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# REPORT TO THE CONGRESS



## Examination Of Financial Statements Of The Tennessee Valley Authority For Fiscal Year 1972 B-114850

*BY THE COMPTROLLER-GENERAL  
OF THE UNITED STATES*

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MARCH 27, 1973



COMPTROLLER GENERAL OF THE UNITED STATES  
WASHINGTON, D.C. 20548

B-114850

(1) To the President of the Senate and the  
Speaker of the House of Representatives

This is our report on the examination of the financial statements of the Tennessee Valley Authority for fiscal year 1972 made pursuant to the Government Corporation Control Act (31 U.S.C. 851). We have included as an appendix a description of TVA's retirement system, financial statements, and the certified public accounting firm's opinion thereon.

Copies of this report are being sent to the Director, Office of Management and Budget; the Secretary of the Treasury; and the Chairman, Board of Directors, Tennessee Valley Authority.

Comptroller General  
of the United States

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#### ABBREVIATIONS

AEC	Atomic Energy Commission
ANC	American Nuclear Corporation
TVA	Tennessee Valley Authority

D I G E S T

WHY THE EXAMINATION WAS MADE

The Government Corporation Control Act requires the Comptroller General to audit the Tennessee Valley Authority annually.

OPINION ON FINANCIAL STATEMENTS

In the opinion of the General Accounting Office, the Authority's financial statements present fairly its financial position at June 30, 1972, and the results of its operations and the changes in the financial position of its several programs for the year then ended, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year and with applicable Federal laws. (See p. 22.)

OTHER MATTERS OF INTEREST

Power program

Operating results--Net income from power operations in fiscal year 1972 was \$112.1 million, \$6.9 million less than in 1971. This reduction resulted primarily from a substantial increase in interest charges. (See p. 7.) Of the \$112.1 million, \$75.8 million was paid into the U.S. Treasury--\$55.8 million as a return on the Government's investment in power facilities and \$20 million as partial repayment of the investment as required by the Tennessee Valley

Authority (TVA) Act. The remaining \$36.3 million increased proprietary capital. (See p. 7.)

TVA issued \$550 million in bonds, bringing its long-term debt to \$1.225 billion at June 30, 1972. Net income for the latest 5 years was sufficient to permit TVA to issue additional bonds in fiscal year 1973 on a parity with its outstanding bonds. A \$150 million issue was sold in July 1972. (See p. 8.)

Nuclear power developments--TVA continues to experience delays in bringing its first nuclear power-plant, Browns Ferry, into commercial operation.

The plant was originally scheduled to begin operation in October 1970, but delays in equipment deliveries, modifications in project features, and technical difficulties in meeting Atomic Energy Commission (AEC) requirements have caused its rescheduling to August 1973.

The Sequoyah Nuclear Plant under construction and the Watts Bar Nuclear Plant are scheduled for commercial service in 1974 and 1977, respectively. (See p. 10.) The site has not been selected for a nuclear plant scheduled to operate commercially in September 1979. (See p. 11.)

The Nation's first large-scale breeder reactor demonstration plant

will be built and operated on the TVA system, with a target date for operation around 1980. This reactor, reportedly more efficient than reactors now in use, will be funded, in part, by both public and private segments of the electric utility industry. TVA's share will amount to about \$22 million over the next 10 years. AEC will contribute financial and technical support and other services and will supply all nuclear fuel. (See p. 11.)

Two corporations were formed to provide general direction to the project and to manage its construction and operation. TVA is represented on the Board of Directors of each corporation. (See p. 12.)

As part of the long-range fuel procurement for its nuclear plants, TVA purchased an interest in mineral rights on about 400,000 acres to be explored for uranium ore. TVA contracted to pay \$2 million for a 20-percent interest in the mineral rights with an option to purchase an additional 30-percent interest in 10-percent increments for \$1 million each. (See p. 14.)

Protecting the environment--TVA continued to provide controls to protect the environment from the potentially harmful effects of its various programs. TVA has a \$100 million program of installing electrostatic precipitators to remove fly ash particles from stack emissions at its older coal-fired plants.

In the next fiscal year, it plans to start construction of a test wet limestone scrubber system designed to control sulfur dioxide emissions from one large generating unit at the Widows Creek Steam Plant. (See p. 16.)

TVA is designing heated water discharge systems on new powerplants to insure that aquatic life will not be harmed. (See pp. 15 and 16.)

Radioactive materials released from TVA's nuclear plants will be greatly reduced by using an advanced treatment system. (See p. 16.)

TVA believes that it can responsibly protect the environment from the potentially harmful effects of pollutants from its steam-electric plants for about \$75 million a year. Added controls either already required or being considered could substantially increase this amount. (See p. 17.)

#### Fertilizer program

Developmental production--TVA is restructuring its fertilizer developmental production program to reduce the amount of appropriated funds needed to finance net program costs and capital outlays. (See p. 18.) The changes involve buying, rather than producing, certain materials used in fertilizer programs; dropping production of products containing nitrate; and modifying existing facilities, rather than building new ones, for new fertilizers. (See p. 19.)

#### RECOMMENDATIONS OR SUGGESTIONS

This report contains no recommendations or suggestions.

#### MATTERS FOR CONSIDERATION BY THE CONGRESS

This report, required by law, informs the Congress of the operations and financial conditions of TVA.

## CHAPTER 1

### INTRODUCTION

The Tennessee Valley Authority (TVA) is an independent Government corporation created by the Tennessee Valley Authority Act of May 18, 1933 (48 Stat. 58, 16 U.S.C. 831), to provide generally for the unified development of the Tennessee River system and to assist in developing other resources in the Tennessee Valley and adjoining areas. TVA generates, transmits, and sells electric power; controls floods; keeps navigable water in the Tennessee River; develops fertilizers and munitions; and plans for the proper use, conservation, and development of natural resources in the Tennessee Valley.

TVA activities are directed by its three-member Board of Directors. Members of the Board are appointed by the President, with the advice and consent of the Senate, to serve 9-year overlapping terms. The President designates one member as Chairman. Board members at June 30, 1972, and the expiration dates of their terms are:

Aubrey J. Wagner, Chairman	May 18, 1978
Don McBride	May 18, 1975

A vacancy existed on the Board at June 30, 1972, because the term of Mr. Frank E. Smith expired on May 18, 1972. Mr. William L. Jenkins was sworn in on December 1, 1972. His term expires May 18, 1981.

Mr. Lynn Seeber, TVA's General Manager, is responsible to the Board for carrying out its policies, decisions, and programs.

Additional information on TVA activities can be found in its annual report to the President and to the Congress, issued pursuant to the TVA Act.

## CHAPTER 2

### GENERAL COMMENTS

#### POWER OPERATIONS

TVA supplies power, at wholesale prices, to 160 municipal and cooperative electric systems which distribute power to more than two million customers in seven States. Power is sold also to 48 industrial consumers having large or unusual power requirements and to several Federal atomic, aerospace, and military installations.

Section 14 of the TVA Act requires that accounts of specified power activities be kept in accordance with the uniform system of accounting prescribed for electric utilities by the Federal Power Commission. Power program operating results for fiscal year 1972 are shown in exhibit II. The results are summarized and compared with those of fiscal year 1971, as follows:

	<u>1972</u>	<u>1971</u>	<u>Percent increase or decrease (-)</u>
	(000 omitted)		
Operating revenues:			
Sales of electric energy	\$622,591	\$579,322	7
Rents	<u>19,272</u>	<u>18,713</u>	3
Total operating revenues	641,863	598,035	7
Operating expenses	<u>481,312</u>	<u>449,519</u>	7
Operating income	160,551	148,516	8
Other income and deductions	<sup>a</sup> <u>51,913</u>	<sup>a</sup> <u>48,153</u>	8
Total income	212,464	196,669	8
Interest charges	<u>100,340</u>	<u>77,665</u>	29
Net income	112,124	119,004	-6
Payment of return on appropriation investment	<u>55,810</u>	<u>65,147</u>	-14
Increase in retained earnings	<u>\$ 56,314</u>	<u>\$ 53,857</u>	5

<sup>a</sup>Interest income and interest capitalized on construction and nuclear fuel costs.



Although fiscal year 1972 operating income from power operations increased \$12 million, or 8 percent, over that of 1971, net income decreased \$6.9 million, or 6 percent, primarily because interest charges in 1972 were \$22.7 million higher than in 1971. TVA's 1972 payment to the Treasury as a return on the appropriation investment was lower than that in 1971 by more than \$9.3 million, primarily because the average interest rate used in computing the payment was lower in 1972 than in 1971. The payment in 1973 will be about \$2 million less than in 1972 because of a reduction in the appropriation investment and a further decline in the average interest rate used in computing the payment.

Retained earnings from 1972 power operations increased \$2.5 million, from \$53.8 million in 1971 to \$56.3 million in 1972.

TVA sales of electricity to Federal agencies increased in 1972 by 6 percent over 1971 and will continue to grow over the next several years because of additional power requirements of the Atomic Energy Commission (AEC). AEC has contracted to incrementally increase its purchases to reach a total of 3,165,000 kilowatts by 1976, contingent upon TVA's having adequate capacity available.

#### RATE ADJUSTMENTS

The act requires TVA to sell power at rates as low as feasible but adequate to maintain the financial soundness of the power program. To comply with this requirement, TVA and a committee representing the distributors review current and prospective power revenues and expenses quarterly. After the review the Board determines whether a rate adjustment is needed. The rates were increased in October 1970. The rates were not adjusted during fiscal year 1972; however, the Board approved a rate increase effective January 2, 1973.

#### PROPRIETARY CAPITAL AND PAYMENTS TO THE TREASURY

From the inception of TVA in 1933 to June 30, 1972, the United States made available to TVA \$2.692 billion in proprietary capital through appropriations, bond purchases, and property transfers. During the same period TVA repaid

\$457 million to the Treasury, retained earnings of \$771 million from its power program, and incurred net expenses of \$538 million on its other programs. At June 30, 1972, the Government's proprietary capital in TVA was \$2.468 billion. The following tabulation of the equity of the United States in TVA presents this information in detail.

	<u>Power</u>	<u>Nonpower</u>	<u>Total</u>
	----- (000 omitted) -----		
Appropriations, property transfers, and bonds issued:			
Appropriations by the Congress	\$1,383,558	\$1,189,716	\$2,573,274
Property transfers from other agencies, net	21,305	32,053	53,358
Bonds issued to the Treasury and the Reconstruction Finance Corporation	<u>65,072</u>	<u>-</u>	<u>65,072</u>
Total	<u>1,469,935</u>	<u>1,221,769</u>	<u>2,691,704</u>
Less:			
Repayments to the general fund of the Treasury:			
Through June 30, 1947--under section 26 of the TVA Act	15,059	7,875	22,934
Through June 30, 1972--under section 26 of the TVA Act and title II of the Government Corporations Appropriation Act, 1948	170,000	33,711	203,711
Through June 30, 1972--under section 15d of the TVA Act	165,000	-	165,000
Bonds redeemed (\$56,500,000 under title II of the Government Corporations Appropriation Act, 1948)	<u>65,072</u>	<u>-</u>	<u>65,072</u>
Total	<u>415,131</u>	<u>41,586</u>	<u>456,717</u>
Net investment of Treasury funds	1,054,804	1,180,183	2,234,987
Retained earnings from power program	771,050	-	771,050
Net expense of nonpower programs	<u>-</u>	<u>-538,136</u>	<u>-538,136</u>
Total proprietary capital	<u><sup>a</sup>\$1,825,854</u>	<u>\$ 642,047</u>	<u><sup>a</sup>\$2,467,901</u>

<sup>a</sup>Does not include short-term notes payable to the Treasury, which totaled \$100,000,000 at June 30, 1972.

The TVA Act requires TVA to pay the Treasury each year, beginning with fiscal year 1961, a part of the net appropriation investment in power facilities and a return on the outstanding investment. The required payments of the net appropriation investment are as follows: \$10 million annually for the first 5 years, \$15 million annually for the next 5 years, and \$20 million annually thereafter until \$1 billion has been repaid. Payments due may be deferred for not more than 2 years, but the Board of Directors has not exercised this option. TVA had repaid \$165 million under this provision at June 30, 1972.

The required payment to the Treasury of an annual return on the net appropriation investment in power facilities is based on the average interest rate payable by the Treasury on its total marketable public obligations at the beginning of the fiscal year, and such rate is applied to the unrepaid appropriation investment as of that time. The 12 annual payments of the return on the appropriation investment that had been made as of June 30, 1972, amounted to \$569.2 million, including a payment of \$55.8 million in fiscal year 1972.

During fiscal year 1973 TVA will be required to pay the Treasury from power proceeds \$20 million as a repayment of the appropriation investment and \$53.8 million as a return on the investment. Computation of the return was based on the unrepaid appropriation investment of \$1.055 billion at July 1, 1972, and on the average Treasury interest rate of 5.099 percent at that date.

## BORROWING AUTHORITY

TVA is authorized, under section 15d of the act, to issue and sell bonds, notes, and other evidence of indebtedness up to \$5 billion outstanding at any one time to assist in financing its power program. Section 15d states that the time of issuance and maximum interest rates to be borne by the obligations are subject to approval by the Secretary of the Treasury, who is authorized to purchase TVA interim obligations up to \$150 million outstanding at any one time. Debt service on these obligations is payable solely from TVA's net power proceeds and has precedence over repayments of the appropriation investment and payments of a return on investment to the Treasury. Bond sales, which began in 1960, totaled \$1.225 billion as of June 30, 1972.

Under section 3.4 of the Basic Tennessee Valley Authority Power Bond Resolution, adopted October 6, 1960, TVA's net power income for the latest 5 fiscal years must have totaled at least \$200 million before bonds on a parity with those outstanding can be issued. Moreover, that minimum requirement is increased by \$15 million for each one quarter of 1 percent (or major fraction thereof) by which the average interest rate that TVA is required to use in calculating the annual return on the appropriation investment in power has exceeded 3.25 percent during those 5 years.

TVA met the requirement for the 5 years ended June 30, 1971, and sold \$550 million in bonds in four issues during fiscal year 1972. TVA also met the requirement for the 5 years ended June 30, 1972; therefore, bonds on a parity with those outstanding can be issued during fiscal year 1973. TVA sold \$150 million worth of bonds in July 1972.

At June 30, 1972, TVA had outstanding short-term notes of \$630 million payable to the public, a reduction of \$50.3 million over the amount outstanding at the beginning of the fiscal year. Short-term notes payable to the Treasury at June 30, 1972, amounted to \$100 million, the same as at June 30, 1971. As the obligations payable to the Treasury became due during the year, new obligations in like amounts replaced them.

## CONSTRUCTION PROGRAM

At June 30, 1972, TVA's gross investment in fixed assets was \$5.501 billion, an increase of \$595 million over the investment at June 30, 1971. A summary of the differences in the fiscal year-end balances of the individual categories of fixed assets is shown below.

	<u>Balance</u> <u>June 30, 1971</u>	<u>Balance</u> <u>June 30, 1972</u>	<u>Increases</u>
	(000 omitted)		
Completed plant	\$3,954,636	\$4,077,140	\$122,504
Construction in progress	905,720	1,354,849	449,129
Investigations for future projects	4,261	4,926	665
Nuclear fuel	<u>41,500</u>	<u>63,860</u>	<u>22,360</u>
	<u>\$4,906,117</u>	<u>\$5,500,775</u>	<u>\$594,658</u>

During fiscal year 1972 additions to construction work in progress amounted to \$588 million and transfers to the completed plant amounted to \$138.9 million, which resulted in a \$449.1 million increase in construction in progress.

Construction in progress at June 30, 1972, was primarily for powerplants and related facilities. TVA has 16 million kilowatts of capacity under construction or on order. Most of this new capacity will be provided by large nuclear units. However, peaking capacity--units normally used only during periods of highest power demands--is being boosted by a large pumped-storage hydroelectric project and by gas turbines. TVA's estimate of the scheduled dates of commercial operation for the major generating units under construction follows.

<u>Project</u>	<u>Unit number</u>	<u>Nameplate capacity (kilowatts)</u>	<u>Scheduled commercial service date</u>
Raccoon Mountain	1	382,500	November 1974
Pumped-Storage	2	382,500	February 1975
Project	3	382,500	May 1975
	4	382,500	August 1975
Browns Ferry Nuclear	1	1,152,000	August 1973
Plant	2	1,152,000	April 1974
	3	1,152,000	October 1974
Sequoyah Nuclear Plant	1	1,220,580	November 1974
	2	1,220,580	July 1975
Cumberland Steam Plant	1	1,300,000	November 1972
	2	1,300,000	April 1973

The Browns Ferry Nuclear Plant, TVA's first such plant, originally scheduled for commercial operation in October 1970, is expected to be in service in August 1973. Operational dates have been rescheduled primarily due to delays in equipment deliveries, modifications in the scope of project features, and technical difficulties in meeting requirements for environmental protection and engineered safeguards. The most recent delay on the first power unit, from October 1972 to August 1973, was caused by major changes requested by AEC in the preoperational testing program and by modifications in several systems to meet AEC's new requirements for operating licenses. The operation of the second and third units has also been delayed 9 and 8 months, respectively, for the same reasons.

Operation of the Sequoyah Nuclear Plant will be delayed 4 months, from July to November 1974, because of the need to redesign the polar crane wall within the reactor building and to modify the safety-related piping systems. The expected date of operation of the first unit at the Watts Bar Nuclear Plant has been changed from August 1976 to May 1977 primarily because of revisions in AEC's licensing requirements.

Construction continued during fiscal year 1972 on the coal-fired Cumberland Steam Plant and the Raccoon Mountain Pumped-Storage Project. The first unit of the Cumberland Steam Plant began initial operation in April 1972; however, because of excessive vibration the unit cannot be operated at its nameplate capacity, so TVA does not consider it to be in commercial operation. According to TVA, the unit was being operated at less than capacity--900 megawatts--instead of being shut down and modified because power was needed during the summer to meet interchange agreements and to maintain adequate system reserves. TVA estimated that the first unit would begin commercial operation in November 1972 and the second unit in April 1973.

The first unit of the Raccoon Mountain Pumped-Storage Project is scheduled for operation in 1974 and succeeding units in 1975. When the project is operational, water will be pumped from the Tennessee River into a mountaintop reservoir during offpeak periods and will be released to generate power during peak periods.

The hydroelectric generating unit at Tims Ford Dam was placed in commercial operation in March 1972. The project adds 45,000 kilowatts of capacity to the TVA system primarily for peaking purposes.

TVA has ordered a nuclear plant, in addition to the power units under construction and the Watts Bar Nuclear Plant, but the site has not yet been selected. The first unit of this plant is tentatively scheduled to begin operation in September 1979. TVA also has invited bids for nuclear plants scheduled for service in 1980-82.

#### TVA PARTICIPATION IN BREEDER REACTOR DEMONSTRATION PROGRAM

The President, in his June 1971 message to the Congress on energy resources, announced a broad range of actions proposed for private industry and the Government to find new sources of energy and to find sources that would not pollute the environment. The fast breeder reactor was one means offered for meeting the Nation's growing demand for economical clean energy. To facilitate research and development for clean energy, the President's program included a commitment to successfully demonstrate the liquid metal fast breeder reactor by 1980.

In January 1972 AEC accepted as a basis for further negotiation a joint proposal submitted by the Commonwealth Edison Company of Chicago and TVA to build and operate the Nation's first large-scale fast breeder reactor demonstration plant. The Commonwealth-TVA plan contemplates a breeder reactor plant with a capacity of 300,000 to 500,000 kilowatts. The plant will be on the TVA system near Oak Ridge, Tennessee.

The major objectives in the construction and demonstration operation of the plant on an electric utility system are to

- demonstrate the potential value and environmental desirability of the fast breeder reactor concept as a practical future source of electric power;
- confirm the value of this concept for conserving important nonrenewable natural resources;
- develop important technological and economic data for the benefit of the Government, industry, and the public; and
- provide a broad base of experience and information for commercial and industrial application of the fast breeder reactor concept.

According to TVA the fast breeder reactor produces more nuclear fuel than it consumes and is estimated to capture from 60 to 80 percent of the potential energy available in uranium compared with only about 2 percent in today's light-water reactors.

Two corporations were formed to oversee the fast breeder demonstration program. The Breeder Reactor Corporation will provide general direction, arrange for utility industry funds, and serve as liaison with participating utilities. The Project Management Corporation will manage the project and report and analyze data on the construction and operation of the program. TVA is represented on the Board of Directors of each corporation.

Funding of the demonstration program is a cooperative venture with AEC and all segments of the electric utility



industry, both public and private, contributing. The participants have pledged about \$250 million. Each utility will contribute its share based on an industrywide financial formula using 1970 power sales and will make payments in 10 equal annual installments beginning in 1972. Under the formula TVA's share will amount to about \$22 million, or about \$2.2 million in each of the next 10 years. Also AEC will contribute financial and technical support and other services and will supply all nuclear fuel. AEC has estimated that the cost of the program will be about \$700 million.

Under an August 1972 memorandum of understanding of the principal features of the arrangement which AEC, TVA, Commonwealth, and the Breeder Reactor and Project Management Corporations intend to incorporate in subsequent definitive agreements, TVA and Commonwealth will provide about \$2 million each in nonreimbursable services to the project.

TVA will own the power produced by the demonstration plant and will reimburse the project for the energy on the basis of the value of the net output to the TVA system. In addition to providing the site for the plant, TVA will provide the transmission facilities to connect the project switchyard with TVA's power system.

TVA anticipates that the plant should be ready for operation in 1980 but a precise construction schedule has not been developed. Proposals for the plant's equipment were received and were being evaluated by the Project Management Corporation and AEC at the date of our examination.

PURCHASE OF INTEREST IN  
URANIUM MINERAL RIGHTS

As part of the long-range fuel procurement for its nuclear plants, TVA purchased in April 1972 a 20-percent undivided interest in common in the mineral rights to about 400,000 acres controlled by American Nuclear Corporation (ANC) in Wyoming which are to be explored for uranium. TVA will pay \$2 million for the 20-percent interest over a 2-year period ending May 31, 1973, with options to purchase an additional 30-percent interest in the ANC properties in 10-percent increments until a 50-percent interest has been acquired. TVA will pay \$1 million for each additional 10-percent interest acquired.

ANC is obligated to spend the purchase money received from TVA to explore for uranium ore on the jointly owned properties, except that approximately 10 percent of the money can be used to acquire additional properties to be included in the exploration program.

According to the agreement, as uranium ore is discovered on specific properties, the properties may be transferred to the exclusive control of either TVA or ANC. TVA has the right to the properties on which the first 10 million pounds of uranium ore are discovered, and ANC has the right to those properties on which the next 10 million pounds are discovered. Thereafter the property for each additional 5 million pounds is alternately transferred to TVA or ANC.

TVA will pay ANC \$125,000 each year between 1971 and 1976, in addition to the amount paid for the mineral rights, as TVA's share of general and administrative expenses and 50 percent of annual royalty and lease payments due on the jointly owned properties.

Although uranium exploration is generally considered highly speculative, TVA has received an opinion from a consultant that it is likely that profitable deposits of uranium will be discovered on some ANC properties.

According to TVA, satisfactory arrangements have already been made to satisfy the fuel requirements for the first several years of operation of the nine nuclear units now under construction or on order. However, beginning in 1978,

TVA will need several million pounds of uranium each year through 1985 with the need averaging 8 million pounds a year between 1981 and 1985. The 8 million pounds represent 30 percent of the total 1970 uranium production in the United States.

Because of the expected increase in demand for uranium in the late 1970s and the 1980s, the short supply of known or projected uranium reserves, and less exploration for uranium caused by soft market conditions, TVA believes the situation offers TVA and other utilities an opportunity to engage in exploration for uranium ore to insure a sufficient supply. Since the agreement with ANC is designed to help provide only a part of TVA's future uranium requirements, TVA anticipates entering into more exploration ventures and is also considering other methods of meeting its future uranium needs.

#### MEETING ENVIRONMENTAL NEEDS

The generation of electricity at steam-electric plants produces several pollutants which could adversely affect air and water quality in the Tennessee Valley if measures were not taken to control them. Principal pollutants are fly ash particles, heated water discharges, radioactive materials, and sulfur gases. According to TVA, equipment has been developed to provide a high degree of control on all but the emission of gaseous sulfur dioxide and various processes are being tested for its control.

TVA is involved in a \$100 million program of installing electrostatic precipitators for removing fly ash particles from stack emissions at its older coal-fired steamplants. The precipitators, scheduled to be completed on all units by 1975 or 1976, are expected to bring the system's average fly ash collection efficiency to about 98 percent.

TVA is designing heated water discharge systems on new powerplants for optimum effectiveness at each plant site to insure that aquatic life will not be harmed by the heated water. To accomplish this objective, TVA designed some plants to carry the heated water through large diffuser pipes laid across the bottom of the river channel where the heated water will discharge from thousands of holes and mix effectively with the cooler, overflowing river water. Where

the diffuser systems are insufficient to protect aquatic life or do not meet the strict water temperature regulations, other means, such as closed-cycle cooling towers, are used. In the closed-cycle system, the temperature of the discharged water is lowered as it gives up its heat to the tower's cool air updrafts and the cooled water is returned to the plant.

The Browns Ferry nuclear plant was originally designed with only the diffuser pipe system but TVA is now adding cooling towers at an estimated cost of \$43 million.

Radioactive materials released from TVA nuclear plants will be greatly reduced by use of an advanced gaseous treatment system. TVA reports the new system will keep radioactivity at the Browns Ferry plant boundary well within AEC guidelines.

One of the most challenging problems facing TVA and other electric utilities is developing a successful process for removing sulfur dioxide from coal-burning powerplant stack gases. Coal cannot now be burned without discharging sulfur into the air.

In his June 1971 message to the Congress, the President recognized sulfur emissions as a major bottleneck in the clean energy program and urged immediate efforts to achieve commercial-scale demonstrations in sulfur oxide control technology.

Currently there is no commercially demonstrated process for removing sulfur dioxide from stack gases of large generating units. To advance technology in this area, TVA plans to install a full-scale limestone wet scrubber facility on a 550,000-kilowatt unit at its Widows Creek Steam Plant. This process is considered the most promising for early development on large powerplants. The current estimated cost of the facility, now scheduled to begin operation in 1975, is \$36 million.

Federal and State regulations to be effective between 1975 and 1978 drastically limit the emission level of sulfur dioxide. TVA reports that it can avoid harmful levels of sulfur dioxide concentrations at ground level by dispersing

the gas from very tall stacks and by cutting back on generation at a plant when local meteorological conditions interfere with proper dispersal.

TVA believes it can responsibly protect the environment from the potentially harmful effects of pollutants from its steam-electric plants for about \$75 million annually. Added controls either already required or those being considered, however, could substantially increase this amount.

TVA also reports it is correcting other environmental problems of electricity production. These include making transmission lines and substations less noticeable by taking advantage of better design and siting of structures, local topography, and landscaping and by developing increasingly effective methods for reclaiming lands strip mined for coal.

In December 1971 TVA strengthened its strip-mine reclamation requirements by delineating more precise standards for suppliers. Term contracts for the purchase of coal now require TVA approval of a detailed mining and reclamation plan before producers can qualify as approved bidders. To provide a more workable enforcement procedure, TVA withholds portions of the amounts due under the contracts, places the withheld funds in a reserve account, and pays them with interest when the required reclamation is satisfactorily completed. This money is available for TVA to perform any reclamation not satisfactorily completed by the contractors. Contractors remain liable for reclamation costs that exceed the amounts in the reserve account. TVA is seeking to renegotiate existing coal supply contracts to incorporate these provisions.

CHANGES UNDERWAY IN FERTILIZER  
DEVELOPMENTAL PRODUCTION PROGRAM

TVA is changing its fertilizer developmental production program to reduce the amount of Federal appropriations needed each year to finance the net program operating expense and the cost of modernizing and constructing chemical facilities. The focal point of the fertilizer research and development programs is the National Fertilizer Development Center at Muscle Shoals, Alabama.

In recent years mounting fertilizer development production expenditures and declining income from the sale of fertilizer products, byproducts, and miscellaneous sources have caused an increasingly larger deficit in TVA's developmental production operation. These deficits have been financed from several sources, including the use of appropriated funds.

Fiscal year	Net income or deficit(-)	Sources of funds to cover deficit	
		<u>Appropriated</u>	<u>Other (note a)</u>
1965	\$1,782,000	\$ -	\$ -
1966	58,000	-	-
1967	-2,653,000	-	2,653,000
1968	-1,006,000	328,000	678,000
1969	-1,955,000	1,378,000	577,000
1970	-3,781,000	2,072,000	1,709,000
1971	-5,160,000	1,986,000	3,174,000
1972	-6,913,000	6,310,000	603,000

<sup>a</sup>Includes reduction of inventories, prior years' fund accumulations, sale of Florida phosphate land, sales of other land and equipment, and miscellaneous receipts.

At the request of the Office of Management and Budget, TVA analyzed its fertilizer developmental production program to reduce the net expense of developmental production. As a result of the analysis, TVA is restructuring the present program to minimize operating costs by shifting production of basic phosphate raw materials and certain intermediate materials from TVA to private producers, dropping production of all products containing nitrates, and modifying present

facilities to produce urea-ammonium phosphate fertilizers rather than building new facilities.

TVA will close its phosphate-mining operation in Tennessee and shut down all phosphorus electric furnaces and phosphoric acid plants at Muscle Shoals. Wet-process phosphoric acid will be purchased from private industry to replace the furnace phosphoric acid now produced by TVA and used in most of TVA's fertilizers. The wet-process phosphoric acid costs considerably less than furnace acid, and this advantage is expected to continue.

TVA plans to phase out use of furnace acid by the end of fiscal year 1974 if it can obtain a reliable, economical supply of wet-process acid and can complete the needed technical development to use wet-process acid in producing all the fertilizers planned. In fiscal year 1972 TVA retired one of its phosphorus furnaces which had an undepreciated asset value of \$3.2 million. TVA will accelerate the depreciation charges on the two remaining phosphorus furnaces so that the \$8 million investment will be written off by the end of fiscal year 1974.

TVA had planned to phase out over several years the production of products containing nitrates as the new urea-ammonium phosphates were added. Under the new plan, products with nitrates will be dropped from the developmental program by the end of fiscal year 1973 before the urea-ammonium phosphates are introduced. This change in plans will result in substantially closing nitric acid plants at the end of fiscal year 1973. TVA reports this move will eliminate the need for about \$1.4 million worth of pollution abatement equipment to meet nitrogen oxide emission standards.

The last step in the plan adopted by TVA involves modifying the existing granular combination fertilizer plant to produce urea-ammonium phosphates instead of constructing new facilities. TVA estimates that appropriation requirements for the fertilizer developmental production program for fiscal years 1973 and 1974 will be about \$5.8 million each year but will drop to about half this amount from 1975 through 1978 when the full effect of the plan is felt. Not building facilities for producing and storing both urea and nitrates will save about \$2.7 million.

Implementation of the plan to eliminate phosphate mining; production of phosphorus, phosphoric acid, and nitric acid; and, the operation of one rather than two granulation plants reportedly will drastically reduce operation and maintenance personnel between fiscal years 1973 and 1975.



## CHAPTER 3

### SCOPE OF EXAMINATION

Our examination of TVA's balance sheet as of June 30, 1972, and the related statements of power and nonpower programs and of changes in financial position for the year then ended was made in accordance with generally accepted auditing standards and included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

As provided by section 15d(c) of the TVA Act, TVA employs a firm of certified public accountants to audit its accounts and financial statements for each fiscal year, to facilitate its issuance and sale of revenue bonds. The audit does not take the place of that required of our Office. We observed and tested the firm's audit work.

## CHAPTER 4

### OPINION ON FINANCIAL STATEMENTS

In our opinion, TVA's financial statements (exhibits I through IV and schs. A through F) present fairly its financial position at June 30, 1972, and the results of its operations and the changes in the financial position of its several programs for the year then ended, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year and with applicable Federal laws.

The public accounting firm's opinion on the financial statements follows.

LYBRAND, ROSS BROS. & MONTGOMERY  
CERTIFIED PUBLIC ACCOUNTANTS

COOPERS & LYBRAND  
IN PRINCIPAL AREAS  
OF THE WORLD

BEST DOCUMENT AVAILABLE

To the Board of Directors of  
Tennessee Valley Authority:

We have examined the accompanying financial statements of TENNESSEE VALLEY AUTHORITY at June 30, 1972 and 1971 and for the years then ended. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

In our opinion, Exhibits I, II, III and IV of the aforementioned financial statements present fairly:

- (1) the financial position of the Authority at June 30, 1972 and 1971, and the results of operations and changes in financial position of its several programs for the years then ended; and
- (2) the assets and liabilities of the Authority at June 30, 1972 and 1971, relating to the power program, and the results of operations and changes in financial position of that program for the years then ended,

all in conformity with generally accepted accounting principles applied on a consistent basis.

The supplemental information appearing in Schedules A to F, inclusive, which has been subjected to audit procedures applied in the examination of the basic financial statements, is, in our opinion, fairly stated in relation to the basic financial statements taken as a whole.

*Lybrand, Ross Bros. + Montgomery*

New York, August 25, 1972  
(December 13, 1972, as to  
Note 8, first paragraph,  
last sentence)

**TENNESSEE VALLEY AUTHORITY**

(A CORPORATION WHOLLY OWNED BY THE UNITED STATES OF AMERICA)

**BALANCE SHEETS JUNE 30, 1972 AND 1971**

**A S S E T S**

	Power program		All programs	
	1972	1971	1972	1971
	(Thousands)			
PROPERTY, PLANT, AND EQUIPMENT, substantially all at original cost				
Completed plant; schedule A				
Multipurpose dams; note 1	\$ 488,644	\$ 478,298	\$1,010,967	\$ 962,191
Single-purpose dams	66,876	63,688	66,876	63,688
Steam production plants	1,713,992	1,697,729	1,713,992	1,697,729
Other electric plant	1,134,849	1,078,137	1,134,849	1,078,137
Other plant	-	-	150,457	152,891
	<u>3,404,361</u>	<u>3,317,852</u>	<u>4,077,141</u>	<u>3,954,636</u>
Less accumulated depreciation and depletion; note 2	<u>1,075,425</u>	<u>997,916</u>	<u>1,201,213</u>	<u>1,117,576</u>
	<u>2,328,936</u>	<u>2,319,936</u>	<u>2,875,928</u>	<u>2,837,060</u>
Construction and investigations in progress; schedule B and note 3	1,294,367	822,362	1,359,775	909,981
Nuclear fuel in process of fabrication	<u>63,860</u>	<u>41,500</u>	<u>63,860</u>	<u>41,500</u>
 Total property, plant, and equipment	<u>3,687,163</u>	<u>3,183,798</u>	<u>4,299,563</u>	<u>3,788,541</u>
CURRENT ASSETS				
Cash	50,763	20,769	86,835	43,982
Accounts receivable	61,170	54,536	70,453	62,643
Inventories, principally at average cost	<u>109,323</u>	<u>83,132</u>	<u>114,565</u>	<u>88,469</u>
 Total current assets	<u>221,256</u>	<u>158,437</u>	<u>271,853</u>	<u>195,094</u>
DEFERRED CHARGES				
Unamortized debt discount and expense; note 2	11,034	9,428	11,034	9,428
Other	<u>647</u>	<u>762</u>	<u>647</u>	<u>762</u>
 Total deferred charges	<u>11,681</u>	<u>10,190</u>	<u>11,681</u>	<u>10,190</u>
 Total assets	<u>\$3,920,100</u>	<u>\$3,352,425</u>	<u>\$4,583,097</u>	<u>\$3,993,825</u>

Notes 1 through 8 following the exhibits are an integral part of the financial statements.

\*Deduct

**BEST DOCUMENT AVAILABLE**

## L I A B I L I T I E S

	Power program		All programs	
	1972	1971	1972	1971
	(Thousands)			
<b>PROPRIETARY CAPITAL</b>				
Appropriation investment; note 4				
Total congressional appropriations	\$1,383,558	\$1,380,199	\$2,573,274	\$2,506,124
Transfers of property from other Federal agencies	<u>21,305</u>	<u>21,077</u>	<u>53,358</u>	<u>52,944</u>
	1,404,863	1,401,276	2,626,632	2,559,068
Less repayments to General Fund of the U. S. Treasury; note 5	<u>350,059</u>	<u>330,059</u>	<u>391,645</u>	<u>371,611</u>
Appropriation investment	1,054,804	1,071,217	2,234,987	2,187,457
Retained earnings of power program; exhibit II	771,050	714,736	771,050	714,736
Accumulated net expense of nonpower programs; exhibit III	<u>-</u>	<u>-</u>	<u>538,136*</u>	<u>494,128*</u>
Total proprietary capital	<u>1,825,854</u>	<u>1,785,953</u>	<u>2,467,901</u>	<u>2,408,065</u>
LONG-TERM DEBT; note 6	<u>1,225,000</u>	<u>675,000</u>	<u>1,225,000</u>	<u>675,000</u>
SHORT-TERM NOTES; note 6	<u>730,000</u>	<u>780,300</u>	<u>730,000</u>	<u>780,300</u>
<b>OTHER CURRENT LIABILITIES</b>				
Accounts payable	102,047	88,730	110,719	97,747
Employees' accrued leave	11,300	9,714	20,977	18,680
Payrolls accrued	12,278	3,840	14,879	5,145
Interest accrued	<u>12,558</u>	<u>7,873</u>	<u>12,558</u>	<u>7,873</u>
Total other current liabilities	<u>138,183</u>	<u>110,157</u>	<u>159,133</u>	<u>129,445</u>
<b>DEFERRED CREDITS</b>				
Unamortized debt premium; note 2	<u>165</u>	<u>234</u>	<u>165</u>	<u>234</u>
CONTRIBUTIONS IN AID OF CONSTRUCTION	<u>898</u>	<u>781</u>	<u>898</u>	<u>781</u>
<b>COMMITMENTS; note 3</b>				
Total liabilities	<u>\$3,920,100</u>	<u>\$3,352,425</u>	<u>\$4,583,097</u>	<u>\$3,993,825</u>

E.

**TENNESSEE VALLEY AUTHORITY**  
**POWER PROGRAM**  
**NET INCOME AND RETAINED EARNINGS**  
**FOR THE YEARS ENDED JUNE 30, 1972 AND 1971**

	1972		1971	
	kWh	Amount	kWh	Amount
	(Thousands)			
<b>OPERATING REVENUES</b>				
Sales of electric energy				
Municipalities and cooperatives	57,820,337	\$415,349	55,534,621	\$379,189
Federal agencies	12,501,761	73,255	11,773,513	61,840
Industries	19,591,953	124,308	21,278,275	125,014
Electric utilities	539,724	6,250	1,407,313	10,109
Total outside sales	90,453,775	619,162	89,993,722	576,152
Interdivisional	636,631	3,429	653,925	3,170
Total sales of electric energy	<u>91,090,406</u>	<u>622,591</u>	<u>90,647,647</u>	<u>579,322</u>
Rents		19,272		18,713
Total operating revenues		<u>641,863</u>		<u>598,035</u>
<b>OPERATING EXPENSES; schedule C</b>				
Production		325,567		306,111
Transmission		17,779		16,905
Customer accounts		442		426
Demonstration of power use		1,158		1,178
Administrative and general		24,031		22,006
Payments in lieu of taxes		25,726		19,961
Social security taxes		3,210		2,930
Provision for depreciation		83,399		80,002
Total operating expenses		<u>481,312</u>		<u>449,519</u>
Operating income		160,551		148,516
<b>OTHER INCOME AND DEDUCTIONS</b>				
Interest income		54		29
Allowance for funds used (construction and nuclear fuel); note 2		52,023		48,131
Other		164*		7*
Total other income and deductions		<u>51,913</u>		<u>48,153</u>
Income before interest charges		<u>212,464</u>		<u>196,669</u>
<b>INTEREST CHARGES</b>				
Interest on long-term debt		69,028		48,603
Other interest expense; note 2		31,140		29,003
Amortization of long-term debt discount, expense, and premium, net; note 2		172		59
Total interest charges		<u>100,340</u>		<u>77,665</u>
NET INCOME		112,124		119,004
Payment of return on appropriation investment; note 5		55,810		65,147
Increase in retained earnings		56,314		53,857
Retained earnings at beginning of period		714,736		660,879
Retained earnings at end of period		<u>\$771,050</u>		<u>\$714,736</u>

Notes 1 through 8 following the exhibits are an integral part of the financial statements.

\*Deduct

EXHIBIT III

Page 1

TENNESSEE VALLEY AUTHORITY

NONPOWER PROGRAMS  
NET EXPENSE AND ACCUMULATED NET EXPENSE  
FOR THE YEARS ENDED JUNE 30, 1972 AND 1971

	<u>1972</u>	<u>1971</u>
	(Thousands)	
WATER RESOURCES DEVELOPMENT		
Navigation operations		
Studies and investigations	\$ 823	\$ 907
Operation and maintenance of facilities	<u>4,926</u>	<u>5,001</u>
Total expense of navigation operations	<u>5,749</u>	<u>5,908</u>
Flood control operations		
Studies and investigations	899	749
Operation and maintenance of facilities	3,914	3,743
Local flood control improvements	<u>68</u>	<u>482</u>
Total expense of flood control operations	<u>4,881</u>	<u>4,974</u>
Recreation projects		
Recreation resources development	736	688
Operation and maintenance of facilities	<u>1,498</u>	<u>10</u>
Total expense of recreation projects	<u>2,234</u>	<u>698</u>
Regional water quality management	1,545	1,496
Fisheries and waterfowl resources development	338	433
Preliminary surveys and engineering	<u>547</u>	<u>1,159</u>
Total expense of water resources development	<u>15,294</u>	<u>14,668</u>
FERTILIZER AND MUNITIONS DEVELOPMENT		
Developmental production		
Cost of products distributed	<u>23,090</u>	<u>22,872</u>
General expenses		
Loss on retirements of manufacturing plant and equipment	3,533	1,250
Loss on disposal of Florida phosphate reserves	9	870
Other general expenses	<u>1,536</u>	<u>1,247</u>
Total general expenses	<u>5,078</u>	<u>3,367</u>
Total production expense	<u>28,168</u>	<u>26,239</u>
Less transfers and sales of products		
Transfers to TVA programs, at market prices		
Fertilizer industry demonstrations	14,974	15,410
Farm test demonstrations	280	334
Agricultural projects	178	299
Other	<u>37</u>	<u>58</u>
Total transfers and sales	<u>15,469</u>	<u>16,101</u>
Net expense of developmental production	<u>12,553</u>	<u>9,484</u>
Fertilizer introduction		
Fertilizer industry demonstrations		
Fertilizers used	14,974	15,410
Educational distribution expense	<u>1,298</u>	<u>1,217</u>
Total industry payments for fertilizer	<u>16,272</u>	<u>16,627</u>
Less industry payments for fertilizer	<u>14,393</u>	<u>14,801</u>
Net expense of fertilizer introduction	<u>1,879</u>	<u>1,826</u>

**TENNESSEE VALLEY AUTHORITY**  
**NONPOWER PROGRAMS**  
**NET EXPENSE AND ACCUMULATED NET EXPENSE**  
**FOR THE YEARS ENDED JUNE 30, 1972 AND 1971**

	1972	1971
	(Thousands)	
<b>FERTILIZER AND MUNITIONS DEVELOPMENT - continued</b>		
Fertilizer introduction - continued		
Farm test demonstrations outside the Valley		
Fertilizers used	\$ 280	\$ 334
Planning and supervision	503	492
	783	826
Less farmer payments for fertilizer	190	225
	593	601
Net expense of fertilizer introduction	2,472	2,427
Research and development	5,059	4,972
Net expense of fertilizer and munitions development	20,084	16,883
<b>GENERAL RESOURCES DEVELOPMENT</b>		
Agricultural projects		
Agricultural development		
Fertilizers used	178	299
Planning and supervision	952	912
	1,130	1,211
Less farmer payments for fertilizer	114	180
	1,016	1,031
Development investigations and general expenses	438	414
Net expense of agricultural projects	1,454	1,445
Forest and wild land resources development	1,235	1,096
Tributary area development	1,668	1,514
Regional development planning	376	522
Townlift community improvement	480	373
Demonstrations in education and manpower development	139	1,027
Minerals projects	213	224
Environmental quality projects	332	164
Net expense of general resources development	5,897	6,365
<b>LAND BETWEEN THE LAKES OPERATIONS</b>	1,972	1,699
<b>ENVIRONMENTAL RESEARCH AND DEVELOPMENT</b>	182	156
<b>VALLEY MAPPING</b>	499	308
<b>OTHER EXPENSE, NET</b>	80	23
NET EXPENSE; schedule D	44,008	40,102
Accumulated net expense at beginning of period	494,128	454,026
Accumulated net expense at end of period	\$538,136	\$494,128

Notes 1 through 8 following the exhibits are an integral part of the financial statements.



EXHIBIT IV

Page 1

TENNESSEE VALLEY AUTHORITY

CHANGES IN FINANCIAL POSITION  
FOR THE YEARS ENDED JUNE 30, 1972 AND 1971

	Power program		All programs	
	1972	1971	1972	1971
	(Thousands)			
<b>SOURCE OF FUNDS</b>				
Net power income; exhibit II	\$ 112,124	\$ 119,004	\$ 112,124	\$ 119,004
Add items not requiring funds; note a	31,931	31,969	31,931	31,969
Funds from power operations	144,055	150,973	144,055	150,973
Sale of power facilities	480	610	480	610
Funds from power program; note b	144,535	151,583	144,535	151,583
Net expense of nonpower programs; exhibit III			44,008*	40,102*
Add items not requiring funds; note a			10,270	8,633
Funds used in nonpower operations			33,738*	31,469*
Sale of nonpower facilities			564	2,140
Funds used in nonpower programs			33,174*	29,329*
Sale of long-term bonds	547,034	-	547,034	-
Issues of short-term notes	2,020,000	1,740,000	2,020,000	1,740,000
Congressional appropriations	3,359	2,654	67,150	56,180
Property transfers	228	248	414	506
Contributions in aid of construction	117	22	117	22
Total source of funds	<u>\$2,715,273</u>	<u>\$1,894,507</u>	<u>\$2,746,076</u>	<u>\$1,918,962</u>
<b>DISPOSITION OF FUNDS</b>				
Expended for plant and equipment, excluding allowance for funds used	\$ 538,165	\$ 433,344	\$ 559,033	\$ 458,012
Less salvage from plant transfers, and depreciation charged to construction and clearing accounts	2,676	2,175	5,053	4,457
	<u>535,489</u>	<u>431,169</u>	<u>553,980</u>	<u>453,555</u>
Payments to U. S. Treasury; note 5				
Return on appropriation investment	55,810	65,147	55,810	65,147
Repayment of appropriation investment	20,000	20,000	20,034	20,010
	<u>75,810</u>	<u>85,147</u>	<u>75,844</u>	<u>85,157</u>
Redemption of short-term notes	2,070,300	1,380,700	2,070,300	1,380,700
Deferred charges, net	1,119*	3,253	1,119*	3,253
Changes in working capital				
Cash				
(Increase or decrease*)	29,994	37,597*	42,853	36,210*
Accounts receivable				
(Increase or decrease*)	6,634	8,683	7,810	12,081
Inventories				
(Increase or decrease*)	26,191	45,625	26,096	45,425
Other current liabilities				
(Increase* or decrease)	28,026*	22,473*	29,688*	24,999*
Total	<u>34,793</u>	<u>5,762*</u>	<u>47,071</u>	<u>3,703*</u>
(Increase or decrease*)				
Total disposition of funds	<u>\$2,715,273</u>	<u>\$1,894,507</u>	<u>\$2,746,076</u>	<u>\$1,918,962</u>

\*Deduct

**TENNESSEE VALLEY AUTHORITY**  
**CHANGES IN FINANCIAL POSITION**  
**FOR THE YEARS ENDED JUNE 30, 1972 AND 1971**

BEST DOCUMENT AVAILABLE

NOTES:

- a. Items not requiring funds:

	<u>Power</u>		<u>Nonpower</u>	
	<u>1972</u>	<u>1971</u>	<u>1972</u>	<u>1971</u>
	(Thousands)			
Provisions for depreciation	\$83,399	\$80,002	\$ 6,714	\$6,497
Provisions for depletion	104	19	14	16
Loss on retirements and disposals of property, plant, and equipment	164	7	3,542	2,120
Amortization of deferred charges and credits, net	287	72	-	-
Allowance for funds used (construction and nuclear fuel)	<u>52,023*</u>	<u>48,131*</u>	<u>-</u>	<u>-</u>
	<u>\$31,931</u>	<u>\$31,969</u>	<u>\$10,270</u>	<u>\$8,633</u>

- b. Net power proceeds (see note 6) may be derived as follows:

	<u>Year ended June 30</u>	
	<u>1972</u>	<u>1971</u>
	(Thousands)	
Funds from power program	\$144,535	\$151,583
Add back interest charges	<u>100,168</u>	<u>77,606</u>
Net power proceeds	<u>\$244,703</u>	<u>\$229,189</u>

Notes 1 through 8 following the exhibits are an integral part of the financial statements.

\*Deduct

**TENNESSEE VALLEY AUTHORITY**  
**NOTES TO FINANCIAL STATEMENTS**

1. Allocation of cost of multipurpose projects--Section 14 of the TVA Act requires TVA's Board of Directors to allocate the cost of completed multipurpose projects, subject to the approval of the President of the United States. The cost of facilities installed exclusively for a single purpose is assigned directly to that purpose; the cost of multiple-use facilities is allocated among the various purposes served. The allocation for the Tims Ford multipurpose dam, placed in service in 1972, is to be submitted for the President's approval.

The total investment of \$1,010,967,000 in completed multipurpose dams at June 30, 1972, is classified as follows:

	Investment		
	Direct	Multiple-use (Thousands)	Total
Power	\$311,489	\$177,155	\$ 488,644
Navigation	150,809	136,785	287,594
Flood control	59,668	134,668	194,336
Recreation	103	23,236	23,339
Tributary area development	<u>20</u>	<u>17,034</u>	<u>17,054</u>
Total	<u>\$522,089</u>	<u>\$488,878</u>	<u>\$1,010,967</u>

2. Accounting policies--Straight-line depreciation is provided for substantially on a composite basis. Rates of depreciation are derived from engineering studies of useful life and are reviewed each year. Depletion of coal land and land rights and phosphate land and mineral rights is provided on a unit of production basis.

The practice of capitalizing an allowance for funds used during construction and during the fabrication of nuclear fuels is followed in the power program. The rate is established at the beginning of each 6-month period on the basis of the cost of borrowings during the preceding 12 months. Rates used were 5.4 percent and 5.5 percent during 1972 and 8.4 percent and 7.7 percent during 1971.

Discounts, expenses, and premiums on power borrowings are amortized on a straight-line basis over the term of the related securities. Amortization of discount on short-term notes is charged to other interest expense.

3. Estimates of cost to complete major construction projects, and commitments--The cost to complete the major power projects (including nuclear fuel) under construction or authorized for construction at June 30, 1972, is estimated to be \$3,673,700,000, including commitments of \$1,127,800,000 for materials and services contracted for and not delivered. The corresponding estimate for multipurpose and nonpower projects is \$173,200,000, including commitments of \$1,600,000. Additional contractual commitments of \$600,000 for multipurpose and nonpower projects had been entered into at June 30, 1972, on which TVA's obligation is limited by the availability of funds from congressional appropriations for succeeding fiscal periods.

TVA and the City of Memphis, Tennessee, have entered into agreements under which (1) TVA sells to the City all the power and energy requirements of its electric distribution system, and (2) the City leases to TVA the Thomas H. Allen steam-electric generating plant with an installed capacity of 990,000 kilowatts; each agreement is for a term of 20 years, beginning January 1, 1965. The lease agreement provides for annual rental payments of \$6,900,000 and grants TVA an option to buy the plant for \$2,000,000 at the end of the lease term.

On June 22, 1972, the TVA Board of Directors approved a Utility Contribution Agreement with Breeder Reactor Corporation (BRC), a District of Columbia nonprofit corporation, obligating TVA to pay to Breeder Reactor Corporation the sum of \$21.7 million over a 10-year period beginning December 31, 1972, and ending December 31, 1981, on behalf of TVA and its distributors in support of the Nation's first commercial scale liquid metal fast breeder reactor demonstration plant project.

# TENNESSEE VALLEY AUTHORITY

## NOTES -- CONTINUED

4. Appropriation investment--Changes in appropriation investment during the years ended June 30, 1972 and 1971, were as follows:

	<u>Power program</u>		<u>All programs</u>	
	<u>1972</u>	<u>1971</u>	<u>1972</u>	<u>1971</u>
	(Thousands)			
Congressional appropriations	\$ 3,359	\$ 2,654	\$ 67,150	\$ 56,180
Transfers of property from other Federal agencies	228	248	414	506
	<u>3,587</u>	<u>2,902</u>	<u>67,564</u>	<u>56,686</u>
Less repayments to General Fund of the U. S. Treasury	20,000	20,000	20,034	20,010
Increase or decrease* for the period	16,413*	17,098*	47,530	36,676
Balance, beginning of period	<u>1,071,217</u>	<u>1,088,315</u>	<u>2,187,457</u>	<u>2,150,781</u>
Balance, end of period	<u>\$1,054,804</u>	<u>\$1,071,217</u>	<u>\$2,234,987</u>	<u>\$2,187,457</u>

An additional appropriation of \$64,550,000 was made as of July 1, 1972, by Public Law 92-405, approved August 25, 1972.

5. Payments to the U. S. Treasury--Section 15d of the TVA Act requires the payment from net power proceeds of a return on the net appropriation investment in power facilities plus repayments of such investment, beginning with fiscal year 1961. The amount of return payable during each year is based on the appropriation investment as of the beginning of that year and the computed average interest rate payable by the U. S. Treasury on its total marketable public obligations as of the same date. The repayment schedule calls for payment of not less than \$10 million for each of the first five years (1961-1965), \$15 million for each of the next five years (1966-1970), and \$20 million for each year thereafter until a total of \$1 billion shall have been repaid. The payments required by Section 15d may be deferred under certain circumstances for not more than two years.

Required payments have been made as follows:

	<u>Return</u>	<u>Repayment</u>	<u>Total</u>
	(Thousands)		
Total to June 30, 1971	\$513,393	\$145,000	\$658,393
Year ended June 30, 1972	<u>55,810</u>	<u>20,000</u>	<u>75,810</u>
	<u>\$569,203</u>	<u>\$165,000</u>	<u>\$734,203</u>

For 1973 the required payments will be \$53,764,000 as a return on the appropriation investment at the computed average interest rate of 5.099 percent and \$20,000,000 as a repayment, a total of \$73,764,000.

In addition to the payments from net power proceeds, \$34,000 of nonpower proceeds was paid to the U. S. Treasury in 1972 under the provisions of Section 26 of the TVA Act. This brought the total payments from nonpower proceeds to \$41,586,000.

Prior to 1961, under then existing legislation, TVA paid to the Treasury \$185,059,000 of power proceeds. In addition, \$65,072,000 of bonds sold to the Treasury and Reconstruction Finance Corporation in fiscal years 1939-1941 have been fully repaid from power proceeds. Section 26 of the TVA Act provides for annual payments to the Treasury of any power or nonpower proceeds not needed for the operation of dams and reservoirs, the conduct of the power program, and the manufacture and distribution of fertilizers.

# TENNESSEE VALLEY AUTHORITY

## NOTES — CONTINUED

6. Borrowing authority--Section 15d of the TVA Act authorizes TVA to issue bonds, notes, and other evidences of indebtedness up to a total of \$5 billion outstanding at any one time to assist in financing its power program. Debt service on these obligations, which is payable solely from TVA's net power proceeds, has precedence over the payments to the U. S. Treasury described in note 5. Issues outstanding on June 30, 1972, consist of the following:

	(Thousands)
Long-term debt	
4.40% 1960 Series A, due November 15, 1985	\$ 50,000
4-5/8% 1961 Series A, due July 1, 1986	50,000
4-1/2% 1962 Series A, due February 1, 1987	45,000
5.70% 1967 Series A, due May 15, 1992	70,000
6-3/8% 1967 Series B, due November 1, 1992	60,000
8% 1969 Series A, due June 1, 1974	100,000
8-1/4% 1969 Series B, due October 15, 1994	100,000
9% 1970 Series A, due March 15, 1995	100,000
9-1/4% 1970 Series B, due June 15, 1995	50,000
8-3/4% 1970 Series C, due June 15, 1975	50,000
7-1/4% 1971 Series A, due July 1, 1976	100,000
7.30% 1971 Series B, due October 1, 1996	150,000
7% 1972 Series A, due January 1, 1997	150,000
7.35% 1972 Series B, due May 1, 1997	150,000
Total long-term debt	<u>1,225,000</u>
Short-term notes	
Payable to U. S. Treasury	100,000
Payable to public	<u>630,000</u>
Total short-term notes	<u>730,000</u>
	<u>\$1,955,000</u>

An additional bond issue, 7.35 percent 1972 Series C, due July 1, 1997, in the amount of \$150,000,000 was sold in July 1972.

7. Retirement plan--TVA has a contributory retirement plan which covers substantially all of its salaried employees. The cost of currently accruing benefits is funded currently, and the unfunded prior service cost is being amortized and funded over a period of 34 years from July 1, 1971. The cost of the plan to TVA for the years ended June 30, 1972 and 1971, was \$16,813,000 and \$15,256,000, respectively.

8. Litigation--In December 1971 a suit was filed in Federal Court seeking to enjoin the construction of the Tellico Dam multipurpose project on various grounds, including alleged failure to comply with the National Environmental Policy Act. The United States District Court for the Eastern District of Tennessee issued a preliminary injunction, pending trial, enjoining certain phases of work on the project, but allowing other activities to go forward. The issuance of the preliminary injunction was affirmed by the United States Court of Appeals for the Sixth Circuit on December 13, 1972.

On July 5, 1972, the Environmental Defense Fund and six other plaintiffs filed a complaint for injunction, declaratory judgment, and other relief to restrain TVA from construction of the Duck River project, consisting of the Normandy and Columbia dams. The action was filed in the United States District Court for the Eastern District of Tennessee, Northern Division, but was transferred to the Winchester Division of that court. TVA has filed a motion to dismiss the action or in the alternative for summary judgment. No motion has been made at this time for a preliminary injunction or a temporary restraining order. Counsel for TVA believe that the action is without merit.

On May 26, 1972, TVA filed an action in the United States District Court for the Northern District of Alabama, Northeastern Division, to acquire 1,174 acres of land in Jackson County, Alabama, known as the Bellefonte site, "for and as a part of an inventory of sites for electric generating plants." Defendants filed an answer in which they raised 34 objections and defenses to the taking. In substance they are that TVA lacks statutory and constitutional authority to acquire the property, that it is not being acquired for a public use, and that the taking is unnecessary, an abuse of discretion, and in violation of the National Environmental Policy Act of 1969. TVA filed a motion to strike such defenses and objections on the ground that they are insufficient as a matter of law. Counsel for TVA believe that the defenses are without merit.

SCHEDULE A

**TENNESSEE VALLEY AUTHORITY**  
**COMPLETED PLANT**  
**JUNE 30, 1972**

	Assets	Depreciation and depletion	
		Provision year ended June 30, 1972	Accumulated balance June 30, 1972
<b>Power</b>			
Multipurpose dams; [See GAO note 1.]	\$ 428,928,234	\$ 5,958,506	\$ 150,367,870
Multipurpose dams; [See GAO note 2.]	59,716,203	786,369	5,055,849
Single-purpose dams;	66,875,548	1,139,552	25,038,952
Steam production plants;	1,713,991,936	47,751,646	594,198,779
Other electric plant;	1,134,849,144	28,397,740	300,763,750
Total power	<u>3,404,361,065</u>	<u>84,033,813</u>	<u>1,075,425,200</u>
<b>Navigation</b>			
Multipurpose dams; [See GAO note 1.]	227,605,463	2,275,101	45,785,533
Multipurpose dams; [See GAO note 2.]	59,988,816	559,498	3,177,696
Total navigation	<u>287,594,279</u>	<u>2,834,599</u>	<u>48,963,229</u>
<b>Flood control</b>			
Multipurpose dams; [See GAO note 1.]	180,176,920	1,279,274	33,624,433
Multipurpose dams; [See GAO note 2.]	14,159,103	65,253	303,758
Bristol flood control plant;	2,066,082	13,533	92,595
Total flood control	<u>196,402,105</u>	<u>1,358,060</u>	<u>34,020,786</u>
<b>Tributary area development</b>			
Multipurpose dams; [See GAO note 2.]	17,053,488	66,441	267,632
<b>Recreation and conservation education</b>			
Multipurpose dams; [See GAO note 2.]	23,338,701	42,334	42,334
Land between the lakes;	45,877,648	336,715	1,611,812
Other recreation plant;	550,342	12,806	32,504
Total recreation and conservation education	<u>69,766,691</u>	<u>391,855</u>	<u>1,686,650</u>
Chemical;	<u>54,278,197</u>	<u>2,013,292</u>	<u>21,172,718</u>
General;	<u>47,683,874</u>	<u>2,724,405</u>	<u>19,676,827</u>
Total	<u>\$4,077,139,699</u>	<u>\$93,422,465</u>	<u>\$1,201,213,042</u>
<b>Total completed plant</b>			
Multipurpose dams	\$1,010,966,928	\$11,032,776	\$ 238,625,105
Single-purpose dams	66,875,548	1,139,552	25,038,952
Steam production plants	1,713,991,936	47,751,646	594,198,779
Other electric plant	1,134,849,144	28,397,740	300,763,750
Other plant	150,456,143	5,100,751	42,586,456
Total	<u>\$4,077,139,699</u>	<u>\$93,422,465</u>	<u>\$1,201,213,042</u>

- GAO notes:  
1. System allocation.  
2. Project allocations.

SCHEDULE B

**TENNESSEE VALLEY AUTHORITY**  
**CONSTRUCTION AND INVESTIGATIONS IN PROGRESS**  
 JUNE 30, 1972

	<u>Power program</u>	<u>All programs</u>
Construction in progress		
Generating facilities		
Browns Ferry Nuclear Plant	\$ 496,922,114	\$ 496,922,114
Sequoyah Nuclear Plant	226,660,858	226,660,858
Watts Bar Nuclear Plant	7,969,391	7,969,391
Additional nuclear capacity	2,495,131	2,495,131
Additional steam capacity	187,130	187,130
Cumberland Steam Plant	343,644,836	343,644,836
Colbert gas turbine units 1-8	41,201,963	41,201,963
Allen gas turbine units 1-16	3,632,243	3,632,243
Allen gas turbine units 17-20	21,269,473	21,269,473
Raccoon Mountain pumped storage project	41,885,709	41,885,709
Total generating facilities	<u>1,185,868,848</u>	<u>1,185,868,848</u>
Transmission lines, substations, and other additions to power facilities	<u>105,414,365</u>	<u>105,414,365</u>
Navigation facilities		<u>2,066,984</u>
Flood control facilities		<u>647,274</u>
Multipurpose facilities		
Tellico Dam and Reservoir	-	32,505,485
Tims Ford Dam and Reservoir	35,100	203,811
Columbia Dam and Reservoir	-	763,953
Normandy Dam and Reservoir	-	1,507,175
Mills River Dam and Reservoir	-	344,636
Upper French Broad water control system	-	1,190,692
Bear Creek water control system	-	4,526,465
Other	271,612	867,170
Total multipurpose facilities	<u>306,712</u>	<u>41,909,387</u>
Chemical plant		<u>13,537,574</u>
Recreation and conservation education facilities		
Land between the lakes		3,503,566
Other recreation facilities		512,333
Total recreation and conservation education facilities		<u>4,015,899</u>
General plant		
General construction equipment and materials	-	1,020,596
Other additions to general plant	94,190	368,308
Total general plant	<u>94,190</u>	<u>1,388,904</u>
Total construction in progress	<u>1,291,684,115</u>	<u>1,354,849,235</u>
Investigations for future projects		
Power facilities	2,682,995	2,682,995
Navigation facilities	-	117,903
Flood control facilities	-	958,472
Multipurpose facilities	-	1,166,741
Total investigations for future projects	<u>2,682,995</u>	<u>4,926,111</u>
Total construction and investigations in progress	<u>\$1,294,367,110</u>	<u>\$1,359,775,346</u>

TENNESSEE VALLEY AUTHORITY

BEST DOCUMENT AVAILABLE

DETAILS OF POWER EXPENSE  
FOR THE YEAR ENDED JUNE 30, 1972

SUMMARY	Total	Provision for depreciation	Total before depreciation (exhibit II)	Operation	Maintenance	Other
Production						
Multipurpose dams						
Direct	\$ 11,309,542	\$ 5,401,380	\$ 5,908,162	\$ 3,384,047	\$ 2,524,115	\$ -
Multiple-use; schedule E	4,474,906	1,343,495	3,131,411	2,343,186	788,225	-
Single-purpose dams	2,999,680	1,139,552	1,860,128	876,107	984,021	-
Cumberland Basin projects; note a	10,635,932	-	10,635,932	-	-	10,635,932
Steam plants	330,990,805	47,751,646	283,239,159	243,010,050	40,229,109	-
Gas turbine plants	1,499,615	769,339	730,276	670,099	60,177	-
Total generation	361,910,480	56,405,412	305,505,068	250,283,489	44,585,647	10,635,932
Purchased power	3,796,193	-	3,796,193	-	-	3,796,193
Interchange power received	15,970,904	-	15,970,904	-	-	15,970,904
Interchange power delivered	13,095,355*	-	13,095,355*	-	-	13,095,355*
System control and load dispatching	1,343,276	-	1,343,276	-	-	1,343,276
Other	12,046,868	-	12,046,868	-	-	12,046,868
Total production	381,972,366	56,405,412	325,566,954	250,283,489	44,585,647	30,697,818
Transmission	43,034,073	29,294,950	17,779,123	10,257,037	7,522,086	-
Customer accounts	441,798	-	441,798	441,798	-	-
Demonstration of power use	1,158,424	-	1,158,424	1,158,424	-	-
Payments in lieu of taxes; note b	25,726,228	-	25,726,228	-	-	25,726,228
Social security taxes	3,209,591	-	3,209,591	-	-	3,209,591
Administrative and general						
Direct	25,648,473	1,739,339	23,909,134	23,903,435	5,699	-
Multiple-use	122,017	-	122,017	122,017	-	-
Total operating expense	\$481,312,970	\$83,399,701	\$397,913,269	\$286,166,200	\$52,113,432	\$59,633,637

SYSTEM STATISTICS	kWh generated less station use (thousands)	Production expense including depreciation	Per kWh (mills)	Installed capacity at June 30, 1972 (kilowatts)	Ratio of average gross generation to installed capacity (percent)
		Total			
Generation					
Multipurpose dams					
Direct	14,575,495	\$ 11,309,542	.776	2,944,770	57.18
Multiple-use; schedule E	-	4,474,906	.307	-	-
Total multipurpose dams	14,575,495	15,784,448	1.083	2,944,770	57.18
Single-purpose dams	1,339,696	2,999,680	2.239	250,200	61.12
Cumberland Basin projects; note a	3,257,654	10,635,932	3.265	753,000	49.55
Alcoa dams; note c	2,119,727	-	-	423,715	57.08
Total hydro generation	21,292,572	-	-	4,371,685	56.07
Steam plants	73,204,870	330,990,805	4.521	15,126,335	58.22
Gas turbine plants; note e	71,151	1,499,615	21.077	382,400	1.21
Total generation; note f	94,568,593	-	-	19,880,420	56.65
Purchased power	266,047	3,796,193	-	-	-
Interchange power received	7,075,432	15,970,904	-	-	-
System control and load dispatching	-	1,343,276	-	-	-
Other; note d	234,908	12,046,868	-	-	-
Total system input	102,144,980	-	-	-	-
Delivered under Alcoa agreement	1,857,629*	-	-	-	-
Interchange power delivered	5,998,069*	13,095,355*	-	-	-
Net energy supply	94,289,282	381,972,366	4.051	-	-
Shop and internal uses	5,405*	-	-	-	-
Transmission and transformation losses	3,193,471*	-	-	-	-
Total kWh sales and production expense	91,090,406	\$381,972,366	4.193	-	-

Notes:

- TVA purchases substantially all of the output of seven hydro plants in the Cumberland River Basin. In accordance with memorandums of understanding with the Corps of Engineers, Department of the Army, the Cumberland Basin projects are operated for optimum production of power in conjunction with TVA's power system, subject to flood control, navigation, and other operating requirements of the Army.
- Payments made to states and counties in which power operations are carried out. The basic amount is 5 percent of gross revenues from the sale of power to other than Federal agencies during the preceding year, with the provision of minimum payments under certain circumstances.
- Operation of twelve hydro plants of the Aluminum Company of America is coordinated with the operation of TVA's power plants under an arrangement whereby the storage and release of water from the Alcoa plants are carried out by the company under TVA's direction.
- "kWh generated" includes 234,908,000 kWh generated during test runs of the Cumberland Steam Plant from April 22 to June 30, 1972. The expenses of the generation, less credit for the fair value of energy delivered to the TVA power system, were charged to construction.
- "kWh generated" and "Production expense" include the generation and associated expense, respectively, of twelve additional gas turbine units which had not been accepted for commercial operation at June 30, 1972. Depreciation expense and installed capacity for these units are not included.
- Installed capacity increased 52,040 kilowatts during fiscal year 1972. Additions consisted of the 45,000-kilowatt generating unit at the Tims Ford Hydro Plant and 7,040 kilowatts from modifications to three generators.

\*Deduct



SCHEDULE D

Page 1

**TENNESSEE VALLEY AUTHORITY**

**DETAILS OF NONPOWER NET EXPENSE  
FOR THE YEAR ENDED JUNE 30, 1972**

	Direct	Multiple-use (schedule E)	Total
<b>WATER RESOURCES DEVELOPMENT</b>			
Navigation operations			
Studies and investigations			
Navigation engineering and investigations	\$ 770,088	\$ -	\$ 770,088
Administrative and general expenses; schedule F	<u>52,986</u>	<u>-</u>	<u>52,986</u>
	<u>823,074</u>	<u>-</u>	<u>823,074</u>
Operation and maintenance of facilities			
Operation	14,933	1,451,258	1,466,191
Maintenance	16,213	530,804	547,017
Administrative and general expenses	-	77,647	77,647
Provision for depreciation	<u>1,815,818</u>	<u>1,018,781</u>	<u>2,834,599</u>
	<u>1,846,964</u>	<u>3,078,490</u>	<u>4,925,454</u>
Total expense of navigation operations	<u>\$2,670,038</u>	<u>\$3,078,490</u>	<u>5,748,528</u>
Flood control operations			
Studies and investigations			
System studies and investigations	\$ 271,509	\$ -	271,509
Local flood studies and cooperation with other agencies	594,053	-	594,053
Administrative and general expenses; schedule F	<u>33,404</u>	<u>-</u>	<u>33,404</u>
	<u>898,966</u>	<u>-</u>	<u>898,966</u>
Operation and maintenance of facilities			
Operation	143,964	1,739,138	1,883,102
Maintenance	-	580,434	580,434
Administrative and general expenses	-	92,437	92,437
Provision for depreciation	<u>361,566</u>	<u>996,494</u>	<u>1,358,060</u>
	<u>505,530</u>	<u>3,408,503</u>	<u>3,914,033</u>
Local flood control improvements	<u>67,787</u>	<u>-</u>	<u>67,787</u>
Total expense of flood control operations	<u>\$1,472,283</u>	<u>\$3,408,503</u>	<u>4,880,786</u>
Recreation projects			
Recreation resources development	\$ 697,215	\$ -	697,215
Administrative and general expenses; schedule F	<u>39,163</u>	<u>-</u>	<u>39,163</u>
	<u>736,378</u>	<u>-</u>	<u>736,378</u>
Operation and maintenance of facilities			
Operation	-	1,368,680	1,368,680
Maintenance	-	82	82
Administrative and general expenses	-	73,949	73,949
Provision for depreciation	<u>13,148</u>	<u>41,991</u>	<u>55,139</u>
	<u>13,148</u>	<u>1,484,702</u>	<u>1,497,850</u>
Total expense of recreation projects	<u>\$ 749,526</u>	<u>\$1,484,702</u>	<u>2,234,228</u>
Regional water quality management			
Regional water quality management			1,449,469
Provision for depreciation			29,789
Administrative and general expenses; schedule F			<u>65,656</u>
Total expense of regional water quality management			<u>1,544,914</u>
Fisheries and waterfowl resources development			
Fisheries investigations			126,281
Fisheries management and use			102,914
Waterfowl management and use			81,124
Provision for depreciation			9,517
Administrative and general expenses; schedule F			<u>18,430</u>
Total expense of fisheries and waterfowl resources development			<u>338,266</u>
Preliminary surveys and engineering			
Preliminary surveys and engineering			519,544
Administrative and general expenses; schedule F			<u>27,644</u>
Total expense of preliminary surveys and engineering			<u>547,188</u>
Total expense of water resources development			<u>\$15,293,910</u>

## TENNESSEE VALLEY AUTHORITY

DETAILS OF NONPOWER NET EXPENSE  
FOR THE YEAR ENDED JUNE 30, 1972

## FERTILIZER AND MUNITIONS DEVELOPMENT

## Developmental production

## Cost of products distributed; note a

Materials used		\$ 6,914,713
Direct manufacturing and shipping expense		13,331,022
Indirect manufacturing and shipping expense		2,597,924
Provisions for depreciation and depletion		1,891,621
Recoveries from byproducts and in-process materials		418,837*
In-process inventory changes		95,760*
Finished inventory changes, net of exchanged products		<u>1,131,109*</u>
Total cost of products distributed		<u>23,089,574</u>

## General expenses

Loss on retirements of manufacturing plant and equipment		3,533,364
Loss on disposal of Florida phosphate reserves		9,117

## Other general expenses

Administrative and general; schedule F	\$ 556,605	
Shipping order and field inventory expense	295,185	
Training expenses	349,966	
Loss on disposal of spare parts from inventory	104,647	
Provision for depreciation of idle manufacturing plant and equipment	46,528	
Other, including depreciation of \$17,374*	<u>183,182</u>	<u>1,536,113</u>

Total general expenses		<u>5,078,594</u>
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Total production expense		<u>28,168,168</u>
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## Less transfers and sales of products

Transfers to TVA programs, at market prices		14,974,388
Fertilizer industry demonstrations		279,680
Farm test demonstrations		177,877
Agricultural projects		37,191
Other		<u>15,469,136</u>

Total transfers		<u>146,282</u>
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Direct sales		<u>15,615,418</u>
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Total transfers and sales		<u>12,552,750</u>
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Net expense of developmental production		
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## Fertilizer introduction

## Fertilizer industry demonstrations

Fertilizers used		14,974,388
Educational distribution expense	1,235,829	
Administrative and general expenses; schedule F	<u>62,229</u>	<u>1,298,058</u>
		<u>16,272,446</u>
Less industry payments for fertilizer; note b		<u>14,393,328</u>
		<u>1,879,118</u>

## Farm test demonstrations outside the Valley

Fertilizers used		279,680
Planning and supervision	486,036	
Administrative and general expenses; schedule F	<u>17,286</u>	<u>503,322</u>
		<u>783,002</u>
Less farmer payments for fertilizer		<u>190,169</u>
		<u>592,833</u>

Net expense of fertilizer introduction		<u>2,471,951</u>
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## Research and development

## Research and development of products and processes

Applied research		822,097
Process engineering		1,125,229
General expenses		<u>690,904</u>
		<u>2,638,230</u>

## Research and development of processes for recovery of sulfur

Basic chemical and agronomic research		176,471
Provision for depreciation		1,944,987
Administrative and general expenses; schedule F		89,078
		<u>210,888</u>

Total expense of research and development		<u>5,059,654</u>
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Net expense of fertilizer and munitions development		<u>\$20,084,355</u>
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\*Deduct

SCHEDULE D

Page 3

TENNESSEE VALLEY AUTHORITY

DETAILS OF NONPOWER NET EXPENSE  
FOR THE YEAR ENDED JUNE 30, 1972

GENERAL RESOURCES DEVELOPMENT

Agricultural projects		
Agricultural development		
Fertilizers used		
In specific tributary areas	\$ 62,973	
Outside specific tributary areas	<u>114,904</u>	\$ 177,877
Planning and supervision		
In specific tributary areas	239,909	
Outside specific tributary areas	<u>711,787</u>	951,696
		<u>1,129,573</u>
Less farmer payments for fertilizer		
In specific tributary areas	38,076	
Outside specific tributary areas	<u>75,928</u>	114,004
		<u>1,015,569</u>
Agribusiness development	82,602	
Preliminary investigations in tributary watersheds	55,602	
Program planning and analysis	88,881	
Research on forage fertilization and utilization	54,781	
Studies of agricultural uses of heated water	46,677	
Tenure and land use adjustment	26,501	
Tennessee Valley rural life conferences	24,345	
Provision for depreciation	3,439	
Administrative and general expenses; schedule F	<u>55,315</u>	438,143
Net expense of agricultural projects		<u>1,453,712</u>
Forest and wild land resources development		
Forest industry development		261,591
Forest and wildlife management and wildlife use		260,444
Forest and wild land investigations		264,281
Improvement and establishment of wild land vegetation		305,371
Strip mine reclamation		82,379
Provision for depreciation		11,655
Administrative and general expenses; schedule F		<u>49,530</u>
Total expense of forest and wild land resources development		<u>1,235,251</u>
Tributary area development		
Basic investigations		376,969
Development assistance in specific tributary areas		1,041,794
Administrative and general expenses; schedule F		92,149
Multiple-use operating expenses; schedule E		
Operation and maintenance	87,442	
Provision for depreciation, including \$194 direct	66,441	
Administrative and general expenses	<u>3,697</u>	157,580
Total expense of tributary area development		<u>1,668,492</u>
Regional development planning		
Regional development planning		356,541
Administrative and general expenses; schedule F		<u>19,582</u>
Total expense of regional development planning		<u>376,123</u>
Townlift community improvement		
Townlift community improvement		451,801
Administrative and general expenses; schedule F		<u>27,644</u>
Total expense of townlift community improvement		<u>479,445</u>
Demonstrations in education and manpower development		
Demonstrations in education and manpower development		52,903
Administrative and general expenses; schedule F		<u>86,390</u>
Total expense of demonstrations in education and manpower development		<u>139,293</u>

**TENNESSEE VALLEY AUTHORITY**  
**DETAILS OF NONPOWER NET EXPENSE**  
**FOR THE YEAR ENDED JUNE 30, 1972**

GENERAL RESOURCES DEVELOPMENT - continued	
Minerals projects	
Mineral resources investigations	\$ 204,470
Administrative and general expenses; schedule F	<u>8,063</u>
Total expense of minerals projects	<u>212,533</u>
Environmental quality projects	
Research on design of systems for waste management	138,725
Regional air quality management	97,383
Research on disposal of solid wastes	71,760
Administrative and general expenses; schedule F	<u>24,342</u>
Total expense of environmental quality projects	<u>332,210</u>
Net expense of general resources development	\$ <u>5,897,059</u>
LAND BETWEEN THE LAKES OPERATIONS	
Land between the lakes operations	\$ 1,585,933
Provision for depreciation	336,715
Administrative and general expenses; schedule F	<u>49,530</u>
Total expense of land between the lakes operations	\$ <u>1,972,178</u>
ENVIRONMENTAL RESEARCH AND DEVELOPMENT	
Environmental research and development	\$ 158,886
Administrative and general expenses; schedule F	<u>23,037</u>
Total expense of environmental research and development	\$ <u>181,923</u>
VALLEY MAPPING	
Valley mapping	\$ 471,774
Provision for depreciation	12,604
Administrative and general expenses; schedule F	<u>14,307</u>
Total expense of valley mapping	\$ <u>498,685</u>
OTHER EXPENSE OR INCOME*	
Emergency preparedness	\$ 14,352
Maintenance of bridges financed by others on TVA dams	60,593
Writeoff of abandoned project design costs	71,847
Interest income from receivables	<u>66,977*</u>
Other expense, net	\$ <u>79,815</u>
NET EXPENSE	\$ <u>44,007,925</u>

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Notes:

- a. In the discharge of its obligations under Section 5 of the TVA Act, TVA operates plants for the manufacture of products for agricultural and military purposes; conducts research and pilot plant development of new or improved processes for the production of new or existing fertilizers and munitions; and tests the fertilizers produced and demonstrates their effectiveness. Production is carried out on an experimental basis, and costs are consequently affected by the developmental nature of the manufacturing operations.  
  
Research on products and processes is not scaled to TVA's production operations. Its scope is determined by opportunities to render service in the public interest; findings are made available to the public through technical publications, answers to correspondence, and discussions with technical visitors to the laboratories and plants. For these reasons, the cost of such research is accounted for under a separate program rather than as a part of production operations.
- b. Sales of fertilizer materials are not on a commercial basis, but are made to organizations collaborating in an educational program aimed at improving the manufacture, distribution, and use of fertilizers.

SCHEDULE E

**TENNESSEE VALLEY AUTHORITY**  
**OPERATING EXPENSES OF MULTIPLE-USE FACILITIES**  
**FOR THE YEAR ENDED JUNE 30, 1972**

Expenses

Operation

Water dispatching	\$ 1,313,326
Water control investigations	136,567
Investigations and control of reservoir ecology	1,163,634
Plant protection and services to visitors	1,434,912
Operation and upkeep of dam reservations	1,143,552
Reservoir land management	1,444,804
Development of water resource management methods	141,441
Other expense	<u>206,604</u>
Total operation	6,984,840
Administrative and general expenses; schedule F	369,747
Maintenance	1,904,409
Provision for depreciation	<u>3,467,008</u>
Total	<u>\$12,726,004</u>

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Distributed to	<u>Operation</u>	<u>Administrative and general</u>	<u>Maintenance</u>	<u>Depreciation</u>	<u>Total</u>
Power operations	\$2,343,186	\$122,017	\$ 788,225	\$1,343,495	\$ 4,596,923
Navigation operations	1,451,258	77,647	530,804	1,018,781	3,078,490
Flood control operations	1,739,138	92,437	580,434	996,494	3,408,503
Recreation projects	1,368,680	73,949	82	41,991	1,484,702
Tributary area development	<u>82,578</u>	<u>3,697</u>	<u>4,864</u>	<u>66,247</u>	<u>157,386</u>
Total	<u>\$6,984,840</u>	<u>\$369,747</u>	<u>\$1,904,409</u>	<u>\$3,467,008</u>	<u>\$12,726,004</u>

SCHEDULE F

**TENNESSEE VALLEY AUTHORITY**  
**ADMINISTRATIVE AND GENERAL EXPENSES**  
**FOR THE YEAR ENDED JUNE 30, 1972**

Expenses	
Board of directors	\$ 271,796
Office of the general manager	262,425
Planning and budget staffs	340,788
Washington office	93,148
Information office, including technical library service	919,917
Equal employment opportunity staff	260,395
Division of personnel	2,414,002
Division of finance	3,053,370
Division of law	1,127,877
Division of property and supply	1,579,696
Medical and safety services	1,234,166
Other administrative and general	<u>179,243</u>
Total	<u>\$11,736,823</u>

	Amount	Percent of total
Distributed to		
Construction	\$ 5,211,026	44.40
Recovered through services billed to others at cost	212,552	1.81
Expense of programs		
Power	4,409,318	37.57
Water resources development		
Navigation	52,986	.45
Flood control	33,404	.28
Regional water quality management	65,656	.56
Fisheries and waterfowl resources development	18,430	.16
Preliminary surveys and engineering	27,644	.24
Recreation projects	39,163	.33
Multiple-use operations	369,747	3.15
Fertilizer and munitions development		
Developmental production	556,605	4.74
Fertilizer industry demonstrations	62,229	.53
Farm test demonstrations	17,286	.14
Research and development	210,888	1.80
General resources development		
Agricultural projects	55,315	.47
Forest and wild land resources development	49,530	.42
Tributary area development	92,149	.79
Regional development planning	19,582	.17
Townlift community improvement	27,644	.24
Demonstrations in education and manpower development	86,390	.74
Minerals projects	8,063	.06
Environmental quality projects	24,342	.21
Land between the lakes operations	49,530	.42
Environmental research and development	23,037	.20
Valley mapping	<u>14,307</u>	<u>.12</u>
Total	<u>\$11,736,823</u>	<u>100.00</u>

RETIREMENT SYSTEM OF THE TENNESSEE VALLEY AUTHORITY

The TVA retirement system was established in 1939 to provide a program of retirement, disability, and death benefits financed jointly by contributions of TVA and of its salaried employees. Administration of the system is vested in its own Board of Directors, three are appointed by TVA, three are elected by the participants, and the seventh is chosen by these six directors.

The operation of the retirement system is regarded as a Federal function in general and as a TVA function in particular. As authorized in section 301(b) of the Government Corporation Control Act (31 U.S.C. 866(b)) the General Accounting Office contracted with a firm of certified public accountants to make the audit of the system. Following are the balance sheet of the system at June 30, 1972, and the related statements of change in fund balance for the year then ended with respect to the Fixed Benefit, the Variable Annuity, the Supplement to Medicare Premium Reserve, and the Voluntary Retirement Savings and Investment Plan Funds, together with the auditors' opinion.

LYBRAND, ROSS BROS. & MONTGOMERY  
CERTIFIED PUBLIC ACCOUNTANTS

COOPERS & LYBRAND  
IN PRINCIPAL AREAS  
OF THE WORLD

To the Comptroller General of the United States,  
Washington, D. C.:

We have examined the balance sheet of the RETIREMENT SYSTEM of the TENNESSEE VALLEY AUTHORITY as of June 30, 1972 and the related statement of changes in fund balances for the year then ended. Our examination was made in accordance with generally accepted auditing standards, and accordingly included confirmations from the trustees and custodians of cash and investments held as of June 30, 1972 and such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

In our opinion, the aforementioned financial statements present fairly the financial position of the Retirement System of the Tennessee Valley Authority at June 30, 1972, and the changes in fund balances for the year then ended, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

*Lybrand, Ross Bros. & Montgomery*

New York, September 30, 1972.



RETIREMENT SYSTEM of the TENNESSEE VALLEY AUTHORITY  
BALANCE SHEET, June 30, 1972

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ASSETS:

Investments:

Securities:

Bonds and notes (details annexed):

At amortized cost (current redemption values or market quotations,  
\$57,823,568)

At market (cost, \$7,469,850)

Real estate mortgages (details annexed)

Common stocks (details annexed):

At cost (market quotations, \$275,300,538)

At market (cost, \$44,817,367)

United States Government obligations, at cost (approximates market)

Fund shares:

161,704 shares, at market, \$27.88 per share (cost, \$4,370,443)

91,898 shares, at market, \$10.54 per share (cost, \$957,486)

At market (cost, \$1,470,955) (details annexed)

Properties acquired under buy and leaseback agreements, at cost, less  
amortization of \$670,088

Real property:

Land, at cost

Buildings, at cost, less allowance for depreciation of \$220,594

Cash:

Treasurer's fund

Trustee

Receivables:

Contributions

Dividends, accrued interest, etc.

LIABILITIES and FUNDS:

Payables:

Securities purchased

Other

Fund balances (statement annexed)

<u>Fixed Benefit Fund</u>	<u>Variable Annuity Fund</u>	<u>Voluntary Retirement Savings and Investment Plan</u>			<u>Supplement to Medicare - Premium Reserve Fund</u>
		<u>Fidelity Trend Fund</u>	<u>Puritan Fund</u>	<u>Unit Fund</u>	
\$ 67,071,942	\$ 8,269,050				
2,901,416					
184,330,072					
<u>254,303,430</u>	<u>65,392,580</u>				
2,291,424	73,661,630				\$62,048
		\$4,508,304			
			\$968,604		
				<u>\$1,925,111</u>	
<u>256,594,854</u>	<u>73,661,630</u>	<u>4,508,304</u>	<u>968,604</u>	<u>1,925,111</u>	<u>62,048</u>
1,783,444					
627,000					
<u>849,156</u>					
<u>259,854,454</u>	<u>73,661,630</u>	<u>4,508,304</u>	<u>968,604</u>	<u>1,925,111</u>	<u>62,048</u>
14,805	10,752	95	34	5	
78,943	2,047				3,118
532,243	173,106	5			
<u>1,443,320</u>	<u>139,954</u>		<u>19,298</u>	<u>1,027</u>	<u>795</u>
<u>\$261,923,765</u>	<u>\$73,987,489</u>	<u>\$4,508,404</u>	<u>\$987,936</u>	<u>\$1,926,143</u>	<u>\$65,961</u>
\$ 1,188,048	\$ 66,361				
193,779		\$ 100	\$ 100		
<u>260,541,938</u>	<u>73,921,128</u>	<u>4,508,304</u>	<u>987,836</u>	<u>\$1,926,143</u>	<u>\$65,961</u>
<u>\$261,923,765</u>	<u>\$73,987,489</u>	<u>\$4,508,404</u>	<u>\$987,936</u>	<u>\$1,926,143</u>	<u>\$65,961</u>

RETIREMENT SYSTEM of the TENNESSEE VALLEY AUTHORITY  
INVESTMENTS in SECURITIES  
June 30, 1972

FIXED BENEFIT FUND (at cost or  
amortized cost):

Bonds and notes:

Principal amount:

Utility	\$ 25,123,000	
Financial	12,153,045	
Industrial	12,098,266	
Foreign	6,742,667	
Railroad	3,097,904	

Unamortized (discounts) and  
premiums, net

(1,634,737)

57,580,145

Temporary investments

9,491,797 \$ 67,071,942

Real estate mortgages:

Veterans Administration	433,392	
Federal Housing Administration	469,397	
Commingled	1,505,239	
Other	493,388	2,901,416

493,388

2,901,416

Common stocks:

Industrial	134,603,064	
Utility	20,241,623	
Commingled	23,355,839	
Other	6,129,546	184,330,072

6,129,546

184,330,072

\$254,303,430

VARIABLE ANNUITY FUND (at market):

Bonds and notes:

Industrial	4,437,050	
Financial	3,832,000	\$ 8,269,050

3,832,000

\$ 8,269,050

Common stocks:

Industrial	52,984,575	
Utility	2,645,625	
Financial	9,762,380	65,392,580

9,762,380

65,392,580

\$ 73,661,630

Continued

RETIREMENT SYSTEM of the TENNESSEE VALLEY AUTHORITY  
INVESTMENTS in SECURITIES, Continued  
June 30, 1972

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VOLUNTARY RETIREMENT SAVINGS and INVESTMENT PLAN:	
Unit fund (at market):	
Eddie Special Institutional Fund, Incorporated:	
6,042 shares, \$77.86 per share	
(cost, \$376,457) (note)	\$ 470,438
Rowe Price New Horizons Fund, Inc.:	
12,230 shares, \$44.90 per share	
(cost, \$371,021)	549,124
T. Rowe Price Growth Stock Fund, Inc.:	
13,962 shares, \$32.85 per share	
(cost, \$366,100)	458,657
Smith, Barney Equity Fund Incorporated:	
34,562 shares, \$12.93 per share	
(cost, \$357,377)	<u>446,892</u>
	<u>\$ 1,925,111</u>

Note: On September 24, 1971, the Retirement System realized a gain of \$19,274 upon the sale of its Unit Fund holdings in PRO Fund, Inc. of 19,139.5775 shares with a carrying value of \$202,880. The proceeds were reinvested in 3,469.024 shares of Eddie Special Institutional Fund, Incorporated.

RETIREMENT SYSTEM of the TENNESSEE VALLEY AUTHORITY  
 STATEMENT of CHANGES in FUND BALANCES  
 for the year ended June 30, 1972

	Fixed Benefit Fund			
	Total	Annuity Savings Account	Pension Accumulation Account	Investment Reserve Account
Contributions:				
Members	\$ 3,741,022	\$ 3,741,022		
Tennessee Valley Authority	16,997,223		\$ 16,997,223	
Investment income:				
Interest	4,331,374		4,331,374	
Dividends	4,613,047		4,613,047	
Rents (less depreciation and amortization of \$99,855)	171,331		171,331	
Net realized gains (losses) on sales of investments	82,172		3,662,374	(\$3,580,202)
Capital gains distribution				
Net unrealized appreciation of investments	29,936,169	3,741,022	29,775,349	(3,580,202)
Transfers:				
Interest		1,697,927	(1,932,867)	234,940
Accumulations	(156,442)	(3,637,776)	3,481,334	
	<u>\$ 29,779,727</u>	<u>\$ 1,801,173</u>	<u>\$ 31,323,816</u>	<u>(\$3,345,262)</u>
Administrative expenses	\$ 628,588		\$ 628,588	
Withdrawals	369,358	\$ 346,783	22,575	
Death benefits	911,549	166,076	745,473	
Retirement benefits	8,600,453		8,600,453	
	<u>\$ 10,509,948</u>	<u>\$ 512,859</u>	<u>\$ 9,997,089</u>	
Net increase (decrease)	\$ 19,269,779	\$ 1,288,314	\$ 21,326,727	(\$3,345,262)
Balances, June 30, 1971	241,272,159	42,954,711	191,022,801	7,294,647
Balances, June 30, 1972	<u>\$260,541,938</u>	<u>\$44,243,025</u>	<u>\$212,349,528</u>	<u>\$3,949,385</u>

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Variable Annuity Fund	Voluntary Retirement Savings and Investment Plan			Supplement to Medicare Premium Reserve Fund
	Fidelity Trend Fund	Puritan Fund	Unit Fund	
\$ 5,154,143	\$ 665,679	\$190,363	\$ 489,151	
258,354				\$ 2,386
868,221	79,467	61,222	4,659	
(906,870)				
		14,531	12,710	
<u>15,026,261</u>	<u>485,715</u>	<u>2,774</u>	<u>328,714</u>	
20,400,109	1,230,861	268,890	835,234	2,386
156,442	(428,589)	(27,325)	455,914	
<u>\$20,556,551</u>	<u>\$ 802,272</u>	<u>\$241,565</u>	<u>\$1,291,148</u>	<u>\$ 2,386</u>
\$ 389,031	\$ 395,825	\$ 81,667	\$ 61,721	
32,192				
634,733				
<u>\$ 1,055,956</u>	<u>\$ 395,825</u>	<u>\$ 81,667</u>	<u>\$ 61,721</u>	
\$19,500,595	\$ 406,447	\$159,898	\$1,229,427	\$ 2,386
54,420,533	4,101,857	827,938	696,716	63,575
<u>\$73,921,128</u>	<u>\$4,508,304</u>	<u>\$987,836</u>	<u>\$1,926,143</u>	<u>\$65,961</u>

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