

OAK RIDGE NATIONAL LABORATORY

OPERATED BY
UNION CARBIDE CORPORATION
NUCLEAR DIVISION



POST OFFICE BOX Y
OAK RIDGE, TENNESSEE 37830

June 13, 1975

Mr. Regis R. Boyle
Cost Benefit Analysis Branch
Directorate of Licensing
Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Mr. Boyle:

The enclosed memo describes the revised CONCEPT calculations for the Washington Public Power Supply System's Nuclear Projects No. 1 and 4 requested by J. C. Petersen and presents results from those calculations.

Capital cost estimates for plants provided with heat rejection systems utilizing mechanical draft evaporative cooling towers are presented.

The estimates produced by the CONCEPT code are not intended as substitutes for detailed engineering cost estimates, but were prepared as a rough check on the applicant's estimate and to provide consistent estimates for the nuclear plant and fossil-fired alternatives.

If I can be of further assistance, please contact me.

Sincerely yours,

L. L. Bennett HLB

L. L. Bennett, Director
Studies and Evaluations Program

LLb:sf

Enclosure

cc: H. I. Bowers
M. L. Myers
J. C. Petersen, DL ✓
T. H. Row

8409270544 840824
PDR FOIA
COHEN84-603 PDR

COST ESTIMATES FOR ALTERNATIVE BASE-LOAD GENERATION SYSTEMS

A recently developed computer program was used to rough check the applicant's capital cost estimate for the proposed nuclear power station and to estimate the costs for fossil-fired alternative generation systems.

This computer program, called CONCEPT¹⁻³ was developed as part of the program analysis activities of the AEC Division of Reactor Research and Development, and the work was performed in the Studies and Evaluations Program at the Oak Ridge National Laboratory. The code was designed primarily for use in examining average trends in costs, identifying important elements in the cost structure, determining sensitivity to technical and economic factors, and providing reasonable long-range projections of costs. Although cost estimates produced by the CONCEPT code are not intended as substitutes for detailed engineering cost estimates for specific projects, the code has been organized to facilitate modifications to the cost models so that costs may be tailored to a particular project. Use of the computer provides a rapid means of calculating future capital costs of a project with various assumed sets of economic and technical ground rules.

DESCRIPTION OF THE CONCEPT CODE

The procedures used in the CONCEPT code are based on the premise that any central station power plant involves approximately the same major cost components regardless of location or date of initial operation. Therefore, if the trends of these major cost components can be established as a function of plant type and size, location, and interest and escalation rates, then a cost estimate for a reference case can be adjusted to fit the case of interest. The application of this approach requires a detailed "cost model" for each plant type at a reference condition and the determination of the cost trend relationships. The generation of these data has comprised a large effort in the development of the CONCEPT code. Detailed investment cost studies by an architect-engineering firm have provided basic cost model data for light water reactor nuclear plants,⁴⁻⁵ and fossil-fired plants.⁶⁻⁷ These cost data have been revised to reflect plant design changes since the 1971 reference date of the initial estimates.

The cost model is based on a detailed cost estimate for a reference plant at a designated location and a specified date. This estimate includes a detailed breakdown of each cost account into costs for factory equipment, site materials, and site labor. A typical cost model consists of over a hundred individual cost accounts, each of which can be altered by input at the user's option. The AEC system of cost accounts⁸ is used in CONCEPT.

To generate a cost estimate under specific conditions, the user specifies the following input: plant type and location, net capacity, beginning date for design and construction, date of commercial operation, length of construction workweek, and rate of interest during construction. If the specified plant size is different from the reference plant size, the direct cost for each two-digit account is adjusted by using scaling functions which define the cost as a function of plant size. This initial step gives an estimate of the direct costs for a plant of the specified type and size at the base date and location.

The code has access to cost index data files for 20 key cities in the United States. These files contain data on cost of materials and wage rates for 16 construction crafts as reported by trade publications over the past fifteen years. These data are used to determine historical trends of site labor and material costs, providing a basis for projecting future costs of site labor and materials. These cost data may be overridden by user input if data for the particular project are available.

This technique of separating the plant cost into individual components, applying appropriate scaling functions and location-dependent cost adjustments, and escalating to different dates is the heart of the computerized approach used in CONCEPT. The procedure is illustrated schematically in Fig. 1.

ESTIMATED CAPITAL COSTS

The assumptions used in the CONCEPT calculations for this project are listed in Table 1. Table 2 summarizes the total plant capital investment estimates for the proposed nuclear station.

As stated previously, the above cost estimates produced by the CONCEPT code are not intended as substitutes for detailed engineering cost estimates, but were prepared as a check on the applicant's estimate and to provide consistent estimates for the nuclear plant and fossil-fired alternatives.

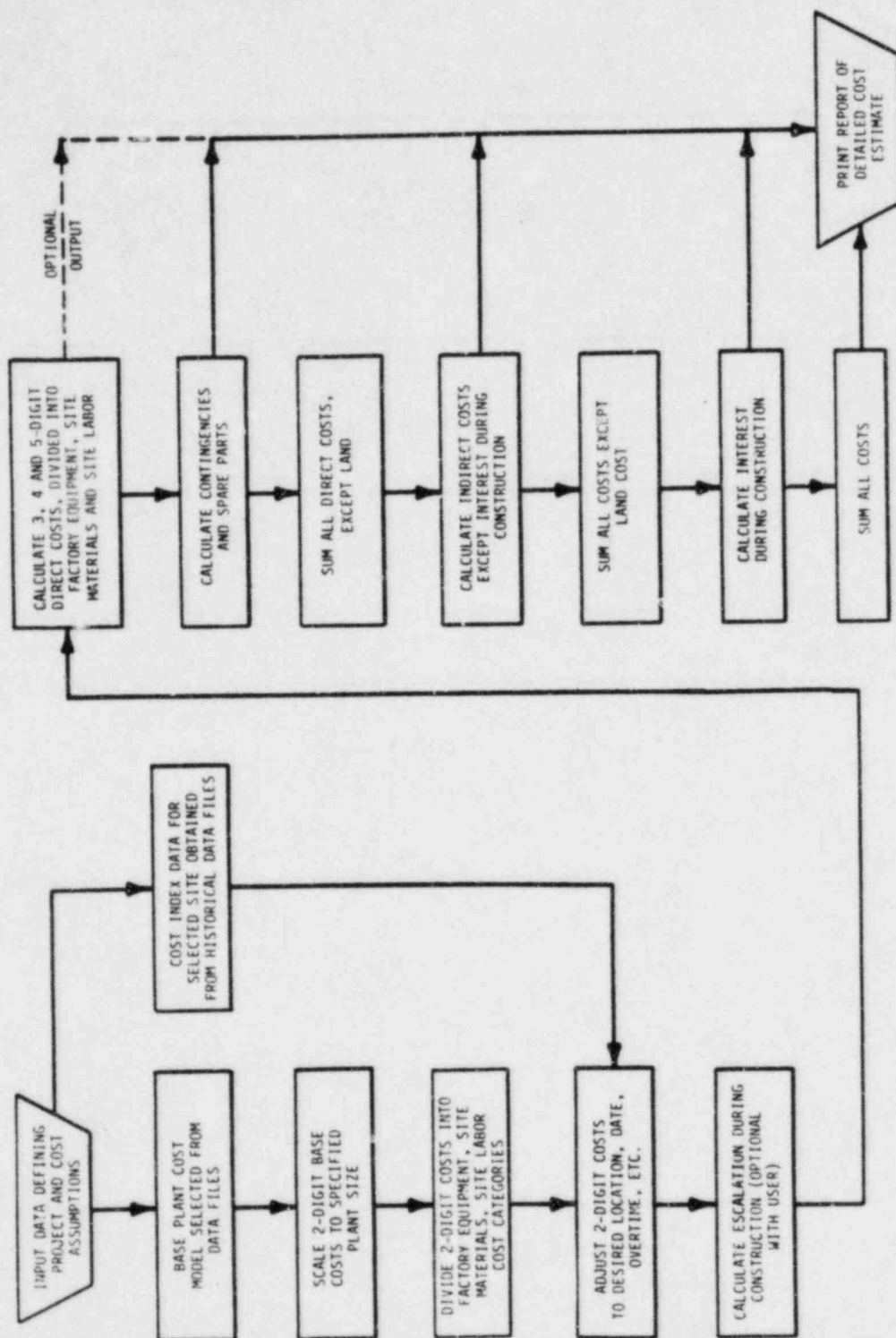


Fig. 1. Use of the CONCEPT program for estimating capital costs.

Table 1. Assumptions Used in CONCEPT Calculations
(Revised June 1975)

Plant name	Washington Public Power Supply System
Plant type	Two-unit PWR
Alternate plant types	none
Unit size	1240 MWe-net, each unit
Plant location	
Actual	Satsop, Washington
CONCEPT calculations	Seattle
Interest during construction	7%/year, simple
Escalation during construction	
Site labor	8%/year
Site materials	8%/year
Purchased equipment	8%/year
Site labor requirements	8.5 manhours/kWe
Length of workweek	40 hours
Start of design and construction date	
NSS ordered	Unit 1 December 1972
Fossil alternatives	Unit 4 July 1974
Commercial operation dates	none
Unit 1	September 1980
Unit 4	March 1982

Table 2. Plant Capital Investment Summary for a
2480-MWe Pressurized Water Reactor Nuclear Power Plant
Using Mechanical Draft Evaporative Cooling Towers

(Revised June 1975)

(Washington Public Power Supply System, Nuclear Projects No. 1 and No. 4)

	<u>Unit 1</u>	<u>Unit 4</u>	<u>Total</u>
Net capability, MW(e)	1240	1240	2480
<u>Direct Costs (Millions of Dollars)</u>			
Land and land rights	0	0	0
Physical plant			
Structures and site facilities	70	63	133
Reactor plant equipment	102	111	213
Turbine plant equipment	104	114	218
Electric plant equipment	40	39	79
Miscellaneous plant equipment	7	5	12
Subtotal (physical plant)	323	332	655
Spare parts allowance	2	2	4
Contingency allowance	23	23	46
Subtotal (total physical plant)	348	357	705
<u>Indirect Costs (Millions of Dollars)</u>			
Construction facilities, equipment and services	21	17	38
Engineering and construction management services	53	46	99
Other costs	17	14	31
Interest during construction	103 + 108 *	101 + 122 *	204 4-0
<u>Total Costs</u>			
Plant capital cost at start of project			
Millions of dollars	542	535	1077
Dollars per kilowatt	437	431	434
Escalation during construction	203	205	408
Plant capital cost at commercial operation			
Millions of dollars	745 845 *	740 862 *	1485 17-7
Dollars per kilowatt	601	597	599

* 10% interest rate applied to the amount of the loan at the time of the loan.

REFERENCES

1. *CONCEPT: A Computer Code for Conceptual Cost Estimates of Steam-Electric Power Plants - Status Report*, USAEC Report WASH-1180 (April 1971).
2. R. C. DeLozier, L. D. Reynolds, and H. I. Bowers, *CONCEPT: Computerized Conceptual Cost Estimates for Steam-Electric Power Plants - Phase I User's Manual*, USAEC Report ORNL-TM-3276, Oak Ridge National Laboratory, October 1971.
3. H. I. Bowers, R. C. DeLozier, L. D. Reynolds, and B. E. Srite, *CONCEPT II: A Computer Code for Conceptual Cost Estimates of Steam-Electric Power Plants - Phase II User's Manual*, USAEC Report ORNL-4809, Oak Ridge National Laboratory, April 1973.
4. *1000-MWE Central Station Power Plant Investment Cost Study, Volume I, Pressurized Water Reactor Plant*, USAEC Report WASH-1230 (Vol. I), United Engineers and Constructors, Inc., Philadelphia, Pa., June 1972.
5. *1000-MWE Central Station Power Plant Investment Cost Study, Volume II, Boiling Water Reactor Plant*, USAEC Report WASH-1230 (Vol. II), United Engineers and Constructors, Inc., Philadelphia, Pa., June 1972.
6. *1000-MWE Central Station Power Plant Investment Cost Study, Volume III, Coal-Fired Fossil Plant*, USAEC Report WASH-1230 (Vol. III), United Engineers and Constructors, Inc., Philadelphia, Pa., June 1972.
7. *1000-MWE Central Station Power Plant Investment Cost Study, Volume IV, Oil-Fired Fossil Plant*, USAEC Report WASH-1230 (Vol. IV), United Engineers and Constructors, Inc., Philadelphia, Pa., June 1972.
8. *Guide for Economic Evaluation of Nuclear Reactor Plant Designs*, USAEC Report NUS-531, NUS Corporation, January 1969.

Washington Public Power Supply System

3000 George Washington Way P.O. Box 968 Richland, Washington 99352-0968 (509)372-5000

August 15, 1983
G01-83-0395

Director of Nuclear Reactor Regulation
Attention: Mr. A. Schwencer, Chief
Licensing Branch No. 2
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, DC 20555

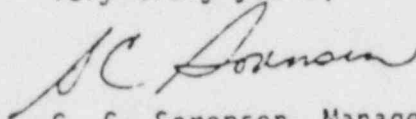
Dear Mr. Schwencer:

As we discussed via telephone on August 4, 1983, the Supply System was declared in default on its obligations of Projects 4 and 5 on July 22, 1983. A copy of an internal Supply System memorandum on this topic is attached.

Also attached is a copy of a telegram from the Bonneville Power Administration, confirming their intent and authority to fund completion of WNP-2 from Bonneville revenues.

We will keep you advised should the situation change.

Very truly yours,



G. C. Sorensen, Manager (Acting)
Nuclear Safety and Regulatory Programs

cc: R. Auluck, NRC
M. Thadani, NRC
A. Vietti, NRC
NS Reynolds, D&L
WS Chin, BPA
A. Toth, NRC WNP-2

~~8308190417~~

Washington Public Power Supply

Packman 2.46. Hydro (Jan 1st 1961)

	1960	1961	1962	1963	1964	Cumulative
P/INT (Gross)	12,209,219	11,209,219	11,210,202	11,273,058	12,236,790	11,209,219
Depr. Ret.	1,806,791	1,550,985	1,225,188	1,038,297	781,186	1,506,781
NET P/INT	10,402,428	9,658,234	9,985,015	10,234,761	11,455,604	10,402,428
Annual Deprec. Exp.	255,786	255,797	256,891	257,111	253,605	1,285,290
Depr. Rate	.021	.021	.021	.021	.021	
Life	47.7	47.7	47.5	47.7	47.9	
Bonds Retired	27,000	182,122	329,177	0	0	\$ 518,300
Bonds Outstanding	13,181,000	13,263,000	13,370,122	13,709,000	13,710,000	13,710,000
					141,253 paid amt. 1965	13,710,000
						3.8
Revenue	855,928	863,622	872,290	880,624	871,667	
Exp. (Operating)	655,984	685,992	727,772	720,502	719,856	
Interest (Bonds)	8,987	8,921	9,104	8,992	8,240	
Interest (Mort.)	6,434	6,149	6,167	6,216	6,570	
Interest (Other)	35,851	28,185	2,921	8,207	9,030	
Int. on Bonds Pay.	14,381	10,883	14,470	14,964	10,877	
Int. on Mort. Pay.	14,180	11,716	9,171	14,451	7,557	
Int. on Other	62,501	-	53,334	65,292	10,727	
Int. on Investments	23,145	53,094	35,177	42,144	1,108	
Gain on Investments	2749	3589	-	-	-	
Depreciation	260,804	260,800	261,899	262,119	269,656	
Interest on Bonds	982,074	982,870	983,220	980,625	982,610	
NET Income	0	0	0	0	0	
Sinking Funds						
P. I. Reserves	500,615	500,615	500,615	500,615	500,717	
D. I. Int. Pay.	16,683	16,133	16,932	16,970	16,929	
Debt and Reserves	474	14,354	125,608	0	0	
TOTAL ASSETS	13,608,880	13,605,088	13,721,663	13,987,082	14,075,057	
TOTAL LIABILITIES						

Washington Public Power Supply System

P.O. Box 968 3000 George Washington Way Richland, Washington 99352 (509) 372-5000

Docket No. 50-397

December 15, 1981
G02-81-525
SS-L-02-CDT-81-106

Mr. A. Schwencer, Chief
Licensing Branch No. 2
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Schwencer:

Subject: NUCLEAR PROJECT NO. 2
QUESTIONS CONCERNING FINANCIAL INFORMATION

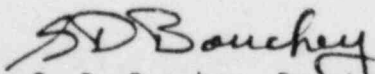
Reference: Letter, A. Schwencer to R. L. Ferguson, "WNP-2 FSAR Request for Additional Information," dated November 12, 1981

Enclosed are sixty copies of the responses to the MRC questions transmitted to the Supply System by the reference letter. These questions will be incorporated into an amendment to the WNP-2 FSAR within two (2) months.

Seven copies of each of the following reports are being submitted as enclosures to this letter:

1. Washington Public Power Supply System Quarterly Report, dated September 27, 1981
2. Washington Public Power Supply System 1981 Annual Report
3. Washington Public Power Supply System \$750,000,000 Official Statement

Very truly yours,



G. D. Bouchey, Deputy Director
Safety and Security

CDT/rch
Enclosure

cc: R Auluck - NRC
WS Chin - BPA
R Feil - NRC Site

~~8242184285~~

g. 600.001

- a. Indicate the estimated annual costs by year to operate the subject facility for the first seven full years of commercial operation. The types of costs included in the estimates should be indicated and should include (but not necessarily be limited to) operation and maintenance expenses with fuel costs shown separately, depreciation, taxes, and reasonable return on investment. (Enclosed is a form which should be used for each year of the seven year period.) Indicate the projected plant capacity of each unit for each year. In addition, provide similar data assuming plant capacity factors of 50% and 60%.
- b. Indicate the average unit price per kWh experienced on system-wide sales of electric power to all customers for the most recent 12-month period.

Response:

- a. The estimated annual projected costs for the operation of WNP-2 for the seven-year period February 1984 through June 1991 are presented as Table 600.001-1, based on Supply System generation estimates. Tables 600.001-2 and 600.001-3 present WNP-2 operating costs for the same period based on 50% and 60% plant factors, respectively.
- b. The Supply System operates each Project as an independent utility and, accordingly, does not maintain financial records on a system-wide basis. Results for the Hanford Generating Project and the Packwood Lake Hydroelectric Project for the twelve-month period ending October 30, 1981, are as follows:

	HGP	Packwood
Revenues	\$15,703,000	\$794,000
Generation (mWh)	1,452,287	90,248
Mills per kWh	10.8	8.8

TABLE 600.001-1

ESTIMATED ANNUAL COST OF OPERATING
NUCLEAR GENERATING UNIT WNP-2
FOR FISCAL YEAR ENDING JUNE 30
(Dollars in Thousands)

	1984 ⁽¹⁾	1985	1986	1987	1988	1989	1990	1991
Operation and Maintenance Expenses								
Nuclear Power Generation:								
Nuclear Fuel Expense (2)	\$ 39,364	\$ 99,066	\$ 88,792	\$ 91,847	\$ 99,066	\$ 109,359	\$ 120,671	\$ 128,638
Other Operating Expenses (3)	9,773	30,818	39,197	42,408	45,910	49,924	54,299	59,065
Maintenance Expenses	4,967	14,252	14,581	15,109	16,269	17,009	17,632	18,280
Total	54,104	144,136	142,570	149,444	161,245	176,292	192,602	205,983
Transmission Expenses (4)	-	-	-	-	-	-	-	-
Administrative and General Expenses								
Property and Liability Insurance	1,661	4,641	4,755	4,867	5,034	5,125	5,227	5,332
Other A&G Expenses	7,727	15,934	13,893	14,620	16,141	17,486	19,394	21,480
Total	9,388	20,575	18,648	19,487	21,175	22,611	24,621	26,812
Total O&M Expenses	63,492	164,711	161,218	168,931	182,420	198,903	217,223	232,795
Depreciation Expense	30,415	73,176	73,608	74,148	74,743	75,420	76,164	76,992
Taxes Other than Income Taxes:								
Property Taxes (5)	-	-	-	-	-	-	-	-
Other (5)	1,959	5,105	5,378	5,615	5,870	6,131	6,442	6,731
Total	1,959	5,105	5,378	5,615	5,870	6,131	6,442	6,731
Income Taxes (6)	-	-	-	-	-	-	-	-
Total Operating Expenses	\$ 95,866	\$242,992	\$240,204	\$248,694	\$263,038	\$280,454	\$299,829	\$316,518
Generation (kWh x 10 ⁶)	2,376	5,980	6,461	6,745	6,745	6,745	6,745	6,715

(1) 5 months only

(2) Plant factor: 60%-1st 12 months; 65%-2nd 12 months; 70%-thereafter

(3) Includes provision for decommissioning

(4) Plant output is transmitted by the Bonneville Power Administration

(5) The Supply System is assessed a privilege tax in lieu of property taxes

(6) The Supply System is exempt from Income Tax liability

TABLE 600.001-2

ESTIMATED ANNUAL COST OF OPERATING
NUCLEAR GENERATING UNIT VNP-2
FOR FISCAL YEAR ENDING JUNE 30
(Dollars in Thousands)

	1984 ⁽¹⁾	1985	1986	1987	1988	1989	1990	1991
Operation and Maintenance Expenses								
Nuclear Power Generation:								
Nuclear Fuel Expense (2)	\$ 32,803	\$ 79,822	\$ 70,604	\$ 66,011	\$ 65,605	\$ 70,433	\$ 74,703	\$ 79,213
Other Operating Expenses (3)	9,773	30,818	39,197	42,408	45,910	49,924	54,299	59,065
Maintenance Expenses	4,967	14,252	14,581	15,189	16,269	17,009	17,632	18,280
Total	47,543	124,892	124,382	123,608	127,784	137,366	146,634	156,558
Transmission Expenses (4)	-	-	-	-	-	-	-	-
Administrative and General Expenses								
Property and Liability Insurance	1,661	4,641	4,755	4,867	5,034	5,125	5,227	5,332
Other A&G Expenses	7,727	15,934	13,893	14,620	16,141	17,486	19,394	21,480
Total	9,388	20,575	18,648	19,487	21,175	22,611	24,621	26,812
Total O&M Expenses	56,931	145,467	143,030	143,095	148,959	159,977	171,255	183,370
Depreciation Expense	30,415	73,176	73,608	74,148	74,748	75,420	76,164	76,992
Taxes Other than Income Taxes:								
Property Taxes (5)	-	-	-	-	-	-	-	-
Other (5)	1,861	4,816	5,105	5,228	5,368	5,547	5,752	5,990
Total	1,861	4,816	5,105	5,228	5,368	5,547	5,752	5,990
Income Taxes (6)	-	-	-	-	-	-	-	-
Total Operating Expenses	\$ 89,207	\$ 223,459	\$ 221,743	\$ 222,471	\$ 229,075	\$ 240,944	\$ 253,171	\$ 266,352
Generation (kWh x 10 ⁶)	1,980	4,818	4,818	4,818	4,818	4,818	4,818	4,818

(1) 5 months only

(2) Plant factor: 50%

(3) Includes provision for decommissioning

(4) Plant output is transmitted by the Bonneville Power Administration

(5) The Supply System is assessed a privilege tax in lieu of property taxes

(6) The Supply System is exempt from Income Tax liability

TABLE 600.001-3

ESTIMATED ANNUAL COST OF OPERATING
NUCLEAR GENERATING UNIT WNP-2
FOR FISCAL YEAR ENDING JUNE 30
(Dollars in Thousands)

	1984 ⁽¹⁾	1985	1986	1987	1988	1989	1990	1991
Operation and Maintenance Expenses								
Nuclear Power Generation:								
Nuclear Fuel Expense (2)	\$ 39,364	\$ 95,786	\$ 80,004	\$ 78,842	\$ 82,945	\$ 89,460	\$ 97,116	\$ 104,676
Other Operating Expenses (3)	9,773	30,818	39,197	42,408	45,910	49,924	54,299	59,065
Maintenance Expenses	4,967	14,252	14,581	15,189	16,269	17,009	17,632	18,280
Total	54,104	140,856	133,782	136,439	145,124	156,393	169,047	182,021
Transmission Expenses (4)	-	-	-	-	-	-	-	-
Administrative and General Expenses								
Property and Liability Insurance	1,661	4,641	4,755	4,867	5,034	5,125	5,227	5,332
Other A&G Expenses	7,727	15,934	13,893	14,620	16,141	17,486	19,394	21,480
Total	9,388	20,575	18,648	19,487	21,175	22,611	24,621	26,812
Total O&M Expenses	63,492	161,431	152,430	155,926	166,299	179,004	193,668	208,833
Depreciation Expense	30,415	73,176	73,608	74,148	74,748	75,420	76,164	76,992
Taxes Other than Income Taxes:								
Property Taxes (5)	-	-	-	-	-	-	-	-
Other (5)	1,959	5,056	5,246	5,420	5,628	5,833	6,089	6,372
Total	1,959	5,056	5,246	5,420	5,628	5,833	6,089	6,372
Income Taxes (6)	-	-	-	-	-	-	-	-
Total Operating Expenses	\$ 95,866	\$ 239,663	\$ 231,284	\$ 235,494	\$ 246,675	\$ 260,257	\$ 275,921	\$ 292,197
Generation (kWh X 10 ⁶)	2,376	5,782	5,782	5,782	5,782	5,782	5,782	5,782

(1) 5 months only

(2) Plant factor: 60%

(3) Includes provision for decommissioning

(4) Plant output is transmitted by the Bonneville Power Administration

(5) The Supply System is assessed a privilege tax in lieu of property taxes

(6) The Supply System is exempt from Income Tax liability

Q. 600.002

Indicate the estimated costs of permanently shutting down the facility, a list of what is included in such costs, the assumptions made in estimating the costs, the type of shutdown contemplated, and the source of funds to cover these costs.

Response:

It is planned to decommission the WNP-2 facility at the end of its operating life by placing the facility in protective storage for fifty years and then dismantle it with shipment of waste materials to appropriate repositories. The general activities necessary for placing it in protective storage are:

1. Detailed planning and preparation for placing in protective storage,
2. Final shutdown of the nuclear reaction,
3. Plant cooldown,
4. Fuel discharge into the spent fuel pool,
5. Shipment of the fuel to a permanent disposal site,
6. General decontamination of the facility,
7. Shipment of radioactive wastes to a disposal site,
8. Deactivation of plant systems not needed during the protective storage period,
9. Confinement of residual radioactivity, as appropriate,
10. Installation of intrusion alarms and barriers, and
11. Establishment of continuous surveillance.

Nonradioactive equipment and facilities will be salvaged, scrapped or converted to beneficial uses, as appropriate.

The total cost for decommissioning the facility is estimated to be \$57,000,000 in 1978 dollars, including \$26,800,000 for placing it in protective storage. A breakdown of the costs for shutting the plant down and placing it in protective storage is attached as Table 600.002-1.

The primary assumptions used for estimating these costs are:

1. 1978 dollars,
2. 1978 technology and nuclear regulations,
3. All radioactive wastes shipped to offsite repositories,
4. Thirty full power years of plant operation,
5. ALARA occupational exposure philosophy,
6. No unforeseen difficulties experienced while placing the plant in protective storage, and
7. Radiation dose rates based on measured data from operating plants.

Decommissioning of the Project will be financed by use of a decommissioning sinking fund. Payments into the fund during operation of the plant, together with investment income thereon, will result in the accumulation of sufficient monies to finance the subsequent decommissioning. Periodically, at intervals no longer than five years during commercial operations, the decommissioning technology and regulatory climate will be reviewed to determine if the payments into the sinking fund should be changed, and the payments will be adjusted accordingly.

TABLE 600.002-1

ESTIMATED COSTS FOR PREPARATIONS
FOR PASSIVE STORAGE

Cost Category	Estimated Costs (\$ millions)
Disposal of Radioactive Materials (Radioactive Wastes)	\$ 1.2
Staff Labor	11.3
Energy	2.1
Special Tools and Equipment	0.4
Miscellaneous Supplies	1.4
Specialty Contractors	0.2
Nuclear Insurance	0.5
Spent Fuel Shipment	3.8
Fuel Channel Disposal	0.6
Contingency (25%)	<u>5.3</u>
TOTAL	\$26.8

Q. 600.003

Provide an estimate of the annual cost to maintain the shut-down facility in a safe condition. Indicate what is included in the estimate, assumptions made in estimating the costs, and the source of funds to cover these costs.

Response:

The facility will be placed in protective storage as described above in the response to Question 600.002. The estimated annual cost for maintaining the protective storage is \$75,000 in 1978 dollars. A breakdown of these costs is attached as Table 600.003-1.

The primary assumptions used for estimating these costs are:

1. 1978 costs,
2. 1978 technology and nuclear regulations,
3. Multiple reactor site, and
4. Specialty contractors will be hired for site security, equipment maintenance, and radiation and environmental surveillance.

The source of funds for the protective storage will be the decommissioning sinking fund referred to in the response to Question 600.002.

WNP-2

TABLE 600.003-1
ESTIMATED ANNUAL COSTS FOR
WNP-2 PROTECTIVE STORAGE

Cost Category	Estimated Annual Cost (\$)
Surveillance and Maintenance Representative	\$ 6,500
Secretary	5,075
Repairman	2,710
Security	8,800
Third Party Inspection	7,500
Environmental Radiological Monitoring Program Personnel	14,230
Quality Assurance Specialist	1,000
Equipment and Supplies	1,000
Annual Allowance for Repairs	5,000
Utilities and Services	5,000
License Fee	650
NEL-PIA Insurance	2,500
Contingency (25%)	<u>14,991</u>
TOTAL	\$74,956

Q. 600.004

Provide copies of WPFSS's quarterly financial report for the most recent period. Also, provide a copy of the most recent "Annual Financial Report".

Response:

A copy of the Supply System's most recent quarterly financial report covering the period July 1, 1981 through October 1, 1981, and a copy of the Supply System's 1981 Annual Report have been submitted to the NRC. (See Reference 1.)

REFERENCE:

1. Letter G02-81-525, G. D. Bouchey to A. Schwender,
"Questions Concerning Financial Information", dated
December 15, 1981.

Q. 600.005

Provide copies of the official statement for WPPSS's most recent security issue and copies of the preliminary statement for any pending issue(s).

Response:

A copy of the September 1, 1981 official statement for nuclear projects 1, 2, and 3 has been submitted to the NRC. (See Reference 1 to Question 600.004.)

The next bond issuance is anticipated for early 1982. No preliminary bond statement has as yet been prepared for that issue.

Q. 600.006

Describe the legal basis for WPPSS's rate-setting authority and how it may be used to ensure that sufficient funds will be available to operate the facility and to eventually shut it down and maintain it in a safe shutdown condition.

Response:

The Supply System is a joint operating agency and a municipal corporation of the State of Washington organized under Chapter 43.52 of the Revised Code of Washington, as amended. The Supply System is composed of 19 operating public utility districts of the State of Washington and the cities of Richland, Seattle, Tacoma, and Ellensburg, Washington. Pursuant to its statutory authority, the Supply System is empowered to acquire, construct, and operate plants and facilities for the generation and transmission of electrical power and energy, but, as a supply agency, does not distribute power or sell at retail. Rather, it is reimbursed, pursuant to the provisions of the WNP-2 Net Billing Agreements, by the 94 Participants for all WNP-2 costs, whether or not the Project is completed, operable, or operating. See response to Question 600.007.

Q. 600.007

Describe the contractual provisions between WPPSS and its member municipal systems and ensure that sufficient funds will be available to operate the facility and to eventually shut it down and maintain it in a safe shutdown condition. Describe the municipals' rate-setting authority and the rate covenants from the municipals to WPPSS that ensure satisfaction of these requirements.

Response:

WNP-2 will be used for the generation of electrical energy. It will be financed, constructed, operated, and owned by the Supply System. Net Billing Agreements between the Supply System, the Bonneville Power Administration ("BPA"), and 94 statutory preference customers of BPA ("the Participants"), provide for the payment of project costs and the allocation of project capability.

The 94 Participants in WNP-2 consist of 27 municipalities, 21 public utility districts, 1 irrigation district, and 45 cooperatives. Of the total capability of WNP-2, the municipalities have contracted to purchase 22.6%, the districts have contracted to purchase 56.9%, and the cooperatives have contracted to purchase 20.5%. Under the Net Billing Agreements, each Participant will assign its share of the project capability to BPA. BPA's purchase of the capability of WNP-2 was authorized and approved by Congress in the Public Works Appropriations Acts of 1970 and 1971. BPA is obligated under the Net Billing Agreements to pay the Participants of WNP-2, and such Participants are obligated to pay the Supply System, the total annual costs of WNP-2, including debt service on the Net Billed Bonds issued on the Project, less amounts paid from other sources, whether or not WNP-2 is completed, operable, or operating and notwithstanding the suspension, reductions, or curtailment of WNP-2's output. Payments of project costs by the Participants to the Supply System will be credited against the billing made by BPA to the Participants for power and certain services. Each Participant has covenanted that it will establish, maintain, and collect rates or charges for power and energy and other services furnished through its electric utility properties which shall be adequate to provide revenues sufficient to make required payments to the Supply System.

For a more in-depth discussion of these contracts and their terms, see "Bonneville Contracts" under the caption "Bonneville Power Administration" in the September 1, 1981, official statement for Nuclear Projects 1, 2, and 3. (See Reference 1 to Question 600.004.)

Q. 600.008

Indicate the amount of WPPSS's most recent rate relief action and provide copies of the order authorizing the rates. Provide details of the amount and timing of any prospective rate increases.

Response:

The Supply System does not engage in the distribution of power to retail customers. It is authorized, among other things, to acquire, construct, and operate plants, works, and facilities for the generation and transmission of power to utilities. The Supply System does not have "rates", but is reimbursed for the costs of each project by the Participants therein. In any event, as a municipal corporation of the State of Washington, the Supply System is not under the jurisdiction of any regulatory agency having control over "rates and services" incidental to the proposed activity.

Q. 600.009

Indicate the current limit on WPPSS's bonded indebtedness and any prospective or requested increase in the limit. Indicate the current outstanding indebtedness that is applied to this limit.

Response:

The September 1, 1981 bond issuance for WNP-2 was for \$210,000,000. The Supply System has now issued \$1,695,000,000 of revenue bonds for WNP-2. It is estimated that the remaining financial requirements, based on the 1982 construction budget and the currently scheduled February 1984 commercial operation date, are \$811,000,000.

The WNP-2 1981 bonds are part of an issue of bonds authorized to be issued pursuant to the revised code of Washington, Chapter 43.52, as amended, and Resolution No. 640, adopted by the Board of Directors of the Supply System on June 26, 1973, as amended (the "Project No. 2 Resolution"), to pay the cost of the acquisition and construction of WNP-2. The WNP-2 1981 bonds were issued pursuant to a resolution supplemental to the Project No. 2 Resolution, Resolution No. 1184 (the "Project No. 2 Supplemental Resolution") adopted by such Board on September 4, 1981.

On November 3, 1981, the majority of voters of the State of Washington approved Initiative Measure No. 394. If enacted into law, the initiative will require the Supply System, after July 1, 1982, to obtain the approval of the voters of its 23 member governmental entities in order to issue bonds to finance the cost of construction of each of its projects. In the event voter approval for the issuance of bonds with respect to any project is not obtained and alternative sources or methods to finance completion of construction of such project is not available, the Supply System may be obligated to terminate the project. A termination of any of the Supply System's projects could have adverse effects on the projects of the Supply System not terminated. However, such termination would not affect the obligation of Bonneville or the Participants under the WNP-2 Net Billing Agreements.