates; records management is up more than 1,700 percent; and the management portion of start-up operations has increased almost 4,500 percent, the report said.

In January, the Arizona, Texas, California and New Mexico utility commissions hired the accounting firm of Ernst & Whinney to conduct the management audit.

The Washington, D.C.-based accounting firm, one of the so-called "Big Four" in the industry, was asked to make an initial determination of whether any of the increases in construction costs on the triple-reactor facility were caused by poor management decisions or faulty work and whether power from the 3,810-megawatt plant will be needed.

The primary purpose of the audit was to identify areas where further, more detailed investigation may be warranted. It is not the final verdict on the project. That will come in July — or later.

The accounting firm examined records and documents relating to the planning and construction of what will be America's largest nuclear power plant.

Arizona Public Service Co., which owns the largest share of the project and is acting as construction manager, worked with a team of Ernst & Whinney auditors.

The four public utility commissions have indicated they may disallow from the rate base fiscally imprudent expenses.

F2

AZ REP 1-17-86

12 consultants bidding to do 'prudency' audit of Palo Verde complex

A dozen consulting firms have bid to work on a construction-and-management "prudency" audit of the Palo Verde Nuclear Generating Station, utility regulators in Arizona reported Thursday.

The contract offers were filed with regulators from Arizona, Texas, California and New Mexico, who are planning the review of the power plant, whose construction is being completed by a consortium of seven utilities from the four states.

A preliminary audit of the \$9.3 billion plant already has identified about \$3 billion in expenses that it suggested be scrutinized to determine whether they are reasonable and prudent.

Regulators from the four states have said that if any expenses are found to be imprudent, they will not allow the utility owners of the plant to include those costs in their electricity rates.

The bids submitted by the consultants cover five of the six areas that will be examined in the audit, including construction costs, engineering costs, start-up costs, construction and start-up sched-

ules, and management decisions that were made to build the plant and to continue it as the nuclear industry changed.

Bids for work in the sixth area, which involves how well the consortium managers oversaw the work of the general contractor, Bechtel Power Corp., are not due until next Wednesday.

The bids will be reviewed by a special staff committee later this month, and recommendations to the regulatory commissions from the four states will be made in mid-February, according to Chris Kempley, a lawyer with the Arizona Corporation Commission.

He said the study, estimated to cost \$1.82 million to \$3.25 million, is expected to take 10 to 12 months to finish.

"We're hoping to have it completed by the end of the year," he added.

The preliminary audit, completed in November, was done by the accounting firm of Ernst & Whinney, which has been hired to manage the audit and oversee the work of the other consultants.

Page suing to take over APS system

AZ REP 3-28-85
By JOHN SCHROEDER C-4
Northern Arizona Bureau

FLAGSTAFF — Page has filed a condemnation suit to force Arizona Public Service Co. to turn over to the city its electrical-distribution system in Page.

The condemnation suit was filed Wednesday in Coconino County Superior Court and seeks a hearing for APS to show why Page should not be permitted to take immediate possession of the system.

The suit asks that the title to the system be vested in Page and that the Arizona Corporation Commission's certificate of convenience for APS to operate the system be voided.

Page residents, by a 10-1 ratio in a special election Jan. 29, approved spending up to \$10 million to acquire the system.

The City Council on Feb. 5 adopted a resolution authorizing the acquisition by eminent domain.

APS, in an attempt to block the takeover, was unsuccessful in a court suit in February that challenged the legality of the election.

Although the election authorized the city to spend up to \$10 million to acquire the system, approximately half of that amount would go toward acquiring additional electric power.

Promoters of the acquisition contend that the city can operate the system at a lower cost to customers than can APS.

A key element in the rates depends on how much the city must pay APS for the system. APS has stated that the system is worth between \$8 million and \$10 million; the city contends it is worth between \$3 million and \$5 million.

Page decision to acquire electric system is upheld

By BRENT WHITING
Arizona Republic Staff

1-17-88
6-2

A lineman for Arizona Public Service Co. failed Thursday to have a court overturn an overwhelming decision a year ago by Page residents to take over the utility's electric-distribution system there.

The state Court of Appeals ruled unanimously that the \$10 million bond election be validated.

However, the court admitted there were "certain irregularities" that kept 254 people who were ineligible to vote on the list of those allowed to cast ballots.

"We are convinced there was no fraud or chicanery practiced against the voters of Page, and we feel certain that the result of the election was unaffected by the irregularities," Judge Thomas C. Kleinschmidt wrote for the court.

The decision stems from a lawsuit filed by Page resident Ronald Gene Moore, a journeyman lineman for APS, challenging the election Jan. 29, in which the vote for acquisition was 1,570 to 149.

Stephen K. Smith, a Flagstaff lawyer who represents Moore, said he could not comment on the decision because he hadn't yet seen it.

Moore filed his lawsuit Feb. 8 after APS fought a losing battle to keep the electric system that has served Page for nearly 30 years.

Page officials pushed for the election because they believed the city could make more money if it

was not occupying the role of middleman.

Page receives an allocation of federal power at a preferred-customer rate and then sells it to APS, which in turns sells the power to Page customers.

Moore, who filed his lawsuit with the backing of APS, appealed after Judge William F. Garbarino of Coconino County Superior Court validated the election March 18.

APS could not be a plaintiff in the court action because a plaintiff must be a registered elector who cast a ballot in the contested election, according to state election laws.

Meanwhile Thursday, attorneys for Page and APS agreed that the city will put up a \$5.9 million bond so that it can take immediate possession of the distribution system.

That agreement came during the third day of a Coconino County Superior Court trial. It resolves the amount of the bond to be posted until a court determines the actual amount the city must pay for the system.

A trial on that issue is scheduled to begin June 4 in Coconino County Superior Court.

In the trial settled Thursday, Page had contended that the bond should be \$3.6 million, while APS attorneys had contended it should be \$9.1 million, plus severance damages.

APS muscles developers, suit charges

By James S. Jasper/ABG Correspondent

Arizona Public Service Co. is "coercing" developers into building all-electric subdivisions, according to a complaint filed before the Arizona Corporation Commission by Southwest Gas Corp.

The complaint charges that when developers inform APS they intend to build dual-energy dwellings in APS service areas, the electrical supplier threatens to assess the developer advance fees for the extension of electric facilities at rates 200 percent to 300 percent higher than those assessed on all-electric service.

"Because of the unjustifiably high advance fees APS threatened to assess them, possible delays by APS in installing such services and the unlikelihood of a substantial refund, many of these developers were coerced into installing all-electric facilities in their developments," according to the complaint.

Southwest Gas marketing officials say they have contacted approximately 90 developers in the Phoenix metropolitan area, many of whom expressed interest in building homes with natural gas service were it not for APS' line extension charges.

"All-electric homes cost ratepayers more in the long run, because they must support the greater investment in the power plants required to supply the increased demand for electricity," says Dante Pistone, director of communications for Southwest Gas' Papago division.

"APS intends to meet this self-created demand with increased electricity."

energy. It's given that all housing requires electricity, but not necessarily gas.

Apparently, the builders are not complaining. "We truly haven't had anyone call and say that they have a problem," says Richard E. Mettler, executive vice president of the Home Builders Association of Central Arizona.

"I am aware that APS has a different payback procedure for all-electric than for the home that has potential for gas," he says. "Certainly there is a difference and it would have a bearing on whether a builder would go all-electric. But I haven't had builders call me and say that they are being ripped off."

Fucson Electric Co. says the extension fees for dual homes. "They're more, so why does

SRP does not have policy based on economy may take an advance is new and without a But that proves the allegation. If this policy is the reason selecting dual-energy could expect to see a h of dual-energy

Gas contends the cost is in the middle. Due on charges, potential being denied cheaper

APS wants interim hike; may ask courts

To seek 8.6% rise; claims regulators decide too slowly

By FRANK TURCO
Arizona Republic Staff

B-6
1-21-86

Arizona Public Service Co. plans to ask the state Corporation Commission in the next two weeks for an interim electric-rate increase of at least 8.6 percent, and it may go to court if it doesn't get it, the

company's chief financial officer revealed Monday.

Executive vice president Henry Sargent said the action stems from concerns that the commission is taking too long to act on APS' request for a permanent rate increase.

"We certainly hope the commission will listen to us," Sargent said during a meeting with the editorial board of *The Arizona Republic/The Phoenix Gazette*.

APS filed for an 8.6 percent

increase last May. Hearings on the proposal will begin March 27, about 10 months after the filing.

"We don't anticipate a decision on that request for at least six to eight months," Sargent said.

He said that the \$78.2 million the increase would produce annually is needed much sooner, and that if APS doesn't get it, the company's credit ratings and its ability to borrow could be harmed.

The increase, he said, is needed to help pay for building and

operating Unit 1 of the Palo Verde Nuclear Generating Station, which is expected to be operating commercially in the spring.

APS is among seven utilities involved in the \$9.3 billion, triple-reactor plant being built west of Phoenix.

If APS' costs are not in the company's rate base when Unit 1 begins operating, the company will lose about \$6 million a month, Sargent said.

Such a loss, he claimed, would

make it difficult for the company to regain the "A" bond rating it lost in 1983 and could even lead to possible downgrading of the current "BBB" rating.

Lower ratings make it more difficult to attract investors.

"We may have to consider court if we don't get an interim rate increase," Sargent said.

He maintained that the time it takes for the regulatory panel to

— APS, B7

APS

Continued from B6

reach decisions in rate cases has been lengthening the past several years.

The last five cases filed by APS took an average of 10 months to decide, he said, and the most recent took 16 months.

The interim rate increase sought by APS brought an immediate reaction from Susan Williams, director of the state Residential

Utility Consumer Office, which has intervened in the upcoming APS rate hearing.

She said APS is to blame for most of the delays, first by not filing the case earlier, as it indicated it would do in 1984, and then by not responding in a timely fashion to requests for financial information from other participants in the case.

"There's a certain arrogance in their demands for an interim rate increase when they have not acted prudently as managers," Williams said. "The commission and public will not tolerate such demands."

EXHIBIT G

EXHIBIT H-1

THE ALLOWANCE FOR FUNDS
USED DURING CONSTRUCTION (AFUDC)
AS PERCENT OF NET EARNINGS

	<u>APS</u>	<u>Electric Industry</u>
1980	82%	52%
1981	66	49
1982	72	50
1983	85	47
1984	82	43
9/30/85 (12 mos.)	67	39
5-Year Avg. (1980-84)	77	48

APS Ranking in 80-Utility Sample:

12 Months ended 9/30/85: 64th from top
5 Years -- 1980-84: 67th from top

Source: Regulatory Research Associates - UTILITY FOCUS

E-1A2REP

5-22-89

APS likely will request 6 rate hikes

Arizona Public Service Co. is expected to file a formal request with the state Corporation Commission on Friday for an 8.6 percent rate increase in January and five annual increases of 5.9 percent, the first beginning in 1987.

The complicated rate proposal and supporting documents are being reviewed and will be filed as soon as possible, APS spokesman Kevin Mosley confirmed Tuesday.

Mosley said the amount of revenue that the increase would produce annually and what effect it would have on customers' monthly electric bills had not yet been calculated.

Word that the utility would seek a six-step increase first was made public at the company's annual meeting last month by Keith Turley, APS chairman and chief executive officer.

He said the additional revenues are needed to pay for the company's share of the Palo Verde Nuclear Generating Station, which is being built 55 miles west of downtown Phoenix.

The \$9.3 billion plant is scheduled to begin producing its first electricity before the end of this week.

Radioactive water douses 2

A-4 By Victor Dricks 1-13-86
The Phoenix Gazette

Two workers were contaminated with mildly radioactive water when a valve broke on a water pipeline at the Palo Verde Nuclear Generating Station.

Greg Cook, a spokesman for the U.S. Nuclear Regulatory Commission, said the accident occurred late Friday night.

But Dan Canady, a spokesman for the Arizona Nuclear Power Project, said today he did not know about the incident.

"This is the first I've heard about it," he told a reporter.

Cook said the workers — whose names were not immediately available — received very low doses of radiation that

did not exceed federal regulatory standards set to protect the safety of nuclear plant employees.

"One of the workers received skin contamination, but it was not considered hazardous," Cook said today.

He said details about the accident were sketchy. But he said it occurred when the workers were trying to identify the source of a leak from the reactor coolant system, which contains mildly radioactive water.

Normal procedure would be to immediately douse the workers with water in an attempt to wash radioactive particles off their bodies, Cook said. But he added, he did not know if that had been done.

'Hot' water splashes 2 at A-plant

By JOHN STAGGS
Arizona Republic Staff

B-1
1-14-86

Two employees of Palo Verde Nuclear Generating Station were exposed to "slightly radioactive" water Friday when a valve's packing failed, a plant spokesman said Monday.

"They were opening a pressurizer-isolation valve, and the valve-stem packing gave way," said Dan Canady, who declined to identify the workers. "The amount of exposure was less than 1 percent of what is allowed per quarter (of a year)."

The allowable non-penetrating radiation per quarter is 7,500 millirems, Canady said.

He identified one worker as a radiation-protection technician and the other as an auxiliary operator. An auxiliary operator, Canady explained, acts under the direction of the control-room operator, manually performing tasks that cannot be done from the control-room console.

The two, who were uninjured, were given showers, he said.

Greg Cook, a spokesman for the U.S. Nuclear Regulatory Commission in Walnut Creek, Calif., said, "They had a leak in the reactor-cooling system. They were isolating lines when the bolt on a valve broke and the packing blew out."

He said the two workers "were exposed to 30 millirems inside their bodies and 50 millirems on their skin."

"The exposures were way under the dose limit," he said.

The average chest X-ray exposes the patient to from 20 to 30 millirems of penetrating radiation, about 1 percent of the annual allowable limit under the commission's standards.

Cook said the leak and the valve have been repaired. Canady said plant managers did not consider the event serious enough Friday to report to the media.

"It just wasn't a big thing to them," he said after being contacted by *The Arizona Republic*.

"It is a reportable event to us," Cook said.

But, he added, "We don't require the utility to notify the media."

He explained that only situations that threaten the public require a media report.

The reactor in Unit 1 has been out of commission since Thursday, when it shut itself down during a test. Canady said engineers have decided the problem was a poorly synchronized program during the test.

"It wasn't correctly tuned for the 100 percent level," he said.

The test, called a loss-of-load procedure, is among the last before the reactor begins its final test to enter commercial service. The final test is to run at full power for 100 continuous hours.

Palo Verde Unit 1 must make its commercial run before March 1, or be penalized by the Arizona Corporation Commission. Reactor operators missed previous self-imposed deadlines of Nov. 1 and Dec. 31.

The plant spokesman said operators "now don't have any idea" of when they will restart the reactor, but "may have a better idea on Tuesday."

Phx Cas. H4-86 A-9

Contaminated reactor workers not identified

Arizona Nuclear Power Project officials have declined to identify the two workers who were contaminated with mildly radioactive water when a valve broke on a water pipeline at the Palo Verde Nuclear Generating Station.

"We have to protect their privacy," Palo Verde project spokesman Dan Canady said Monday.

"We consider it a very minor contamination," he said. "If you are working in an auto repair garage you're going to get greasy from time to time. The workers are in areas where there is radiation."

Late Friday, an auxiliary operator whose job it is to manually operate plant equipment and a radiation protection officer were involved in a radiation accident at the plant, said Greg Cook, a spokesman for the U.S. Nuclear Regulatory Commission.

Cook said federal privacy laws prevented the NRC from releasing the names of the workers, who were not injured during the incident that occurred while the plant was not operating.

Palo Verde wires cut; sabotage suspected

By SAM STANTON
Arizona Republic Staff

1-17-86
B-1

For the fifth time since July, officials at the Palo Verde Nuclear Generating Station are investigating the possibility of sabotage.

Plant operators notified the U.S. Nuclear Regulatory Commission late Thursday that they are studying an incident in which two wires were cut inside an instrument panel in the control room of Unit 3, which is still under construction.

The cut wires, which were connected to an instrument that monitors the amount of water flowing to a spray pond beside the unit, were found Tuesday, plant spokesman Dan Canady said.

The wires were found after plant operators noticed Saturday that there was a problem with the instrument. But the NRC was not notified then because "at that point, we didn't know exactly what we had," Canady said.

"On Tuesday, when we were

getting around to that particular system, we began trouble-shooting, and then we found the clipped wires.

"It's too early to tell whether the snipped wires were deliberately cut or if it was accidental," he said.

Although Unit 3 is 99 percent complete, that area of the triple-reactor plant still is open to construction workers, Canady said.

Nuclear fuel is scheduled to be loaded at the unit during the first three months of 1987, he said, and the unit is expected to be operating by the third quarter of that year.

The spray pond is used to help cool the plant after it has been shut down, Canady said, and damage to the measurement device would not be serious, because of backup systems.

Plant personnel are conducting the investigation, he said, and no law-enforcement agencies have been notified.

— Sabotage, B6

Sabotage

Continued from B1

Since last summer, investigations have been conducted into four similar incidents at Palo Verde. But plant operators said they could not find enough evidence to determine whether the problems were accidents or sabotage.

Three incidents in Unit 2 involved switches being flipped. The

fourth, in Unit 3, involved rags being stuffed into an electrical breaker and paper being placed into tracks that connect to a breaker box.

The plant's most serious problem came in February 1984, when \$150,000 worth of electrical cables were cut.

Arizona Public Service Co. is the manager of the project for a consortium of Southwestern utilities that own the plant.

E-8 Fri., Jan. 17, 1986

The Phoenix Gazette

Sabotage again suspected at A-plant

By The Associated Press

Officials at the Palo Verde Nuclear Generating Station are investigating another case of possible sabotage, the fifth such investigation at the nuclear plant since July, officials said.

The U.S. Nuclear Regulatory Commission was notified by plant operators late Thursday that they are studying an incident in which two wires were cut inside an instrument panel in the control room of Unit 3, which is under construction.

Dan Canady, a plant spokesman, said the cut wires were connected to an instrument that monitors the amount of water flowing to a spray pond beside the unit. The damage was discovered Tuesday, he said.

The wires were found after plant operators noticed Saturday that there was a problem with the instrument, but the NRC was not notified then because "at that point, we didn't know exactly what we had," Canady said.

"On Tuesday, when we were getting around to that particular system, we began trouble-shooting, and then we found the clipped wires," he said. "It's too early to tell whether the snipped wires were deliberately cut or if it was accidental."

Although Unit 3 is 99 percent complete, that area of

the triple-reactor plant still is open to construction workers, Canady said.

Plans call for nuclear fuel to be loaded into Unit 3 during the first quarter of next year, Canady said.

The spray pond is used to help cool the plant after it has been shut down, he said, and damage to the measurement device would not be serious, because of backup systems.

He said plant personnel are conducting the investigation and no law-enforcement agencies have been notified.

Investigations have been conducted into four similar incidents at the plant since last July. But plant operators said they could not find enough evidence to determine whether the problems were caused by accidents or by sabotage.

Three incidents in Unit 2 involved switches being flipped. The fourth, in Unit 3, involved rags being stuffed into an electrical breaker and paper being placed into tracks that connect to a breaker box.

The plant's most serious problem came in February 1984, when \$150,000 worth of electrical cables were cut.

The plant, located 50 miles west of downtown Phoenix, is owned by a consortium of electric utilities in Arizona, New Mexico, Texas and California.

Palo Verde 'sabotage' baffles APS; 5 cases discovered since July

By JOHN STAGGS
Arizona Republic Staff

B-3

Officials at the Palo Verde Nuclear Generating Station say they are baffled by the latest incidents of apparent sabotage at the triple-reactor plant.

Two electrical wires were discovered cut in the unfinished Unit 3 of the plant Tuesday, but the incident was not reported to the U.S. Nuclear Regulatory Commission until Thursday.

"We're checking all the work orders now," spokesman Dan Canady said. "We're going back to make sure somebody wasn't told to cut the wires."

Canady said officials probably will know later this week whether the cut wires were the result of an official work request or foul play.

"There are literally thousands of work orders that we have to go through yet," he said.

The wires are connected to an instrument that monitors the amount of water flowing to a spray pond beside the unit. Water in the spray pond is used to help cool the plant after it has been shut down.

The operators noticed a problem with the instrument Jan. 11 but didn't discover the cut wires until Tuesday. The NRC was not notified until Thursday "because we didn't know what we had," Canady said.

Roy Zimmerman, head NRC inspector at Palo Verde, said, "It went up the management chain. Once it was identified at a certain level of management, they flagged it."

"We would like to see the notification as quickly as possible. I don't want to say it's not a concern of ours, but you need to differentiate between an operating unit and one that's under construction."

Zimmerman said that because there is no nuclear fuel on site for Unit 3, "they don't come under our security requirements."

Plant 'satisfactory,' F1.

He said any concern he might have is over the delay at lower levels of recognizing and classifying problems.

Unit 3 is 99 percent complete, and is scheduled to be loaded with nuclear fuel during the first quarter of 1987.

Myron Scott of the Tempe-based Coalition for Responsible Energy Education said, "The worst thing about this is the fact that Arizona Public Service was late in reporting this incident to the NRC and apparently late in responding themselves. They have been criticized in the past by the NRC for responding late to apparent sabotage. The NRC assumes that the longer you wait, the harder it will be to find out who was responsible."

"APS should assume it has a sabotage problem and should get police help."

The incident was the fifth case of apparent sabotage since July. Three cases involved switches being flipped in Unit 2; rags were found stuffed into an electrical circuit breaker; and paper was placed on tracks that connect to a breaker box.

Meanwhile, Canady said, Palo Verde officials are still looking at Monday or Tuesday for restart of Unit 1. The reactor has been out of service since Jan. 9, when it failed a major test at the 100 percent power level.

On Friday, a review of data revealed that the reactor's coolant pumps lost power too quickly, he said, and technicians were reviewing the safety significance of the power loss before reactivating the plant.

After the plant is reactivated and the test is completed, Unit 1 will undergo one more major test involving the coolant pumps before going into commercial service.

● Sabotage

From A-1

the third quarter of 1987, is 99 percent complete.

Last week's findings were the latest in what is becoming a long series of incidents of unresolved suspected sabotage at the \$9.3 billion project.

Earlier this summer, someone used a remote control panel in an apparent attempt to wrest control of plant functions from control room operators while the Unit 2 reactor was undergoing hot-functional testing.

Other switches on plant components were discovered flipped in Unit 2, and rags and computer papers were found stuffed into an electrical breaker panel and onto tracks that connect to a breaker box in Unit 3.

In February 1984, more than 80 electrical cables were cut at the plant, causing damage that cost \$150,000 to repair.

Maricopa County sheriff's deputies and Palo Verde security guards have investigated several of the incidents but have not reported any success in identifying the person or persons responsible.

Officials at the U.S. Nuclear Regulatory Commission have been notified of the incidents.

While federal officials have expressed concern about them, Palo Verde project officials have tended to discount their possible significance, attributing them to disgruntled workers and employee carelessness.

Canady said today that it would be inappropriate to draw a connection among the separate incidents.

Meanwhile, technicians have restarted the Unit 1 reactor, which had been shut down for repairs and maintenance. The reactor was operating at 68 percent power early today.

Operators hope to have the reactor back up to full power later this week so they can begin a final series of tests designed to pave the way for the plant's entry into commercial service.

New sabotage try suspected at Palo Verde

1-20-86 By Victor Dricks A-1
The Phoenix Gazette

Another incident of suspected sabotage was uncovered over the weekend at the Palo Verde Nuclear Generating Station west of Phoenix.

Late Saturday, technicians found two wires cut on an instrument that records the flow rate of water through the condenser tubes of the Unit 3 reactor.

Two other wires were found cut at the plant Tuesday.

The incidents were the fifth and sixth times since July that plant officials discovered indications of potential sabotage at the Palo Verde plant.

The condenser uses treated sewage effluent to cool steam into water after it has been used to turn the blades of a turbine generator. The water then is recirculated through the nuclear reactor, reheated and reused.

Arizona Nuclear Power Project spokesman Dan Canady said today that it was too early to tell whether the act was deliberate or whether the wires had been snipped as part of a repair that was never completed.

Records indicate that the work on the electrical panel where the wires were cut was performed in 1983, he said.

The two wires that were found cut Tuesday were connected to an instrument that tells plant operators the flow rate of water in the spray pond beside the Unit 3 reactor.

The spray pond is an auxiliary cooling system that could be used to cool the reactor after it had been shut down.

Unit 3, scheduled to be operating in

See ● Sabotage, A-4

Sabotage feared at A-plant

Palo Verde wires cut; seventh such incident

By JOHN STAGGS
Arizona Republic Staff

B-1
1-21-86

In the seventh case of apparent sabotage since July, technicians found more cut wires Saturday in the nearly complete Unit 3 of the Palo Verde Nuclear Generating Station.

"Late Saturday morning, two more wires were found cut" in the lower cable-spreading room, just below the control room, plant spokesman Dan Canady said Monday.

The cut wires, which did not involve nuclear equipment, were connected to a monitor that records the flow of water in the condenser. The condenser is a chamber in which steam changes to water.

The cable-spreading room is used for routing cables to various electrical systems in the nuclear-power plant.

Last Tuesday, technicians discovered apparent sabotage to two electrical wires connected to an instrument that monitors the amount of water flowing to a spray pond next to Unit 3. Water in the spray pond is used to help cool the reactor after it has been shut down.

Unit 3 is 99 percent complete and is scheduled to be loaded with nuclear fuel during the first quarter of 1987.

Canady said the Maricopa County Sheriff's Office has been notified of both cases of apparent sabotage, but that no assistance has been requested.

"We're in the process of notifying the Nuclear Regulatory Commission now," he said.

The federal agency's security regulations will not take effect until the plant's fuel arrives later this year.

NRC spokesman Greg Cook said his agency "is responsible for the public's health and safety" insofar

Sabotage

Continued from B1

as radioactive material is concerned.

He said that even though there appears to be a pattern of apparent sabotage, the situation does not require his agency's intervention. None of the previous cases has been solved.

"Usually, the utility will step up its inspection program," he said. "Pre-operational inspections should pick up any problems.

"It would be awfully hard to damage any of these circuits and not have it be caught. We're concerned, but we're not worried."

Canady said the cut wires were discovered while workers were checking systems in the unit. The wires were installed in 1983.

He said the news media and government agencies were not notified earlier because "until you start checking, you don't know whether" somebody was told to cut the wires.

Myron Scott of the Tempe-based Coalition for Responsible Energy Education said, "Arizona Public Service Company (which is in charge of Palo Verde's construction) should assume it has a sabotage problem and should get police help."

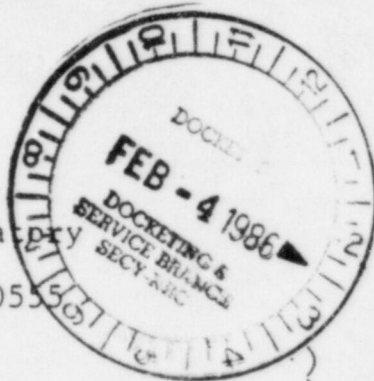
Three of the cases of apparent sabotage involved switches being flipped in Unit 2. In the two other incidents, rags were stuffed into an electrical circuit breaker, and paper was placed on tracks that connect to a breaker box, potentially breaking an electrical circuit.

Meanwhile, Unit 1 was restarted Sunday night. It had been out of service since Jan. 9, when it failed a major test at the 100 percent power level. Normally, the unit would have been restarted quickly, but engineers wanted to assess the safety significance of the failed test before restarting the reactor, officials said.

The unit will undergo two more major tests before going into commercial service, which is expected this spring.

The \$9.3 billion plant, 50 miles west of downtown Phoenix, is owned by a consortium of seven Southwestern utilities, including APS.

953



February 1, 1986
Coalition for Responsible Energy Education
315 W. Riviera Drive
Tempe, AZ 85282

Commissioners
1 U.S. Nuclear Regulatory
Commission
2 Washington, D.C. 20555

3 In the Matter of:
4 Arizona Public Service, et al.
5 (Arizona Nuclear Power Project-
Station Unit Nos. 1 and 2)

DOCKET NOS. 50-528;
50-529
(2.206)
Emergency Relief Petition

7 RE: Show Cause Petition Pursuant to 10 CFR 2.206(a) re: PVNGs-2
8 License Suspension Request, Management Competence and Character
Proceedings Initiation Filed with NRR January 17, 1986

9 I.

- 10 1. The Coalition for Responsible Energy Education (hereinafter
- 11 referred to as "CREE" or "the Coalition"), hereby petitions the
- 12 Commissioners for emergency relief pursuant to 10 CFR 2.206(a),
- 13 as regards Palo Verde Nuclear Generating Station (PVNGS) Unit No.
- 14 2. The Coalition seeks an Order from the Commissioners suspending
- 15 nuclear operation of PVNGS No. 2 and the PVNGS No. 2 operating
- 16 license issued December 9, 1985, until such time as the Director,
- 17 Office of Nuclear Reactor Regulation (NRR), shall issue an initial
- 18 response to CREE's Petition to Show Cause, dated January 17, 1986,
- 19 and the Addendum thereto, dated January 21, 1986.

20 II. FACTS

- 21 2. On or about January 17, 1986, the Coalition filed with NRR
- 22 a Petition requesting relief in the form of temporary suspension
- 23 of the PVNGS-2 operating license, pending completion of hearings
- 24 and requested regulatory actions related to the issue of Arizona
- 25 Public Service Company/Arizona Nuclear Power Project (APS/ANPP)
- 26 management competence and character at PVNGS-1. The Petition was

7pp.

DSC3

1 amended by an Addendum of added facts filed on or about January 21,
2 1986.

3 3. Said Petitions urged regulatory actions regarding NRC-
4 identified deficiencies which, in the opinion of the Petitioner,
5 demonstrated a pattern of repeated failures in areas directly under
6 the control of plant management, thereby raising the issue of
7 management competence and character. Petitioners urged actions
8 beyond the scope of routine regulatory and enforcement actions, as
9 discussed in said petitions, including commencement of hearings.
10 In addition, CREE requested suspension of the PVNGS-2 operating
11 license, pending completion of the requested relief actions.

12 4. As set forth in the Petitions, CREE's reasoning for
13 requesting an Order to Show Cause affecting PVNGS-2, as well as
14 PVNGS-1, was the belief and concern that pending Unit 2 startup and
15 power ascension testing, conducted simultaneously with Unit 1
16 operation, would overtax management resources unacceptably and
17 thereby compromise safety at both reactors.

18 5. Although it is not possible for CREE to establish a certain
19 date for PVNGS-2 initial criticality, low-power physics testing and
20 power ascension testing, startup of Unit 2 appears to be immanent.
21 However, NRR has not yet issued an initial assessment of CREE's
22 Petitions, such as would be expected to include a preliminary
23 determination affecting immediate activities at PVNGS-2.

24 6. While the concerns regarding Unit 1 management competence
25 and character raised by CREE remain relevant after Unit 2 startup,
26 the effect of simultaneous operations was one of the central

1 concerns raised by CREE.

2 7. While CREE is content to await a final Director's
3 Determination through normal channels from NRR and, further, to
4 rely for that determination on the facts set forth in its two
5 previous petitions, additional facts have come to light which
6 CREE regards as demonstrating the urgency of this emergency
7 relief request to the Commissioners.

8 8. Specifically, CREE calls the Commissioners' attention to
9 the Nuclear Regulatory Commission (NRC) Inspection Report dated
10 January 30, 1986, dealing with the NRC inspection of PVNGS-1 and
11 -2 conducted on November 13 through December 27, 1985 (Inspection
12 Report Nos. 50-528/85-43 and 50-529/85-44). Said period post-
13 dates both the period covered by the latest Systematic Assessment
14 of Licensee Performance and CREE's Show Cause Petition and the
15 Addendum thereto. Therefore, the Inspection Report updates the
16 previous information regarding management competence and
17 character relied upon by CREE.

18 9. In CREE's opinion, that Inspection Report clearly
19 supports its concerns that there exists a pattern of repeated
20 failures affecting diverse areas for which management is
21 responsible and which reflect negatively on management competence
22 and character. E.g.:

23 10. In the cover letter, Region V Administrator John B. Martin
24 comments: "...We are concerned with the level of thoroughness
25 applied to your post trip review process... increased effort is
26 warranted in ensuring that all off-normal conditions identified are

1 evaluated with regard to safety significance, and appropriate,
2 thorough corrective action is implemented." NRC Inspection Report,
3 supra, cover letter p. 1.

4 11. The Inspection Report identified two late-submitted LERs,
5 constituting a repetitive violation (528/85-43-01).

6 12. In this context, inspector review of management corrective
7 action report (CAR) MA-85-0002 initiated on August 13, 1985,
8 resulted in the following comment: "The inspector stated that
9 the lack of timeliness in implementing corrective action for CAR
10 MA-85-0002 was disturbing, considering it addressed a violation of
11 Technical Specifications; although minor in safety significance."

12 13. Regarding an identified instance of poor procedural
13 adherence, the Report noted: "The inspector expressed concern that
14 basic procedure adherence must be understood and appreciated at
15 all levels of the organization for company policy to be effective-
16 ly carried out. The area of procedure adherence will continue to
17 be evaluated...." (NRC Inspection Report, supra, p. 13).

18 14. Also, Mr. Martin commented: "Our concern regarding the
19 post trip review process should be viewed broadly with respect to
20 to ensuring self critical appraisals are performed in areas
21 necessitating improvements. The early phase of plant operation is
22 a critical period which requires management's attention to
23 ensure that the proper attitude toward carrying out plant
24 activities is developed and implemented." (NRC Inspection Report,
25 cover letter, p. 2; emphasis added.)

26

1 15. The concerns identified above are not exhaustive of those
2 expressed in the Report, but are selected as illustrating
3 instances in which management-related deficiencies identified in
4 the SALP Report and/or complained of in CREE's previous petitions
5 have continued to reoccur.

6 16. Because the emphasis of CREE's concerns is the pattern
7 of repetitive errors, we wish to emphasize that individual
8 incidents should not be judged in isolation from one another in
9 arriving at a decision on the urgency of this emergency relief
10 request.

11 17. The Commissioners' attention is also directed to three
12 apparent subsequent late-field LERs identified in the LPDR by CREE
13 LER Nos. 85-077 (2 days late); 85-091 (1 day); and 85-092 (1 day).

14 18. Taken together, CREE regards these incidents as strongly
15 supporting its concerns with PVNGS management competence and
16 character and suggesting that management continues to fail to
17 learn from previous errors and appears overburdened. These
18 conclusions emphasize the urgency of this emergency relief request.

19 III. AUTHORITY

20 19. Title 10 of the Code of Federal Regulations 2.206(a)
21 establishes the right of the public to petition the Commission or
22 appropriate directors to institute proceedings pursuant to
23 10 CFR 2.202. The Commission may, pursuant to 10 CFR 2.206(a),
24 institute a proceeding by serving upon the licensee an Order to
25 Show Cause.

26

1 20. The Atomic Energy Act of 1954 gives discretion to revoke,
2 suspend or modify the license or permit of an NRC licensee.
3 (42 U.S.C. 2236.)

4 21. Notwithstanding the discretionary aspect of 42 U.S.C. 2236,
5 the NRC has a mandatory duty to exercise its authority when
6 necessary, and is required to determine that there will be
7 adequate protection of the public health and safety. See
8 Natural Resources Defense Council vs. U.S. Nuclear Regulatory
9 Commission, 528 F. 2d 166 (2d Cir., 1978).

10 22. The NRC has recognized the significance of the issue of
11 management competence and character, when there exists a pattern
12 of repetitive failures for which management is responsible, as
13 raising significant safety concerns. See Houston Lighting and
14 Power Co. (South Texas Project Units 1 and 2), CLI-80-32,
15 12 NRC 281 (1980).

16 23. 10 CFR 2.206(b) establishes that the appropriate
17 director shall respond to show cause petitions and institute
18 appropriate proceedings, or advise the person requesting said
19 proceeding in writing of the the reasons for denying the
20 request, "within a reasonable time."

21 IV. CONCLUSIONS OF LAW

22 24. 42 U.S.C. §2236(a) and 10 CFR 50.100 provide that a
23 license or permit may be revoked, modified or suspended because
24 of "conditions which would warrant the Commission to refuse to
25 grant a license on an original application..." or "for failure to
26 construct or operate a facility in accordance with the terms of

1 the construction permit or license...."

2 25. The evidence in this and prior petitions, particularly
3 repetitive violations of the Technical Specifications for PVNGS-1
4 and failure to effectively implement timely corrective actions on
5 repeated occasions, meets the criteria of the Atomic Energy Act
6 and Chapter 10 of the Code of Federal Regulations as set forth in
7 paragraphs 38 and 39 for suspension of a license or permit.

8 V. RELIEF REQUESTED

9 26. WHEREFORE, Petitioners pray that the Commissioners,
10 pursuant to 10 CFR 2.202(a) temporarily suspend the PVNGS No. 2
11 operating license, pending the initial assessment of the Director,
12 NRR, on CREE's aforementioned Show Cause Petitions.

13 27. Should the Director, NRR, act, in at least preliminary
14 fashion, on CREE's Petitions prior to expeditious Commission
15 action in the instant case and prior to PVNGS-2 initial criticali-
16 ty, this Emergency Relief Petition to the Commissioners would, of
17 course, become moot.

18 RESPECTFULLY SUBMITTED this 1st day of February, 1986.

19
20 

21 MYRON L. SCOTT
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24 Energy Education*
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26 Tempe, AZ 85282
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*See CREE's January 17, 1986,
Petition for Description of
Petitioner