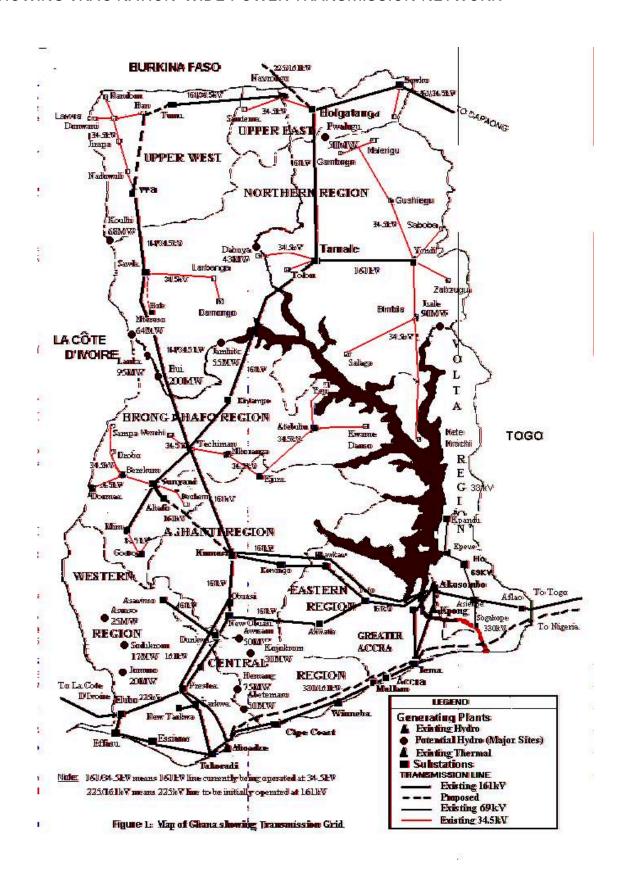


43rd Annual Report and Accounts 2004

MAP OF GHANA SHOWING VRA'S NATION-WIDE POWER TRANSMISSION NETWORK



VOLTA RIVER AUTHORITY

Annual Report and Accounts

For The Year Ended 31st December, 2004

(43) Republic of Ghana



This Report and Statement of Accounts for the year ended 31st December 2004 has been submitted in pursuance of Section 32 of the Volta River Development Act, 1961 (Act 46).

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SECTION 1 The Volta River Authority



PROFILE OF THE VOLTA RIVER AUTHORITY

The Volta River Authority (VRA) formally came into existence on 26th April 1961, under the Volta River Development Act, Act 46 of the Republic of Ghana.

The Authority's primary function is to supply electrical energy for industrial, commercial and domestic use in Ghana.

VRA started with the development of the hydroelectric potentials of the Volta River and the construction and maintenance of a nation-wide grid transmission system. Today, it has assumed responsibility for the development of other energy potentials of the Country.

Power Activities

Ghana's first hydro plant, the Akosombo Generating Station in the Eastern Region, started producing 588MW of power in 1965 from four generating units. In 1972, two additional generating units of 324MW capacity were commissioned to bring Akosombo's total installed capacity to 912 MW. In 1982, a second hydro generating station, down stream of Akosombo, was commissioned on the Volta River at Kpong, also in the Eastern Region. This added another 160 MW capacity to that of Akosombo, to bring the total installed generation capacity to 1,072 MW.

In 1998, VRA resumed work on the Akosombo Generating Station Retrofit Project (AGSRP). The Retrofit Project had been suspended in 1995 partly in order to sustain the supply capability during a period of anticipated shortage. The retrofit involves systematic replacement of the turbine runners to increase efficiency and prolong the life span of the generating station, which had been operating since 1965, for another 30 years. When completed, the retrofitted turbines will increase the generating capacity at Akosombo from 912MW to 1020MW.

Ghana's current demand for electricity exceeds the combined supply from the two hydro generation stations. The shortfall in demand is being met through

the development of thermal power systems. A 330 MW Combined Cycle Thermal Plant was commissioned at Aboadze near Takoradi in 1999. This was followed in 2000, by the addition of a further 220 MW simple cycle thermal plant at the same site, developed through a joint-venture partnership between the VRA and CMS Energy of Michigan, USA. A 110 MW steam plant is to be added to the 220 MW thermal plant to bring the total installed thermal generation capacity to 660 MW.

VRA has a transmission system made up of 39 substations and approximately 4,000 kilometres of transmission lines that cover the entire country. The transmission system is also interconnected with the national electricity grids of La Cote d'Ivoire, Togo, and Burkina Faso.

In 1987, VRA established the Northern Electricity Department (NED) to distribute electricity in parts of Ashanti, the Brong-Ahafo, Northern, Upper East and Upper West Regions. NED was developed as an integral part of the larger Northern Electrification Project that extended the national electricity grid beyond Kumasi, almost 25 years after the Akosombo Dam was commissioned. In 1999 NED's operational area was extended to the northern parts of the Volta Region.

The annual firm energy supply from VRA's combined hydro and thermal generation systems is approximately 7,300 GWh. This is made up of 4,800 GWh hydro and 2,457 GWh thermal energy respectively. However, depending on water inflows into the Volta Lake, the two hydro units can produce about 6100 GWh of energy per annum.

VRA sells power to seven major bulk customers. The major sale (in foreign currency) is to the Volta Aluminium Company (VALCO) in Tema. VRA's second major customer is the Electricity Company of Ghana (ECG). The ECG is responsible for the distribution of the bulk of local electricity consumption in Ghana.



Volta River Authority

Annual Report and Accounts For The Year Ended December 31, 2004

PROFILE OF THE VOLTA RIVER AUTHORITY

It operates principally in the six southern regions of Ghana. Bulk sales are also made to a number of smaller industrial and mining consumers.

VRA exports power to Togo and Benin, and interchanges power with Cote d'Ivoire through Compagnie Ivoirienne d' Electricite' (CIE). VRA has started supply to the border towns of Po and Leo in Burkina Faso. Power exports to Benin are done through that country's national electricity company, Communaute' Electrique du Benin (CEB).

Non Power Activities

VRA is mindful of its social responsibility in its areas of operation. It therefore continues to implement various programmes aimed at mitigating the adverse environmental effects of its operations, and ensuring the well-being of the communities of the Volta Basin.

Since 1996, the VRA has committed the cedi equivalent of US\$500,000 annually to a Resettlement Trust Fund to carry out socio-economic projects within the Volta Basin. The projects include environmental improvement, social welfare, public health, education, electricity, potable water supply and sanitation activities. In 2003 VRA introduced the Community Development Initiative as a framework for accelerating development of the communities.

VRA also operates a well-equipped medical ship, the Onipa Nua, on the Volta Lake and provides free medical services to the communities along the Volta Lake. The Authority undertakes environmental programmes such as dredging activities at the estuary of the Volta River to reduce the incidence of Bilharzia, and to restore the ecosystem in the area. In addition, various afforestation projects are also being carried out to restore vegetation on the highlands bordering the Volta Lake.



SECTION 2 The VRA Board



THE VOLTA RIVER AUTHORITY BOARD

The Members of the Board of the Volta River Authority as at 31st December, 2004:

iver Authority as at 31st December, 2004:
Mr. Osei Asamoa Bonsu, Chartered Accountant
Mr. Joshua Kofi Ofedie, Chief Executive, Volta River Authority
Ing. Samuel Kwesi Asare, Electrical Engineer
Ms. Abena Oduro, Economist & Research Fellow, Centre for Policy Analysis (CEPA)
Mr. Kwabena T. Obese-Jecty, Director, Finance & Commerce, Valco
Mr. Abraham Kofi Asante, Development Consultant
Mr. Teddy Konu, Registrar, University of Ghana, Legon
Ing. (Mrs.) Carlien Bou-Chedid, Engineer, Executive Secretary, Ghana Institution of Engineers
Angelina Domakyaareh (Mrs.) Director, Legal, Volta River Authority



Volta River Authority

Annual Report and Accounts For The Year Ended December 31, 2004

PRINCIPAL OFFICERS (VRA MANAGEMENT) as at 31st December, 2004

Office of the Chief Executive

Chief Executive - Joshua K. Ofedie

Ag. Advisor, Office of the Chief Executive - Ishmael N. Ghansah (Rev.)

Director, Public Affairs - Major. J.B. Gyasi (Rtd.)

Director, Audit - Maxwell Odoom

Director, Office of the Chief Executive - Andrews Addy

Director, Management Information Systems - Vacant

Engineering and Operations (E&O) Branch

Ag. Deputy Chief Executive (E&O) - Freddie Sowah
Director, Transmission Systems - Suraj O. Amadu
Director, Thermal Generation - Steve K. Doku
Director, Technical Services - Felix Abotsi

Director, Engineering Design & Construction - Francis E. Kweku Arkherst Director, Engineering Planning & Dev't. - Richmond Evans-Appiah

Director, Northern Electricity Department - John Nuworklo Director, Hydro Generation - Kirk Koffi

Resources and Services (R&S) Branch

Ag. Deputy Chief Executive (R&S)

Director, Health Services

- Victor O. Okoh (Dr.)

Director, Materials Management

- Harriet Wilson (Ms.)

Director, Legal Services - Angelina Domakyaareh (Mrs.)

Director, Environment & Sustainable Dev't. - Joe W. Sutherland
Director, Transport & Security Services - Joseph Wiafe

Director, VRA Schools - Grace Manieson-Annancy (Mrs)

Director, Human Resources - Isaac K. Aidoo Director, Real Estate - Owura K. Sarfo

Finance & Investments (F&I) Branch

Ag. Deputy Chief Executive (F&I)-VacantDirector, Power Sales-Charles DarkuDirector, Finance-Edwin Gbekor

Chief Accountant - Alexandra Eduah (Mrs.)
Director, Investments - Bright Obeng-Boampong



SECTION 3 Chairman's Statement



Volta River Authority

Annual Report and Accounts
For The Year Ended December 31, 2004

CHAIRMAN'S STATEMENT

The Authority was reconstituted, under my Chairmanship, in February 2004 at a time the Authority was emerging from a major crisis which had ultimately led the Government to appoint an Interim Management Committee to steer the affairs of the Authority.

Very early in our tenure, my Colleagues and I noted the peculiar challenges confronting the Authority and which had compounded in the midst of the crisis. The Authority was in a weak financial position primarily attributed to successive years of losses incurred on its operations because of the increasing quantities of high cost of thermal generation required to supplement limited hydroelectric power supply and which could not be fully recovered through tariffs approved by the Public Utilities Regulatory Commission (PURC).

These operational constraints had in turn created a situation of significant threat to the Authority's ability to fulfill its primary obligation to supply adequate electricity to sustain the nation's economic development needs. Public dissatisfaction with the quality of service therefore also impacted on the public's overall sympathetic support for our operations.

Consequently, we focused 2004 as a year of creating a stabilised operation that would to some extent, restore the image, vitality and financial health of the VRA as well as assure secure and dependable electricity supply for the country.

As a first step, Mr. Joshua Kofi Ofedie, nominated by HE the President in accordance with the Volta River Development Act, 1961, (Act 46) was appointed Chief Executive to assist us drive the new direction of the Authority.

A review of the corporate strategy was undertaken. A number of process improvement initiatives to break the constraints on efficiency were initiated. Some of the major activities initiated during the year included the improvement of the operational efficiency and plant

availability of the Takoradi Thermal Power Station, the expedition of negotiations towards converting the VRA/CMS joint venture 220 MW simple cycle plant at Aboadze into a 330 MW combined cycle plant aimed at significantly reducing generation cost from the plant by about 30%, and the procurement of an integrated financial and materials management information system to improve the business support systems of the Authority.

The Authority, as the lead agency of the Government of Ghana, chalked another significant milestone as work commenced on the construction of the West African Gas Pipeline Project, which on completion in 2007, will provide cheaper natural gas to replace light crude oil as fuel for our thermal plants.

The increase in demand for electricity continued to pose challenges on the need to make additional investments to increase our generation and transmission capacity. Total power generated from both hydro and thermal sources for the year 2004 was 6,039 GWh. Generation from hydro sources was 5,281 GWh compared to 3,885 GWh in 2003, while thermal generation was 758 GWh compared to 2,014 GWh in 2003. The shortfall of 878 GWh compared to 940 GWh in 2003 was supplemented by purchases from Compagnie d'Electricite (CIE) of Cote d'Ivoire.

We also saw a steady expansion in our electricity distribution services through our Northern Electricity Department (NED). Over 174,000 new customers were connected during the year, representing 15% growth. We also worked towards expanding our operations to increase our earnings by entering supply arrangements with a number of new mines and other companies, including the proposed supply to Youga Gold Mines in Burkina Faso.

It is for this reason that we were pleased that the Akosombo Generating Station Retrofit Project aimed at extending the life and capacity of the plant also reached an



Volta River Authority

Annual Report and Accounts For The Year Ended December 31, 2004

CHAIRMAN'S STATEMENT

advanced stage of completion by the end of the year. When completed in March 2005, the capacity of the Akosombo Generating Station will be increased from 912MW to 1020MW.

Our earnings from the sale of electricity increased by 10%, giving a value of \$2,990.85 billion compared to the previous year's figure of \$2,710.39 billion. In 2004, 6,681GWh of power was sold to customers compared to 6,462GWh in 2003, an increase of 1.1%. In contrast our cost of operations from the sale of electricity increased by 10.0%, giving a value of \$2,990.85 billion compared to the previous year's figure of \$2,710.39 billion.

The Authority's social responsibility programmes continued in earnest during the year. Of particular interest were the lake-side health care activities to tackle the prevalence of bilharzia. Our medical boat, MV *ONIPANUA*, undertook several voyages to bring health services to communities that are otherwise inaccessible. We also embarked on improving our partnership with the communities in and around our

catchment areas under our Community Relations Programme to bring more value to improving the lives of their inhabitants.

Despite the challenges faced, our initiatives proved largely successful and I would like to, on behalf of my colleagues, extend our hand of gratitude to the Management and staff of the Authority for their continued dedication and commitment to duty and their supportive efforts that have ensured the early turn around of the industrial relations crisis that had bedeviled the Authority when we assumed duty.

The goodwill, cooperation and support enjoyed by my Colleagues and I give us the assurance of the very positive path to progress in the years ahead.

OSEI ASAMOA BONSU CHAIRMAN



SECTION 4 Operations Review



OPERATIONS REVIEW

General Overview

The Authority put a high premium on fault diagnosis studies undertaken to identify the root causes of deficiencies in the power system so as to increase system security and efficiency. It also focused on cost effective plans and programmes designed to ensure the continuous availability, accessibility and reliability of electricity. For this purpose in particular, the VRA put much stock in the findings of investigations into the cause of high incidence of power system collapse, and designed measures to forestall future occurrence.

The VRA also concerned itself in-depth with key efficiency improvement

programmes in relation to the availability and efficiency of the Takoradi Thermal Power Plant, refinancing and conversion of the Takoradi Expansion Plant Project into a 330 MW Combined Cycle Plant, and the facilitation of the West Africa Gas Pipeline Project. It is expected that these projects would reduce the cost of energy supply by some 20% in the next three years.

The total energy generated in 2004 was 6,917.443 GWh, comprising 5,280 GWh, from hydro sources, 758.126 GWh from thermal sources and imported energy of 878.408 GWh from Compagnie Ivoirienne d'Electricite (CIE).

The electricity generation from the hydro and thermal plants, as well as electricity transmitted in 2003 and 2004, are as shown on the following tables.

Production and Transmission. Electricity produced and transmitted for 2003 and 2004 is as follows:

	2003	2004	Deviation
Total Energy Generation at Akosombo GS	3,210.490 GWh	4,404.430 GWh	37%
Total Energy Generation at Kpong GS	674.714 GWh	876.479 GWh	30%
Total Energy Generation at Takoradi Thermal GS	1,328.216 GWh	535.526 GWh	-60%
Total Energy Generation at Takoradi TICO Thermal GS	668.380 GWh	222.600 GWh	-67%
Total Energy Generation at Tema GS	17.681 GWh		
Emergency Generation at Tema SRP	0.882 GWh		
Total Energy Generated at all Generating stations (A+B+C+D+E+F)	5,900.362 GWh	6,039.035 GWh	2%
Energy imported from CIE for VRA use	940.232 GWh	878.408 GWh	-7%
Energy imported from CEB			
Total Energy Imported From CEB and CIE (H+I)	940.232 GWh	878.408 GWh	-7%
Total Energy Generation Plus Imports (G+J)	6,840.594 GWh	6,917.443 GWh	1%
Total Energy Used at all Generating Stations	40.512 GWh	26.261 GWh	-35%
Energy Input to Transmission Systems (G+J-L)	6,800.083 GWh	6,891.183 GWh	1%
Energy used in the Substations	4.901 GWh	4.685 GWh	-4%
Energy Exported & Sold to CEB From VRA	601.978 GWh	662.004 GWh	10%
Energy Exported & Sold to SONABEL From VRA	1.885 GWh	3.022 GWh	60%
Energy wheeled to CEB From CIE	257.511 GWh	371.220 GWh	44%
Energy Exported to CIE From VRA (Inadvertent Exchange)	0.097 GWh	1.614 GWh	-
Total Energy Exported and wheeled (O+P+Q+R)	861.471 GWh	1,037.860 GWh	20%
Total Consumption within Ghana (incl. VALCO)	5,858.076 GWh	6,014.631 GWh	3%
Total External Sales (CEB,CIE & SONABEL) (O+P+R)	603.960 GWh	666.640 GWh	10%
Total Energy Billed (T+U)	6,462.036 GWh	6,681.270 GWh	3%
Transmission Losses (M+Q-N-S-T)	333.147 GWh	205.228 GWh	-38%
Percentage of Transmisson Losses W/(M-N)*100	4.9%	3.0%	-39%
Maximum Peak Generated (MW)	1,134.8 MW	1,137.0 MW	0%
Average Demand (K/8.76) (MW)	780.9 MW	789.7 MW	1%
Load Factor (Z/Y)	68.8%	69.5%	1%
Average plant discharge at Akosombo GS	858.31 cu.m/sec	1,138.90 cu.m/sec	33%
	(30,329.09 cfs)	(40,243.75 cfs)	





Annual Report and Accounts For The Year Ended December 31, 2004

Electricity Consumption

In 2004, the total energy sold was 6,681.270 GWh. The domestic consumption of energy was 6,014.631GWh. Export sales to Togo and Benin through the joint bulk electricity company, Communaute Electrique du Benin (CEB) as well as Burkina Faso, through its power utility, SONABEL were 666.640 GWh. Transmission losses during the year were also 205,228 GWh, about 3% of the total energy transmitted.

The VRA power system recorded a peak load of 1,137.0MW on April 21, 2004 at 19:45 hours compared with the previous year's figure of 1,134.8MW.



A section of the Takoradi Thermal Power Station

Availability of Plants

The average unit availability of the Akosombo and Kpong generating units were 96.9% and 98.4% respectively while the Takoradi Thermal Power Station (TTPS) achieved 78.14%. The capacity utilization factor of the plant (TTPS) was 19.06%.

In line with VRA's commitment to maintenance culture, the safety of the Akosombo and Kpong Dams was monitored. Physical inspection and analysis of the quantities of seepage and instrumentation readings showed that the

dams were in satisfactory condition. The inspection of the Akosombo and Akuse dams was scheduled for early February, 2005.

The Takoradi Thermal Power Station operated at various times in simple, half-combined, and full cycle modes, during the first half of the year. The plant remained on standby during the second half of the year in accordance with the system planning and SCADA generation plan for the station. However, there were intermittent routine test-runs.

With regard to the Tema Diesel Station, there was no generation during the period under review because the station was not scheduled for generation by System Control Centre. Weekly barring and monthly heat runs for all the available units were done.

There was also no generation from the strategic reserve power plant because all the generating units had been decommissioned.

Environmental Monitoring

The $\mathrm{NO_x}$ data recorded during the year was 98% compliant with the World Bank/EIA maximum allowable limits. This was within the minimum allowable compliance level of 95%.

In order to control the level of SO₂ emission, the sulphur content of fuel to be used at the plant was restricted to a limit of 0.2%. In addition to this, stack-monitoring results indicated that for all the 1432.9 hours of monitoring gas turbine performance, SO₂ emissions were 100% compliant with the World Bank maximum permissible 1 hr. average of 258 ng/J

Ambient NO_x and SO_2 data recorded at the Aboadze and Beposo stations were 100% compliant with EPA allowable limit.

 $\mbox{PM1}_{\mbox{\scriptsize o}}$ (dust particulate) monitoring results were also compliant for the period.





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For The Year Ended December 31, 2004

Major continuous noise generating equipment was also monitored at a distance of one meter as contained in the EIA as part of the plant worker health protection programme. Noise due to the gas turbines and the fuel treatment equipment was monitored only in January. Similar measurements were carried out at the East, West, North and Southern boundaries of the plant. Community noise survey was also carried out to assess the impact of plant operations in the immediate residential areas adjacent to the plant i.e. Aboadze and the VRA Township. Levels were 100% in compliance with EPA limits. However, monitoring could not be carried out for the rest of the year due to the breakdown of the noise meter.

The EPA regulations stipulate that any effluent discharge into the sea should not lead to temperature increase above 3°C. Hence the sea water temperature monitoring programme which commenced since September 1997 was continued for purposes of comparison with the baseline information on sea temperatures during this operational year. Monitoring results indicated that the annual average beach sea temperature for 2004 was 0.13°C below the baseline for 1998 implying that effluent discharge from the plant has not caused any significant increase in beach sea temperature.

Waste water from the oily waste lagoon separated after treatment, is discharged via the main storm drain into the



marshland. Discharge is permitted only after examination for absence of any visible sheen (i.e. less than the 5 ppm limit) and pH test in the laboratory. Analysis of wastewater from the oily water seperator and the neutralization sump were carried out throughout the year. Permission to discharge was given only after effluent met the stated EPA limit.

Hydrology Pattern

The major tributaries of the Volta Lake, namely the Black Volta, White Volta and Oti rivers recorded below average inflows during the year. This resulted in below average inflow into the Reservoir. The 2004 inflow hydrograph is shown as figure 2 below:

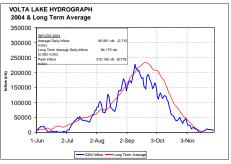


Fig 2: Volta Lake Hydro Graph

The cumulative inflow into the Volta Lake during the 2004 flood season was 31,959MCM (25.91MAF). This was about 85% of the long-term average of 37,622 MCM (30.5 MAF) for the period.

The instantaneous peak inflow into the Reservoir was 6,438 cumecs (227.502 cfs), which occurred on September 10, 2004. The Volta Lake was regulated between elevations 77.48m (254.20ft) at the beginning of the year and 74.77m (245.28ft), the minimum lake elevation at the end of the dry season. This was a drop of 2.71m (8.89 ft) from the beginning of the year.

The maximum elevation recorded was 78.25m (256.75ft) on November 2, 2004, a rise of 3.5 m (11.47ft) at the end of the flood season. The Volta Lake elevation at the end of the year was 77.46m (254.15ft).





The Kpong headpond was regulated between elevations 14.92m (48.95ft) and 15.10m (49.54ft) during the year.

As part of measures to improve the management of the Volta Lake during the previous year, the VRA commissioned the United Kingdom Meteorological (UK MET) office to carry out a study with regard to inflows into the Volta Lake. The final inflow model was used during the 2004 flood season, which forecast the annual inflow into the Reservoir at 25.91MAF.

Generation Operational Plan for 2004

The 2004 Energy Demand and Supply Plan projected a total annual consumption of 8,248 GWh to be met by hydro generation of 4,800 GWh and 3,448 GWh from thermal sources and imports. This was based on a minimum reservoir elevation of 245.5 ft.

However, in view of VRA's commitment of 1,093GWh to CIE and also fuel available at TTPS, the plan was reviewed to draft total hydro generation of 5,270 GWh (10% higher) and base load operation of the Takoradi Thermal Power Plant.

Akosombo Retrofit Project

The VRA remained fully committed to the implementation of the Akosombo Retrofit Project, under which the turbine runners and other critical parts of the generating units are being consecutively replaced with

ANNUAL ENERGY CONSUMED (GWh) BY CLASS OF CUSTOMER

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improved ones, to ensure continued satisfactory service for the next 30 years. The exercise was expected to be completed in 2005.

On completion, the generation capacity of the Akosombo Generating Station will significantly increase by 108MW, from 912MW to 1020MW. The first of four 200MVA unit transformers under the Akosombo GS Transformer Reinforcement Project was delivered in September 2004.

As part of the mini retrofit at the Kpong Generating Station to correct the deformation of the stator among others, the VRA took advantage of the forced outage on Unit 3 to start a mini retrofit on the Unit.

Power System Development

These are projects related to the direct expansion and upgrade of the electric power system.

Strategic Reserve Power Project

This project involved the provision of a 5 x 20MW combustion turbine power plant and associated transmission facilities at Tema to serve as a strategic reserve plant. The project was carried out in two phases. Phase I involved the installation of two of the units and phase II, the other three.

Due to the non-availability of the specified fuel required, however, a decision was taken to decommission the generating units. This exercise was completed in the first quarter of 2004.

330kV Aboadze-Volta Transmission Line Project

The main objective of this project is to transmit adequate thermal power from Aboadze and imports from Cote d'Ivoire to the major load centres in Accra and Tema. The project also forms part of the West African Power Pool (WAPP) being implemented by the ECOWAS Secretariat.



The on-going process to secure funds for the development of a heat recovery steam plant at Aboadze by TICO will result in a total generation capacity of over 800MW from the western corridor, including imports from Cote d'Ivoire, requiring additional bulk transmission capacity. The project will result in increased power transfer capability and thereby improve voltage control, and reduce system losses. The technical and financial evaluations were completed, and the project management consultancy services awarded to SMEC International Pty Ltd., a Kuwaiti Consulting Investment Company (SMEC/KCIC).



Some technical staff working at the Aflao Sub Station

Substation Upgrade Project

The objective of this project is to secure firm capacity at various bulk supply points and thereby improve the power system reliability with load growth. The project involves:

- * Supply of Power Transformers (Phases 1 & 2)
- * Supply of Balance of Plant
- Civil Works and Erection/Installation of Power Transformers and the Balance of Plant.

All five transformers and accessories were delivered to the various sites at Kpando, New Tema, Akosombo and Kumasi.

Erection/installation and commissioning of the Kpando and Akosombo GS transformers were completed. Work on the erection of the New Tema transformer was expected to resume in early 2005 after the delivery of the correct oil level indicator.

Supply of Balance of Plant at Aflao Substation

This project involves the supply of substation equipment required to upgrade the Aflao substation in order to improve supply reliability to some parts of the Southern Volta Region.

- * The contract for the supply and delivery to site of 34.5kV switch gear, control, metering and relaying equipment at Aflao substation was awarded to ABB South Africa.
- * Bids for the Aflao Substation Upgrade erection works were received on October 26, 2004 and evaluated.

Supply of Balance of Plant, Civil Works and Erection/Installation of Power Transformers and associated Balance of Plant.

This project involves the supply of balance of plant, civil works, erection/installation of power transformers and supply and installation of associated substation equipment to improve reliability of power supply at critical substations. It also includes the decommissioning of some power transformers at some substations and movement to other substations. The bidding document for the works is under review.

Aflao Substation Project (SCADA and Communications)

As part of the Aflao Substation Project, a contract, (AF-2), was awarded to ABB Switzerland Limited for the provision of SCADA and Communications Systems for the station. The contract document was executed by the VRA and ABB Switzerland Limited.

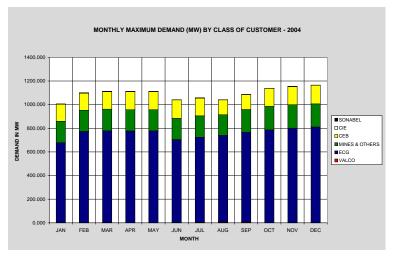




SCADA/Communication Improvement Project

This project involves the replacement of the existing analogue protection system of the lines from Volta to New Tema and Smelter substations with digital type. This requires that the existing copper cables serving as pilot wires and associated analogue relays be replaced with fibre-optic cables and numerical relays. The control buildings at New Tema and Smelter substations would also be extended to accommodate the new equipment.

Second Bulk Supply Point at Mallam in Accra



The status of works was as follows:

* The New Tema Substation Control Building works were substantially completed and have since been handed over. Works on the Smelter

Substation control building were temporarily suspended due to the accidental puncturing of 13.2kV cables. Work subsequently resumed and was about 43% complete by the close of the year.

Mallam Substation Project - Provision of SCADA and Communications Systems

The Mallam (Accra-West) substation project involved the construction of a second 161kV/34.5kV substation (Bulk Supply Point) at Mallam in Accra to supplement the existing capacity for the Accra metropolis to improve reliability of power supply to the capital city and its immediate environs.

The Swedish International Development Agency (SIDA) and the VRA provided funding for the project.

Communication System and SCADA

The VRA is funding this outstanding component of the project. During the year, installation works commenced.

Power Supply to Tema EPZ

The Government of Ghana has established an Export Processing Zone (EPZ) enclave at Tema. The Ghana Free Zone Board (GFZB) and the Gateway Secretariat who are the agencies representing the government have requested the VRA for power supply to the enclave.

It has been decided that the New Tema Substation, which at present provides temporary power supply to the enclave be upgraded to meet the required demand. The upgrade involves the installation of two 161/11.5kV transformers with associated 11.5kV feeders to the enclave as well as an 11.5kV distribution around the enclave.





The project is estimated to cost US\$1.0 million. The GFZB will fully fund the cost of the project through the World Bank.

Closing of OPGW Obuasi-Kumasi Link

The VRA has currently installed OPGW on its southern loop with the exception of the Kumasi-Obuasi link. The Voltacom Implementation Committee (VIC) and the VRA intend to provide an OPGW on this link to close the fibre optic loop. ABB Power Technologies is executing the contract.

Rehabilitation of Akosombo Distribution System

The Akosombo Township power distribution network was constructed at the beginning of the Volta River Project, nearly forty 40 years ago. Due to the expansion of the Township, the network has been extended over the years to accommodate the increased demand. Most of the original network has become inadequate in terms of load carrying and fault correcting capacities and some conductors have become weak. In addition, faults on some particular sections of the network take out the whole township. There has therefore been the need to upgrade the network. Bids for the award of the project are being evaluated.

Shield Wire Scheme Projects

The Shield Wire Scheme (SWS) involves insulation of the shield wires at the top of the HV transmission lines and energizing them at MV for distribution of power to rural communities located along the HV lines in the NED operating area. The scheme provides about 5MVA of power out of about the 65MVA demand by NED. The current project involves the conversion of the Kintampo scheme from "V" to "D" as a medium term solution to be able to serve bigger loads such as water pumps under the Ministry of Local Government and Rural Development District Capitals water project. Equipment for the project is being procured.

BUI Dam Project

The Government of Ghana intends to implement the construction of the Bui Hydroelectric Power Dam as the third Hydroelectric Power Dam in the country. A feasibility study update of the project was carried out in 1995 by Coyne et Bellier of France for the VRA on behalf of Government. The study by Coyne et Bellier recommended a plant capacity of 400MW to be built on the Black Volta in the Bui gorge at an estimated cost of US\$450 million at 1995 prices.

In January 2003, the Government reconstituted the Bui Development Committee (BDC) to fast track the project. The BDC has contacted BKS Acres of Canada, who were implementing the Environmental Impact Assessment (EIA) plan to carry out the outstanding studies which include the EIA, detailed geotechnical and geological survey, detailed survey of the reservoir area and locations for the ancillary structures, further hydrological analysis, and further economic and financial analysis of the project including tariff study.

Rehabilitation of Electro-Volta House

This involves the replacement of the external façade of the building and the





rehabilitation of critical external defects on the building. Negotiations were concluded with the preferred bidder, MultiCAD/Desimone/Somec.

KNUST Hostel Project (SITI)

This project involves the construction of a 25-room hostel at the Kwame Nkrumah University of Science and Technology (KNUST) to be used by the VRA staff to be sponsored to undertake degree programmes in engineering. The engineering drawings were reviewed and finalized.

Kumasi Second Bulk Supply Project

The metropolis of Kumasi and its environs and other major towns in the Ashanti Region as far as Mampong and Bekwai are supplied with electricity from one bulk supply point - the Kumasi Substation, supplying a total load of about 120MVA. The Electricity Company of Ghana (ECG), the only off-taker for the supply from the VRA therefore provides long distance distribution feeders resulting in poor voltages and high system losses. Whilst the load is increasing, continuous increase in the capacity of the existing Kumasi Substation is becoming impracticable due to the long distances over which the power has to be transmitted.

The engineering phase of the project made up of detailed system studies, preliminary substation designs, site surveys, land

1,200
1,000
800
400
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

acquisition and project cost estimate were completed during the year.

Kpong Dam Downstream Shoreline Project

In 1994, the Authority contracted the Architectural and Engineering Services (AESL) to investigate the causes of erosion downstream of the Kpong Dam and make recommendations to solve the problem.

The study indicated that the deterioration of the shoreline was due to the high rate of surface run-off erosion coupled with groundwater infiltration.

The consultant proposed shoreline protection works to check the problem and protect the Authority's installations such as the pylons crossing the river on the Kpong-Akosombo transmission lines. The first phase of the project has been completed and the second phase commenced on September 15, 2004.



Kpong Hydro-electric Dam

Supply of Power Transformers - 2004

In order to ensure that the integrity and reliability of the transmission network is maintained, the VRA initiated action to procure six transformers to replace faulty or obsolete ones in addition to providing spare/redundant transformers for the system.

Load Forecast Update

During the year the Authority carried out a system load forecast study for power demand in Ghana for the period 2005-2014. Customer Survey of the Authority's





bulk customers was undertaken to ascertain energy demand projections of their respective concerns in the medium term. The forecast envisaged an average domestic load growth of 9.9% over that of 2004. The load growth is mainly driven by expected increases in energy consumption by the mining sector and domestic electricity consumption in the Accra/Tema area.

Tumu-Han-Wa Transmission Line Study

The setting up of the power system simulation model for carrying out the technical analysis of the feasibility study for the Tumu - Han - Wa Transmission Line was completed during the year.

DEVELOPMENT OF POWER GENERATING FACILITIES

West African Gas Pipeline Project

During the year, the final report of the Environment Impact Assessment Study for the West African Gas Pipeline Project (WAGP) was received, and was being reviewed. His Excellency, President J.A. Kufuor cut the sod on Friday, December 3, 2004 to commence the construction phase of the WAGP.

The WAGP project involves the construction of a 18-20 inch natural gas pipeline approximately 600km long and associated facilities to supply gas from Nigeria to support the energy requirements of the West African Region. The countries involved in the project are Nigeria, Benin, Togo and Ghana. The project implementation is being carried out by a consortium comprising Chevron Shell, Nigerian National Petroleum Corporation (NNPC) and VRA.

The major foundation customer of the project is the Takoradi Thermal Power Plant Complex, which is expected to substitute light crude oil for the cheaper gas fuel by 2008, in order to significantly reduce the cost of thermal generation.

At the West Africa Power Company (WAPCo) shareholders meeting in Abuja on December 16, 2004, the Shareholders reviewed the Final Investment Decision (FID) conditions and noted that only two conditions were outstanding. These were:

- Ghana's Parliamentary approval of the Government Consent and Support Agreement (GCSA);
- * Ghana's Parliamentary approval of the International Project Agreement (IPA). The outstanding documents were approved by Ghana's Parliament on December 17, 2004. All four participating sponsors submitted their notice of positive FID by December 20, 2004. The FID process was completed on December 23, 2004 when all the

four sponsors fulfilled their Escrow requirements. The major construction contracts were subsequently executed by WAPCo.

Takoradi 2(T2) Expansion Project

The Takoradi 2(T2) Expansion Project involves the conversion of the 2 x110 MW simple cycle combustion turbines at Aboadze into a second block of 330MW Combined Cycle Thermal Plant. In this connection, the following relevant activities were undertaken by the VRA:

- Participation in meetings held in Akuse from July 19-21, 2004 on the interim financing of the T2 Project by the International Finance Corporation
 - (IFC). The meeting discussed the draft MOU in respect of the Restated and Amended PPA as well as the Ghana Government Consent and Support Agreement (GCSA).
- Participation of the VRA Negotiation
 Team with CMS Energy on September
 1, 2004. The objectives of the meeting were:
 - Update on progress of the T2 financing.
 - Assessment of the objectives and the scope of works for the interim





financing includes the current time line to meet Parliamentary approval of all project documents; and

Formulation of a strategy to mobilize construction financing.

The VRA Negotiation Team proposed a strategy for the review of the financing documents which was prioritised in the following order:

- * PPA and Government Consent and Support Agreement (GCSA)
- * Loan Agreement and ECG Receivables
- Interim Services Agreement, Offshore Deed, Direct Agreement and Shareholders Agreement.

The finance group of the negotiation team was mandated to model the amortisation of the full construction financing to see its impact on the ECG receivables so as to know the way forward. The VRA also undertook the following activities:

- * Participation in meetings with CMS Energy on the negotiations of the Project Agreements (Power Purchase, Shared Services, Government Consent and Support Agreements).
- Participation in a technical meeting to examine the Engineering Procurement and Construction Documents for the expansion of the T2 facility from a simple cycle to combined cycle plant.
- Participation in a technical review of the EPC documents for the T2 Expansion Project in Jackson, Michigan. The review involved the technical specifications, equipment layout of the expansion of the T2 plant in Takoradi to convert it from a simple cycle to a combined cycle plant. The gas specification and delivery pressures from WAGP as obtained in the GSA were delivered to CMS for

inclusion in the technical specifications before issuance to bidders.

161kV Kumasi-Sunyani Transmission Line Project Power Supply to Newmont Ghana Gold Limited (NGGL)

The VRA is developing a strategy for advancing the Kumasi - Sunyani Transmission Line Project to be able to provide supply to a new mining company, Newmont Ghana Gold Limited.

Following a meeting with Newmont/Lycopodium and at the request of Lycopodium, an update to the study on power supply options was carried out to evaluate the performance of Static Var Compensators (SVC's) and Shunt Capacitors in responding to steady and transients load conditions. The results of the analysis had been documented and issued for review.

Power Supply to Bittou and Hamele in Burkina Faso from the Ghanaian Electricity Grid

During the year, discussions were held with SONABEL in Ouagadougou in connection with a feasibility study being conducted for the supply of power from the VRA network to serve the border towns of Bittou and Hamele in Burkina Faso. A feasibility study for the power supply to the two towns in Burkina Faso was completed during the year.

West African Power Pool (WAPP)

The VRA participated in a meeting organised by the ECOWAS Secretariat, in collaboration with USAID, and the Government of Ghana, within the framework of activities aimed at establishing the West African Power Pool (WAPP).

The meeting discussed:

- Modifications to the WAPP demand and supply optimisation model.
- Preliminary results of the WAPP Master Plan and dynamic stability study.
- The methodology for the creation of the regional regulatory agency and
- * Draft ECOWAS Environmental Impact



Volta River Authority

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Assessment Guidelines for electric power generation and transmission systems.

Together with the ECOWAS Secretariat, CEB and VRA carried out a technical evaluation of bids for the procurement of consultancy services for the following assignments in connection with the implementation of the 330kV Volta-Mome, Hagou-Sakete and 330kV Aboadze-Preseta transmission projects.

These involved:

- Update of feasibility studies, preliminary designs and tender document preparation;
- Line Route Survey and Environmental Impact Assessment.

The Japanese Government is providing funding for the consultancy services.

Power Supply to Tema Oil Refinery (TOR)

Under a Power Purchase Agreement, the VRA held discussions with the Tema Oil Refinery on the provision of 15MVA of power to the refinery. A draft MOU on the agreement was submitted to TOR.

Wexford Power Project

In 2003, the Wexford Goldfields Ltd. requested the VRA for dedicated power supply for a new mining concession plant at Akyempim in the Western Region. Consequently, the VRA reviewed the environmental management plan for the Wexford Power Project during the year under review.

Power Supply to Goldfields Ghana Limited (GFGL)

During the year the VRA agreed on a timetable for negotiating the Term Sheet and also the Power Supply Agreement with the Goldfields Ghana Ltd. (GFLD).

Emergency Auxiliary Power Supply for System Restoration

The Tema Diesel Station, the Strategic Reserve Power Plant and the VRA-CEB interconnection have been proposed to provide emergency services for black start in the event of the failure of the standby power systems at Akosombo and Kpong Generating Stations during system emergencies.

Review of Power Supply to Kintampo

VRA has completed the technical analysis in connection with the review of the current mode of supply of electricity to Kintampo Township and its environs. The study is under review.

Power Supply to Ashanti Goldfields Company

VRA reviewed the Terms Sheet for the power supply agreement with the Ashanti Goldfields Company.

Power Supply to Ghacem Limited

In connection with the provision of dedicated power supply to GHACEM Ghana Limited facilities at Tema and Takoradi, VRA completed the documentation of the study results.

Power Supply to Proposed Youga Gold Mine

The current developers, Entruscan Limited of the Youga Mines in Burkina Faso have indicated that the mine load will be 7MW instead of 4MW as earlier planned by AGC. VRA continued with the analysis to identify the most suitable option for power supply to the site. The VRA completed the draft feasibility study report on the supply of power to the Youga Mine Project in Burkina Faso.

Third Bulk Supply Point

VRA inspected suitable sites for the development of a Third Bulk Supply Point





to enhance system security in the city of Accra. A site next to tower 219 at Adjirigano close to Trasacco Workshop had been identified. However, further studies had been planned to determine the suitability of the selected site.

Position Paper on the OECF Power Plant Barge

In 2002 the Government of Ghana requested the VRA to take over the operation and maintenance of the 125MW Overseas Economic Cooperation Fund Barge Power Plant (OECF), which was originally being implemented by the Ghana National Petroleum Corporation. The VRA is carrying out investigations to identify an optimum site for the location of the OECF Power Barge and also the possibility of dismantling the gas turbines to reassemble as land-based units.

Tema Thermal Power Project

The VRA drafted a proposal on the constitution of a Tender Evaluation Committee comprising representatives from the Ministry of Energy and the Ministry of Finance in relation to the Authority's proposed development of a 300MW Thermal Power Plant Project to be located at Tema. The committee was responsible for developing the tender evaluation criteria and the review of the tenders received on March 31, 2004. VRA collated inputs for the development of the tender evaluation criteria.

Power Supply to Western Forgings Limited, Tema

VRA was considering various options of power supply to the Western Forgings Limited, located at Kpone. The optimum option is to build a 5km, 11kV line from New Tema Substation to the factory. An interim supply arrangement is to supply the factory from the 3T4 transformer, which also serves Aluworks, EPZ and the VRA. VRA discussed the mode of financing the project on a 50:50 cost-sharing basis.

Renewable Energy Resources

VRA is collaborating with the Ministry of Energy and energy experts from the Japan International Co-operation Agency (JICA) who are carrying out a study on the use of renewable energy resources in Ghana for rural electrification. The study is to produce a renewable energy master plan for rural electrification in Ghana.

Metering Africa 2004 Conference

VRA presented a paper on "An Automatic Metering Reading System for the West African Power Pool" at a Metering Africa Conference held in Abuja from June 8-11, 2004. The conference provided a forum for the power industry stakeholders to meet and share experiences and discover solutions for addressing diverse challenges in metering and billing.

Clean Development Mechanism (CDM) Financing for Takoradi Thermal Plant

This project seeks to access funds under the clean Development Mechanism (CDM) facility of the Kyoto Protocol to provide funding support for the TICO expansion project. VRA issued a Letter of Intent to the World Bank (IBRD) regarding potential purchase of emission reductions from the expansion of the T2 Plant.

World Energy Council Meeting

VRA participated in the 19th World Energy Congress and Exhibition held in Sydney, Australia from September 5th – 10th, 2004. The theme for the Congress was "Delivering sustainability: Opportunities and Challenges for the Energy Industry."

TRANSMISSION

VRA's transmission system performed satisfactorily during the year. The average in-service period of the transmission lines was 99.35% compared with the system target of 98.8%.





The Authority identified encroachments on the Prestea-Elubo right of way (ROW) and demolished the encroachments in the Prestea Township but the VRA was prevented from clearing the ROW at Elubo by the Regional Minister, citing security concerns. A total of 51 illegal structures within the ROW between Volta and Mallam line corridor were removed and sixty other structures, which were also located directly under the transmission line between towers 3/30 and 1/31, would be removed at a later date.

System Maintenance

Regular inspections and checks were carried out on transformers at various substations. Minor maintenance works such as replacement of degenerated silica gel, topping up oil levels and servicing of cooling fans were carried out.

Weekly 30 minutes test run was carried out on the standby diesel generation set at the Volta substation. The set operated satisfactorily. Defective lamps, chokes and starters for lighting systems were replaced at various substations.

Thermo vision tests were carried out on terminal equipment and clamps at various substations. All energy meters in the system were recalibrated to ensure accurate billing of customers. Calibration of transformer feeder and line protection relays was also carried out at various substations. Trip tests were also carried out at various line sections, transformers, feeders, and circuit breakers. Various substation drawings were updated and protection systems on various equipment were modified to enhance performance. The tie-line energy and relay calibration was jointly carried out by VRA/CIE personnel at Abobo and Prestea substations. A Hathaway IDM Events and fault recorder was installed on the tie-line at Prestea.

A new 8km transmission line from Tarkwa to New Tarkwa substation was commissioned in the course of the year.

Routine inspection, servicing and functional testing of the two master station work locations i.e. Hno 5195 and Hno 5196 together with their associated monitors and accessories were carried out.

Maintenance of SCADA equipment at all remote stations was also carried out.

DISTRIBUTION

VRA has since 1987 assumed responsibility for distribution services in the northern regions of Ghana. The Authority's electricity distribution company, the Northern Electricity Department (NED), increased its previous customer population from 150, 950 to 174, 144, an increase of 15.36% over the previous year's figure.

Energy sold during the year was 324, 504, 877kWh compared with 284, 538, 464 kWh for the previous year. Billed Revenue for the year 2004 increased from \$203, 081, 482, 700 to \$295, 732, 155, 125. Revenue collected for the year improved from \$140, 040, 976, 203 to \$202, 105, 909, 988. The collection rate improved from 70% in 2003 to 78% while the receivable lag also improved from 238 to 211 days. System losses for the year dropped from 31.4% from the previous year to 30%. Varied reasons given for the causes of nontechnical losses include power theft through illegal connections, bypassing of meters. Other causes are the use of substandard lines, over-aged meters and lines, inaccurate meter readings and flat rate metering due to unavailability of meters.

To address the problem, VRA purchased quantities of prepaid meters to replace some of the faulty and over-aged meters. Flat rate customers were also being provided with new prepaid meters.

During the year, a computer based billing system was installed in the five operational Areas to replace the Utility Billing and Revenue system. The new billing system has decentralized billing to the Areas compared with the previous system where





all billing was carried out at Tamale. The new system has improved the management of data and customer information by reducing errors in billing and prompt correction when such errors occurred. This has also helped to bring about improvement in collection and reduction in losses.

NED has also introduced load limiters as alternative metering devices for customers in the lifeline bracket and continues to procure and install prepayment meters for non-life-line customers to help retrieve outstanding receivables and to ensure that customers take control of their consumption.

A total of twenty two (22) power transformers of various capacities were installed for various customers. The Ejura New Market Electrification Project constructed by the Ejura District Assembly under the supervision of NED was also completed and the substation commissioned.

His Excellency, President J.A. Kufuor, inaugurated an electrification project at Babile. Two of the three substations in the town were also commissioned.

One hundred and forty-seven (147) new distribution substations were commissioned in the NED operational area with a total capacity of about 8,925 kVA. Nine hundred and seventy six (976) km of 34.5kV lines were commissioned as well, including thirty-eight (38) km of lines to Nsota, Srapokrom, Mampong, Mangoase, Buoku and Asekye through Odumase to Akonkonti.

A 500 KVA, 11/0.433 kV transformer from the Tamale Legion substation was overhauled. Thirty-three (33) Lightning Arresters were repositioned and maintained. Thirty-four others were also installed for transformer protection.

Nine sets of 11 kV drop out fuse gears were installed at Substations that were previously solidly linked. Line

maintenance on both High and Low Voltage Lines covered a distance of 3122.45km while patrolled lines summed up to 6268 km. One thousand, eight hundred and fifty-four (1,854) interconnections and non-standard service were disconnected and removed from the network, while seventy-four illegal connections were also detected and disconnected as part of the on going losses reduction programme.

SUPPORT ACTIVITIES

Management Information System (MIS)

The Authority invested heavily during the year to improve the quality and service delivery of its management information systems. To this end, the following key applications were implemented, namely, Interim Stock Management System, Integrated Financial and Materials Management System (FINMAT), Oracle HRMS Release 11i, School Management System and the Vehicle Maintenance Module of the system.

During the year, Internet/Email services were extended to the Northern Electricity Department in Tamale to facilitate communication.

Health Services

The Authority places a high premium on the health of its employees and their families as well as the communities in its areas of operation. These objectives were pursued through the VRA Hospital, clinics and health programmes.

Total attendance at the Akosombo Hospital and the three satellite clinics in Accra, Akuse and Aboadze was 60,241, a decrease of 0.16% over the previous year's figure of 60,343. Total admission was 1,621 compared with the 2003 figure of 1,493. The external public from which the VRA derives direct revenue constituted about 65.0% of the overall out-patient load and 86.0% of the in-patient load at the Akosombo Hospital.





Preparatory works for the installation of a new X-ray facility at Akosombo started in the latter part of the year. Installation of equipment at Aboadze was completed and staff recruited to man the key areas.

Direct income from the paying public for the year was \$4,194,564,368.00. This exceeded the target of \$2.5 billion. Revenue for the year 2005 has been targeted at \$8 billion cedis. The Hospital facilities at Akosombo are to be expanded to meet the challenges of the new National Health Insurance Scheme. In particular, expansion in eye care and the establishment of an HIV counselling centre are high on the agenda.

The VRA continued with control activities to contain the incidence of Schistosomiasis and Bilharzia in communities along the Volta Lake. For instance, the VRA responded to requests from Mepe, Dambai, Akwamufie and other communities in the Volta Basin for treatment due to Bilharzia infection.

The medical boat, ONIPA NUA undertook six voyages covering about 16 villages and surrounding communities and carried out health activities such as clinical cases, mass immunization, and mass treatment of Schistosomiasis. The operations of the Medical Boat were supported by Swiss Ghana, a Switzerland based NGO.

Environmental Enhancement

In recognition of VRA's sound environmental management practice, the Environmental Protection Agency (EPA), presented an Environmental Award to the Authority.

Three projects were assessed during the year. Out of these, Environmental Permits were secured for the 330kV Aboadze-Volta Transmission Project and the Wexford Power Line Project. The Environmental Permit for the Kumasi-Sunyani Transmission Project is expected to be procured in the first quarter of 2005. Work on the Environmental Management Plan

for Pollution Control in Akosombo Township, and the Debre Shoals Projects were completed and the final drafts were submitted to the EPA for review. An EPA registration form for preparation of Environmental Management Plan for the Akosombo and Kpong Dam was submitted to the EPA.

In response to the EPA's request, the VRA advertised for proposals to undertake this project.

VRA paid the last installment of \$400 million to the Volta Gorge Landowners Association (VGLA), under a contract to manage the forest on either slopes in the Volta Gorge to contain slides and erosion. The immediate benefit is to improve on climatic conditions around the Volta Lake to ensure longer life - span for hydroelectricity production.

VRA carried out its dredging operations, covering a total distance of 2,436.82m. As a result of delay in rehabilitation works on the dredger, the target of attaining sea water intrusion of six (6) parts per thousand at 9km from the estuary could not be achieved.

An average hyacinth cover of 1m and weight of about 10kg. was removed at the Kpong headpond during monthly monitoring. This indicates a considerable reduction in intensity of infestation from an average of 10m² the previous year.

The formation of Community Water Hyacinth Control Task Force was undertaken. Twelve communities were visited out of a target of 25. Sanitization of the remaining 13 communities will continue in 2005.

VRA submitted a proposal for a joint venture between the Authority and the Volta River Estate Limited (VREL) initiative to use harvested aquatic weeds for composite. The VRA collaborated with the Environmental Protection Agency (EPA) to source for funds from the African Development Bank to supplement existing aquatic weed management programme on



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the Volta Lake. The project is expected to take off in year 2005.

Real Estate

Through the Akosombo Management Committee (AMC), the VRA continued to exercise its functions as a Local Authority.

The AMC collected an amount of \$206,740,768 as Local Authority revenue during the year whilst non-Local Authority activities yielded \$5,053,067,836.51 compared with \$3,605,684.72 collected in 2003. According to present agreements, the VRA and Asuogyaman District Assembly will share equally the Local Authority Revenue of \$206,746,768.00

Alteration works were undertaken on the main building in the River Club, Osu, compound for its conversion into a clinic facility to contain a theatre, scrubbing area, four wards, nurses' bay, dispensary and sanitary area. The summer hut has also been converted into a cashier's office, administration office and waiting lounge. At the end of the year works were 50% completed.

Under VRA's housing loan scheme, 19 applications were approved by the Board of Trustees. An amount of \$1,055,512, 391.00 was disbursed to beneficiaries during the year.

During the year under review, a total amount of ¢7,612,409, 158.00 was paid as compensation to claimants who have been adversely affected by the Authority's operations.

Owing to the expected expiration of the tenancy agreement between VRA and ADB at Pegasus house in May, 2005, alternative arrangements were initiated between VRA and SSNIT for the rental of three floors at the Heritage Towers. Accordingly, VRA relocated some of its departments in December 2004.

Human Resource

The Authority was committed to development and empowerment of the human resource base to achieve the corporate vision.

A total of 82 in-house courses were organized and run for 1,011 staff during the year. Sixty-two staff participated in local/external courses in 2004. The Authority sponsored 11 staff for various overseas courses. Fourteen management trainees were assigned to various departments.

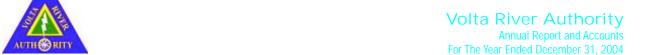
At the end of the year, the corporate labour strength for permanent staff stood at 3,239 compared with the figure of 3,152 in 2003, an increase of 87. The number of contract staff however decreased by 18, from 69 in 2003 to 51 during the year under review.

The industrial climate remained generally calm during the year. The CoEn Consulting/VRA In House team, who worked on the restructuring of the VRA, submitted the final Draft Report to the Chief Executive in April 2004.

A new substantive Chief Executive was appointed for the Authority in April 2004. A new VRA Board was also inaugurated by His Excellency, President J.A. Kufuor.

The new Chief Executive, Mr. Joshua Ofedie, held durbars with staff in July and October 2004. The appointments of five management staff were confirmed. Two hundred and eighty-seven new appointments were made during the year.

Two Long Service Award ceremonies were organized for 142 beneficiaries in the first and second half of the year. A total of 336 employees who had served the Authority for 10 years and more were also given cash awards. An amount of \$\\$819,906,365.17\$ was paid as retirement gifts to 58 employees who qualified for retirement benefits during the first three quarters of the year



The Ghana Employers Association awarded a certificate to the Authority for being among the top 10 trainers in the Association. The Authority was also elected as a Council Member for 2004 for the Petroleum and Power Group and is expected to nominate a representative. Sixty-five employees retired compulsorily from the services of the Authority during the year. Thirty-four staff resigned from the Authority. Seventeen employees were granted Leave of Absence Without Pay.

Transport and Security Services

The Authority continued its Lake Safety Educational campaign to boat operators/owners and lake users in general. The campaign focused on human factors affecting safety, such as risks associated with overloading, non-adherence to load line markings, and effects of alcoholism on navigation, poor preventive and maintenance culture. Two accidents, nevertheless, occurred, claiming nine lives.

Public Affairs

VRA conducted its activities in a socially responsible manner to ensure that the Authority's corporate image is not jeopardized.

As in the previous year, educational programmes were held at various FM stations, and in the form of group communication in the Northern Electricity Department (NED) area to throw more light on the installation of a new customer billing system and the introduction of new prepayment meters to facilitate delivery of service.

In line with its philosophy of a good corporate citizen and socially responsible organization, VRA made various donations and undertook sponsorships of a number of national priority programmes such as conservation of water resources, deepening of democratic governance, and education. By the end of the year, a total amount of over ¢3 billion had been spent on the afore-mentioned programmes.

The Authority's facilities continued to attract tourists and other dignitaries from both international and local destinations. During the year 35,000 tourists visited the Akosombo and Kpong dam sites, a pulsating tourist attraction, earning VRA over ¢74 million in tourist receipts.

Dignitaries among the visitors included His Excellency, President J.A. Kufuor, Maj. General Ashile Yasudare from the Indian National Defence College, Brigadier General M.A. Yerima, Commandant of the Nigerian Armed Forces Staff College, and delegations from various African energy companies, and a Parliamentary Select Committee on Foreign Affairs, from China.

SUBSIDIARY COMPANIES

Kpong Farms Limited (KFL)

In accordance with the decision of the VRA Board to source for a private sector partner to provide the necessary financial and management support to the operations of the Kpong Farms Ltd (KFL), a Request for Proposal (RFP) for private sector participation in KFL was prepared and approved. The RFP document was subsequently advertised for sale in the national dailies. The five interested proposers who purchased the document were Lower Volta Fish Farms Ltd., Narrok Farms Ltd, GECAM Superior Co., G&D Fishing Projects Ltd., Opoku Andoh & Co. Chartered Accountants.

It is expected that the Executive/Board would give their approval to the Evaluation Report to enable VRA/KFL to embark on the necessary negotiations by March 2005 leading to the Joint Venture Agreements with the approved proposer.

VOLTA LAKE TRANSPORT COMPANY

The Director, Investments, assumed direct responsibility for the VLTC on June 1, 2004. Under his leadership, the VLTC was able to negotiate successfully with all its clients to adjust cargo tariffs on the





North/South routes and the ferry stations. As a result fuel tariffs payable by the Tema Oil Refinery (TOR) were increased by 26% while rates for cement shipments for and on behalf of GHACEM and Diamond Cement were adjusted upwards by 17%. This helped the VLTC to improve its revenue base by about \$2.5b and to enable it pay off a large part of its debt and carry through some maintenance programmes.

The VLTC was also able to secure ¢600m working capital support from the VRA in the third quarter when the company experienced serious financial difficulties as a result of the break down of its vessels. This is scheduled to be paid in 2005.

AKOSOMBO HOTELS LIMITED

The main objective of the Akosombo Hotels Limited (AHL) for 2004 was to increase the competitiveness and profitability through increased occupancy, improved quality of services, efficient management of existing facilities, diversification of revenue sources, and reduction of energy costs.

Occupancy of Akosombo Hotels Limited for January – December 2004 was 56% compared with the previous year figure of 55%. Total revenue from January to December, 2004 was ¢7.202billion compared with ¢7.240 billion the previous year, a decrease of 0.01%. Net operating loss for January – December 2004 was ¢2.217 billion compared to a net loss of ¢174million in 2003. The net loss was attributed to three main factors: high energy costs (¢771.5million), high provision for depreciation (¢1.07 billion), and high costs of inputs.

The MV. Dodi Princess Boat was transferred to the Volta Hotel to create the required synergy for the hotel's tourism operations.

VOLTA TELECOMMUNICATIONS COMPANY (VOLTACOM)

Ghana Telecom (GT) in 2003 submitted a proposal to the Ministry of Energy (MOE) to lease and utilize the VRA's fibre network for the purpose of meeting their roll-out plan involving the installation of 400,000 additional fixed lines in the country by 2005. The Ministry of Energy noted that the use of the Voltacom fibre by GT for their business development will avoid duplication of cost and effort in the light of the investments already made by the VRA in the optical fibre. The Ministry of Energy therefore authorized Voltacom to enter into negotiations with GT in order to save GT from having to implement micro-wave links in lieu of the cost-effective Voltacom fibre.

Consequently, Voltacom under the auspices of the Voltacom Implementation Committee (VIC) held negotiations with GT and executed a Memorandum of Understanding (MOU) on February 18, 2004 for the lease of a pair of optical fibre on VRA's existing network. The Agreement was substantially completed in 2004 and is expected to be completed in 2005.

Taking advantage of newer technologies which allow for more efficient use of frequency spectrum, VoltaCom decided to utilize only one - nation - wide channel for its microwave communications links. Consequently, the National Communications Authority (NCA) was requested to allocate only one channel instead of the two channels previously allocated commencing from 2004. The request was acceded to by the NCA enabling VoltaCom to save US\$42,000 in 2004. Total sales for the year amounted to US\$159,668.61. This represents an increase of about 0.9% over the previous year's sales value of US\$153,233.35. Voltacom embarked upon aggressive collection of receivables, with positive results. Total receipts for the year amounted to US\$174,215.68 of which US\$122,378.06 was in respect of the current year (2004).



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Voltacom provided prompt responses to enquiries from prospective customers. In all 13 entities made enquiries and applications for VoltaCom Services. They have already paid for co-location charge of US\$5,600 and the Service Lease Agreement is being prepared for issue in January 2005.

Negotiations are far advanced to provide the Electricity Company of Ghana (ECG) with two EL links from Kumasi to Tema and from Takoradi to Tema with drop-and-insert at Cape Coast.



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FINANCIAL REVIEW For the Year Ended December 31, 2004

The total power generated from both Hydro and Thermal sources for the year 2004 was 6,039 GWh. Generation from Hydro sources was 5,281 GWh in 2004 compared to 3,885 GWh in 2003 while thermal generation was 758 GWh (2003: 2,014 GWh). This was supplemented by purchases from Compagnie Ivoirienne d' Electricité (CIE) of La Cote D' Ivoire of 878 GWh (2003: 940 GWh). Transmission losses were 205 GWh or 3.0% (2003: 330 or 4.9%). Generation and Transmission Substation use was 26 GWh (2003: 40 GWh).

Revenue

Revenue from sale of power increased by 10.0% to \$2,990.85 billion over the previous year's figure of \$2,710.39 billion. This was due mainly to a 1.1% increase in power sold to customers (2004: 6,532 GWh, 2003 6,462 GWh).

Operating Profit

An operating profit of ¢437.15 billion was recorded as compared to the ¢391.10 billion for the previous year. The profit represents a positive return of 1.94% on average revalued net fixed assets as against a return of 2.25% in 2003. The Authority's performance in 2004 continued to improve during the year.

The main factors that contributed to the improvement were;

- 1. The relief accrued to the Authority under assistance from the Government of Ghana.
- 2. Increase of 1.1% in units of power sold to customers.
- 3. A decrease of 21.4% in fuel usage and power imports cost as compared to the year 2003. This was as a result of improved generation mix in favour of Hydro power in 2004

Net Loss

The Authority recorded a net loss of ¢47.05 billion compared to a net loss of ¢32.79 billion in 2003. The loss for the year is after charging depreciation of fixed assets of ¢1,008.01 billion (2003: ¢771.65 billion), exchange fluctuation on foreign debt of ¢275.52 billion (2003: ¢334.63 billion) and loan interest and commitment charges of ¢208.68 billion (2003: ¢89.26 billion).

The operating expenses including power imports, depreciation, loan interest and exchange fluctuation on foreign debt increased by \$3.53 billion to \$3,414.26 billion (2003: \$3,410.73 billion). Exchange Fluctuation on Foreign Debt fell from \$334.63 billion in 2003 to \$275.52 billion in 2004. The depreciation charge on physical revalued fixed assets increased by \$236.36 billion to \$1008.01 billion (2003: \$771.65 billion).

2005 OUTLOOK

A total of 7,957 GWh is estimated as system demand in the year 2005 (made up of a projected customer demand of 7,647 GWh and transmission losses of 310 GWh). This represents about 15% increase over the consumption of 6,890 GWh in year 2004.

The Authority plans to generate 5,700 GWh from its hydro sources and 1,016 GWh from the Takoradi Thermal Plant (TAPCO). The Takoradi International Company (TICO) and CIE are expected to supply 441 GWh and 800 GWh respectively, to make up for the difference of 1,241 GWh.

An amount of \$2,150.19 billion is estimated as expenditure on system generation and supply from TICO and CIE. Total operating expenses for the year excluding depreciation of about \$1,371.40 billion is estimated at \$2,708.00 billion.

The total capital expenditure for the year is estimated at \$878.83 billion. Out of this amount, \$726.84 billion will be expended on generation, transmission and distribution projects whilst other projects and asset purchases take up the balance of \$151.99 billion.

Consequently, the Authority is expected to end the year 2005 with an operating loss of about ¢617.86 billion compared to an operating profit of ¢437.15 billion in year 2004. The year 2005 is expected to end with a cash balance of ¢29.00 billion (2004: ¢278.22 billion). The corresponding rate of return on average revalued net fixed assets is -2.6% compared to the covenanted rate of 8%.



FIVE YEAR FINANCIAL SUMMARY

	2000	2001	2002	2003	2004
	¢'m	¢'m	¢'m	¢'m	¢'m
Sale of Electricity	877,029	1,393,126	2,028,795	2,710,395	2,990,850
Other income	62,839	84,084	68,583	667,543	376,363
Operating and General Expenses	664,812	1,293,290	2,128,596	2,250,505	1,956,778
Depreciation Operating (Loss)/Profit Interest & Commitment Charges	371,772 (257,878) 79,106	400,670 (220,043) 78,542	566,255 (582,513) 186,513	771,652 391,105 89,264	1,008,014 437,150 208,676
Exchange Fluctuation Debt	672,497	23,441	473,585	334,633	275,521
Net (Loss)/Profit for the year	(983,342)	(329,693)	(1,269,119)	(32,792)	(47,047)
Fixed Assets (Cost/Valuation)	16,571,080	18,421,597	24,077,102	32,861,047	42,021,153
Fixed Assets (Net Book Value)	9,997,708	11,971,597	14,027,831	19,510,211	24,093,618
Capital Work in Progress Current Assets Current Liabilities Investment by the Rep. of Ghana Capital Surplus	583,319 727,450 946,302 374 8,330,140	366,562 939,217 1,037,959 374 9,837,379	557,386 1,574,482 2,149,759 374 11,930,006	718,263 2,082,199 1,474,336 374 18,011,052	651,543 1,844,282 600,256 374 22,707,551
Income Surplus Account Long Term Loans	(535,615) 2,413,421	(521,620) 2,372,601	(1,410,570) 2,855,337	(848,123) 2,616,729	(55,518) 2,874,009
Cedi to US\$ Exchange Rate	6,889.28	7,255.48	8,351.91	8,805.55	9,029.73



FIVE YEAR SUMMARY OF FINANCIAL RATIOS

		2000	2001	2002	2003	2004
Return on Average Equity #	%	(0.04)	(0.03)	(0.06)	2.79	2.17
Return on Average Net Fixed						
Assets - Plant in operation *#	%	(3.29)	(2.00)	(0.04)	2.25	1.94
Current Assets Ratio		0.77	0.90	0.73	1.41	3.07
Debt Service Ratio	Times	1.40	0.06	0.004	0.34	0.43
Gearing Ratio	%	23.39	20.09	26.71	15.08	12.58
GWh Generated less						
Station Use (X 10 ⁶)	GWh	7,202.51	7,831.48	7,256.26	5,860.10	6,013.00
Total production Expenses including depreciation per KWh	Cedis	166.30	216.72	293.35	515.72	493.06
Total cost of production including depreciation and interest but excluding Debt Fluctuation per KWh	Cedis	177.28	206.69	397.09	530.95	527.77
Average Revenue/KWh						
Generated	Cedis	121.77	177.26	279.59	576.43	559.99
Total Installed Capacity including NED	MW	1,432	1,432	1,706	1,706	1,706
Ratio of gross hydro generation to firm capability of Akosombo and Kpong +	%	137.70	137.68	104.91	80.94	110.02
System Peak Demand	MW	1,161	1,190	1,227	1,134.80	1,049.00
Ratio of Systems Peak						
Demand to Installed Capacity	%	81.08	83.10	71.92	66.52	61.49

^{*} On replacement cost basis

 $^{\,}$ + This is based on the firm capability of Akosombo and Kpong of 4,800GWh

[#] This is based on operating profit or loss before exchange fluctuation, interest & commitment charges



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STATEMENT OF RESPONSIBILITY of Members of the Volta River Authority

The Members of the Authority are responsible for preparing the financial statements for each financial year which give a true and fair view of the state of affairs of the Authority at the end of the financial year and of the profit and loss of the Authority for that period. In preparing those financial statements, the Members of the Authority are required to:

- Select suitable accounting policies and apply them consistently
- Make judgments and estimates that are reasonable and prudent
- Prepare the financial statements on a going concern basis unless it is inappropriate to presume that the Authority will continue in business

The Members of the Authority are responsible for ensuring that the Authority keeps accounting records which disclose with reasonable accuracy the financial position of the Authority and which enable them to ensure that the financial statements comply with International Accounting Standards. They are responsible for taking such steps as are reasonably open to them to safeguard the assets of the Authority, and to prevent and detect fraud and other irregularities.

The above statement should be read in conjunction with the statement of respective responsibilities of Members in the Independent Auditors' Report.

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INDEPENDENT AUDITORS' REPORT To The Volta River Authority.

We have audited the Financial Statements of Volta River Authority for the year ended December 31, 2004, which comprise the profit and loss account, the balance sheet, the cash flow statement, and the related notes 1-19. These financial statements have been prepared under the accounting policies set out therein.

Respective responsibilities of Members and Auditors

As described in the statement of Members responsibilities, the Members of the Authority are responsible for the preparation of the Financial Statements in accordance with International Accounting Standards.

Our responsibility is to audit the Financial Statements in accordance with relevant legal and regulatory requirements and auditing standards.

We report our opinion as to whether the financial statements give a true and fair view and are properly prepared in accordance with the Volta River Development Act, 1961 (Act 46) as amended. We also report if, in our opinion, the Authority has not kept proper accounting records, if we have not received all the information and explanations we require for our audit.

Basis of opinion

We conducted our audit in accordance with International Standards on Auditing. An audit includes an examination, on a test basis, of evidence relevant to the amounts and disclosures in the financial statements. It also includes an assessment of the significant estimates and judgements made by the Members of the Authority in the preparation of the financial statements and of whether the accounting policies are appropriate to the Authority's circumstances, consistently applied and adequately disclosed.

We planned and performed our audit so as to obtain all the information and explanations, which we considered necessary in order to provide us with sufficient evidence to give reasonable assurance that the financial statements are free from material misstatement, whether caused by fraud or other irregularity or error. In forming our opinion, we also evaluated the overall adequacy of the presentation of information in the financial statements.

Opinion

In our opinion the Financial Statements are in agreement with the records, which have been properly kept. We obtained all the information and explanations we required. In our opinion the Financial Statements give a true and fair view of the state of affairs of the Authority as at December 31, 2004 and of the loss for the year then ended, and have been properly prepared in accordance with the Volta River Development Act, 1961 (Act 46) as amended.

State Enterprises Audit Corporation

Accra

29th June 2005

Deloitte & Touche Chartered Accountants

Accra

29th June 2005



PROFIT AND LOSS ACCOUNT for the year ended December 31, 2004

		2004	2003
	Notes	¢'m	¢'m
Sale of Electricity	2	2,990,850	2,710,395
Other Income	2	376,363	667,543
		3,367,213	3,377,938
Deduct:			
Operating Costs	3	1,956,778	2,250,505
Depreciation	4	1,008,014	771,652
Gain on Foreign Exchange		(34,729)	(35,324)
		2,930,063	2,986,833
Operating Profit		437,150	391,105
Deduct:			
Exchange Fluctuation on Foreign Debt		275,521	334,633
Interest & Commitment Charges	5	208,676	89,264
		484,197	423,897
Net Profit / (Loss) for the year			
transferred to Income Surplus Account		(47,047)	(32,792)





INCOME SURPLUS ACCOUNT for the year ended December 31, 2004

		2004	2003
		¢'m	¢'m
Balance at beginning of year		(848,123)	(1,410,570)
Transfer from capital surplus	14	850,202 2,079	615,500 (795,070)
Profit (Loss) for the year transferred from Profit and Loss Account		(47,047)	(32,792)
		(44,968)	(827,862)
Transfer to Debt Contingency Fund Reserve		(10,550)	(20,261)
Income Surplus / (Deficit) carried forward to Balance Sheet		(55,518)	(848,123)



BALANCE SHEET For the year ended December 31, 2004

		2004	2003
	Notes	¢'m	¢'m
Property, Plant and Equipment	4	24,745,161	20,228,474
Long Term Investments	6	431,337	387,644
		25,176,498	20,616,118
Current Assets			
Stocks	7	184,560	175,772
Debtors	8	1,373,703	1,722,040
Short Term Investments	9	119,495	66,522
Cash and Bank Balances	10	166,524	117,865
		1,844,282	2,082,199
Creditors: amounts falling due within			
one year			
Creditors	11	353,504	787,646
Borrowings	12	246,752	686,690
3		600,256	1,474,336
Net Current Assets		1,244,026	607,863
Total Assets less Current liabilities		26,420,524	21,223,981
Creditors: amounts falling due over			
one year			
Creditors	11	692,876	1,253,267
Borrowings	12	2,874,009	2,616,729
		3,566,885	3,869,996
		22,853,639	17,353,985
Financed by:		22,000,007	17,000,700
Investment by the Rep. of Ghana	13	374	374
Income Surplus Account	10	(55,518)	(848,123)
moomo carpiao moocam		(55,144)	(847,749)
Capital Surplus	14	22,707,551	18,011,052
Debt Contingency Fund Reserve	15	201,232	190,682
· · · · · · · · · · · · · · · · · · ·		22,853,639	17,353,985

The financial statements were approved by the Members of the Authority on June 29, 2004 and signed on its behalf by:

Joshua K. Ofedie

Chief Executive

Osei Asamoah Bonsu Board Chairman





CASH FLOW STATEMENT for the year ended December 31, 2004

		2004	2003
	Notes	¢'m	¢'m
Cash flow from operating activities	18	359,945	115,088
Cash flows from investing activities Interest Received Purchase of plant, property and equipment		10,325 (50,651)	10,641 (40,109)
Proceeds from sale of fixed assets Capital work in progress		535 (4,737) (43,693)	(45,167) 14 5,275 (95,018)
Long Term investments Net cash used in investing activities		(88,221)	(119,197)
Cash flows from financing activities Net Inflows from long term borrowing Net Outflows from Medium term borrowing Net Inflows/(Outflows) from short term borrowing Net cash used in financing activities		218,977 38,303 (375,225) (117,945)	(167,955) 151,499 (171,309) (187,765)
Increase in cash and cash equivalents		153,779	(191,874)
Cash and cash equivalents at the beginning of the year		124,441	316,315
Cash and cash equivalents at the end of December 31, 2004	19	278,220	124,441



1. ACCOUNTING POLICIES

The principal accounting policies adopted by the Authority and used in the preparation of these financial statements are stated below:

Investment in Subsidiaries

Investment in Subsidiaries represents investments at cost less a provision for diminution in value.

Agency Services

The Authority performs certain agency services on resettlement, lake research and transportation for and on behalf of the Government of the Republic of Ghana with funding from the Government and grants and loans from Kreditanstalt Fur Wideraubau (KFW). The transactions in respect of these services are not consolidated with the results, assets and liabilities of the Authority.

Transactions in other currencies

Assets and liabilities denominated in currencies other than the cedi are translated at the rate of exchange ruling at the year end. Exchange differences arising from the conversion of long-term loans in foreign currencies are dealt with as follows:

Exchange differences arising on the conversion of long-term loans used to finance assets that are not commissioned at balance sheet date are charged to the relevant capital work-in-progress account.

Exchange differences arising on the conversion of long-term loans used to finance assets that have been commissioned at balance sheet date are charged to the profit and loss account.

All other translation differences are taken to the profit and loss account.

Property, Plant and Equipment

The gross book values of tangible assets including additions during the year are stated at current replacement cost. Repairs and maintenance expenditures are charged against profit; major improvements and replacements that extend the useful life of an asset are capitalized.

Depreciation is calculated on a straight-line basis at rates estimated to write off the gross value of assets over their economic useful lives.

The principal annual rates used are:

Asset	Rate of Depreciation (%)	No of Years
Dam, Powerhouse	Between 0.67 and 2.2	45 - 150
Transmission Network	Between 2.2 and 3.3	30 - 45
Akosombo/Akuse Townships	2.5	40
Buildings	2.5	40
Hydro Generating Plant	Between 2.2 and 4.0	33 - 45
Aviation and Marine Equipment	12.5	8
Motor Vehicles	Between 10.0 and 25.0	4.0 - 10.0
Miscellaneous Plant, Equipment	Between 12.5 and 25.0	4.0 - 8.0
Meters/Consumer Connections	Between 4.0 and 5.0	20 - 25
Diesel Generating Plant	Between 2.5 and 5.0	20 - 40



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NOTES TO THE FINANCIAL STATEMENT for the year ended December 31, 2004

Distribution Network Between 2.5 and 4.0 25 - 40
Computer Equipment Between 20.0 and 25.0 4.0 - 5.0
Communication Equipment Between 3.3 and 6.67 15 - 30

No depreciation is charged in the year of asset acquisition or of commissioning of capital work-in-progress.

Interest costs related to capital work-in-progress are included in the cost of the assets and are depreciated as part of the total asset cost.

The fixed assets of the Authority are updated yearly to their current replacement values by the application of indices. Physical revaluation is carried out every five years by a firm of engineers and management consultants on current replacement cost basis. The net surplus is credited to Capital Surplus Account. An element of revaluation surplus being that part of the depreciation charge in respect of the revaluation surplus on fixed assets is transferred in each year to Income Surplus Account.

Government Grants

Grants, reliefs and assistance of a capital nature made by the Government of the Republic of Ghana are used to reduce the cost of the acquisition of the relevant fixed assets by the amount of the grant. Grants relating to revenue or recurrent expenditure are credited to the profit and loss account under other income.

Stocks

Stocks are valued, on a consistent basis, at cost less provision for obsolescence. Cost includes all direct expenditure incurred in bringing the goods to their current state.

Debtors

Debtors are stated at book value, less a provision for debts that are expected to be doubtful. Full provision is made for specific debts known to be irrecoverable.

Interest and Finance Costs

Interest and commitment fees payable are charged against profits in the year in which they arise. Interest costs directly related to funding capital work-in-progress are included as part of the capital cost up to the date of commissioning of the asset.



2. Segmental Information - Revenue	2004			2003
Sale of Electricity	GWh	¢m	GWh	¢m
Electricity Company of Ghana	4,820	2,052,011	4,505	1,848,522
Mines	599	286,877	573	246,063
Akosombo Textiles	24	12,948	28	15,609
Aluworks	12	8,551	14	9,185
Others	34	28,926	32	13,756
Northern Electricity Dept (NED)	331	236,206	426	191,053
Local Customers	5,820	2,625,519	5,578	2,324,188
Valco Aluminium Company Ltd	10	2,756	2506	4,540
Communuaute Electrique Du Benin	662	340,667	60230	5,779
Societe National D' elect Du Burkina	3	2,076	2	1,203
Diamond Cement	32	16,590	26	9,932
Free Zone Companies	5	3,242	4	4,753
Foreign Customers	712	365,331	884	386,207
Sub Total	6,532	2,990,850	6,462	2,710,395
Other Income				
Rents		517		805
Interest and Investment Income		10,325		10,641
Miscellaneous		81,369		41,218
Wisconaricous		01,007		11,210
Government Assistance*		283,617		614,865
Profit on sale of Fixed Assets		535		14
Sub Total		376,363		667,543
Total		3,367,213		3,377,938

^{*} The Authority received a relief of net indebtedness owed the Government of Ghana as at December 31, 2004 and in line with the Authority's accounting policy on accounting for government grants and International Accounting Standards (IAS 20); the amount was treated as other income (Government Assistance)



3. Operating Costs	2004	2003
Analysis by Budget Centre: Generation: Hydro Thermal	¢m 39,604 497,048	¢m 23,346 841,297
Transmission	90,852	33,923
Distribution (NED) Purchase of Electricity Central Services Akosombo / Akuse Township Health Services	64,211 905,954 298,499 38,055 22,555 1,956,778	42,722 1,104,131 171,411 20,946 12,729 2,250,505
Analysis by Cost Element:	¢m	¢m
Salaries and Related Expenses	222,403	156,766
Fuel, Handling and Usage	433,680	599,593
Purchase of Electricity	905,954	1,104,131
Other Operating Costs	394,741 1,956,778	390,015 2,250,505

Operating profit has been arrived after charging audit fees ¢680 million (2003 - ¢500 million) and remuneration paid to Members of the Authority of ¢497 million (2003 - ¢505.8 million).



4. PROPERTY, PLANT AND EQUIPMENT

	Dam Power- house and Civil Works	Generating Plant & Machinery	Transmission & Distribution	Other Land, Buildings & Townships	Vehicles, Other Equipment & Misc. Assets	Total DEC 2004
	¢m	¢m	¢m	¢m	¢m	¢m
A. VALUATION						
Balance as at Jan. 1, 2004	13,904,607	8,294,575	8,884,502	1,624,596	152,768	32,861,048
Deletions & Adjustments	-	-	-	-	-	-
Gross Revaluation Surplus	3,493,731	2,294,458	2,326,177	853,317	48,918	9,016,601
Additions during the year	-	137,908	1,587	-	4,009	143,504
Balance as at Dec. 31, 2004	17,398,338	10,726,941	11,212,266	2,477,913	205,695	42,021,153
B. DEPRECIATION						
Balance as at Jan. 1, 2004	5,434,488	3,679,459	3,435,774	687,391	113,727	13,350,839
Deletions & Adjustments	-	-	-	-	-	-
Charge for the period	206,340	395,732	336,357	53,784	15,801	1,008,014
Charge for Prior Year	1,365,609	948,330	868,174	349,485	37,084	3,568,682
Balance as at Dec. 31, 2004	7,006,437	5,023,521	4,640,305	1,090,660	166,612	17,927,535
C. NET BOOK VALUE						
Balance as at Dec. 31, 2004	10,391,901	5,703,420	6,571,961	1,387,253	39,083	24,093,618
Capital Work-in-Progress as at Dec. 31		0,700,120	0,011,701	1,007,200	07,000	651,543
Total as at Dec. 31, 2004						24,745,161
Balance as at Dec. 31, 2003	8,470,119	4,615,114	5,448,726	937,205	39,047	19,510,211
Capital Work-in-Progress as at Dec. 31	, 2003					718,263
Total as at Dec. 31, 2003						20,228,474



5. Interest and Commitment Charges	2004	2003
	¢m	¢m
Interest on Long Term Loans	197,301	64,980
Interest on Medium Term Loans	2,092	6,582
Interest on Short Term Loans	5,360	9,221
Interest on Overdrafts - Local	3,923	8,481
	208,676	89,264
6. Long Term Investments	¢m	¢m
Debt Contingency Fund Investment	201,232	190,682
Equity Shares in Subsidiaries	93,066	92,771
Inter-Company Loan:		
Takoradi Power Company Ltd	120,111	87,951
Other Long Term Assets	<u>16,928</u>	16,240
	431,337	387,644

Equity shares in subsidiaries represent the Authority's investments in subsidiaries at cost less provision for diminution in value. The principal subsidiaries are:

. 3	ountry of poration	Principal Activities	Number of Shares	Authority's Interest (per cent)
Akosombo Hotels Limited	Ghana	Hospitality	1,000	100
Kpong Farms Ltd	Ghana	Farming	2,000	100
Volta Lake Transport Company (VLTC) Volta Telecommunications	Ghana	Transportation	3,000	100
Company Limited (VOLTACOM)	Ghana	Telecommunications	5,000	100
Takoradi Power Company Ltd (TAPCO)	Ghana	Power generation/Gas Supply	5,000	100



7. Stocks		2004	2003
	¢'m	¢'m	
Stores and Spare Parts	71,500	37,535	
Prov. for Obsolete and Slow Moving Items	(1,459)	(3,845)	
	70,041	33,690	
Fuel for Thermal Plant	114,519	142,082	
	184,560	175,772	
8. Debtors	¢'m	¢'m	
Power Sales Debtors	1,252,042	1,670,689	
Provision for Doubtful Debts	(5,000)	(3,054)	
	1,247,042	1,667,635	
Prepayments	15,642	11,223	
Amounts due from Subsidiaries	74,027	8,821	
Sundry Debtors	7,312	20,653	
Staff Advances	29,680	13,708	
	1,373,703	1,722,040	

The prepayments represent the unexpired portion of certain items of expenditure spread on a time basis and advance payments to suppliers for goods and services not supplied nor rendered by the year end

	2004	2003
9. Short Term Investments		
	¢'m	¢'m
Overseas	54,287	29,939
Local	65,208	36,583
	119,495	66,522
10. Cash and Bank	¢'m	¢'m
Overseas	42,081	15,897
Local	124,279	101,787
Cash on Hand	164	181
	166,524	117,865



11. Creditors	2004 ¢'m	2003 ¢'m
Amounts falling due within one year:	¥ 111	¥111
Trade Creditors	216,478	671,010
Amounts Due to Subsidiaries	55,891	60,240
Sundry Creditors	79,175	55,748
Accruals	1,960	648
Accidals	353,504	787,646
Amounts falling due ofter one year	353,504	707,040
Amounts falling due after one year:	(02.07/	1 252 277
Trade Creditors	<u>692,876</u>	<u>1,253,267</u>
Total	1,046,380	2,040,913
12. Borrowings		
Repayments falling due:		
Within one year:		
Bank Overdrafts	7,799	59,946
Loan Interest and Commitment Charges	36,589	49,155
Others	202,364	577,589
	246,752	686,690
Between two and five years	395,859	357,556
Between five and ten years	1,366,946	1,323,325
Over ten years	1,111,204	935,848
over terr years	2,874,009	2,616,729
	2,071,007	2,010,127
	3,120,761	3,303,419



12. Borrowings	Original loan facility ¢m	Drawings as at 31.12.04 ¢m	Repay/Adj. as at 31.12.04 ¢m	Exchange Variation ¢m	Balance as at '31.12.04 ¢m	Balance as at 31.12.03 ¢m
Long Term Loans Akosombo Hydro Project						
Kpong Hydro Project						
Ghana Government	1	1			1	1
European Dev Fund(EDF)	109,743	92,982	(51,703)	5,405	46,684	47,538
Systems Improvement	70.440	70.440	(50.50()		40.077	07.404
Mediocredito Centrale IDA No. 1628 GH	79,462 28,107	79,462 24,438	(59,596) (11,122)	- 541	19,866 13,856	27,121 14,541
Northern Electrification and System	20,107	24,430	(11,123)	341	13,630	14,341
Reinforcement Project						
Commonwealth Dev. Corp(CDC)	209,331	161,421	(161,421)	-	-	7,928
Af. Dev. Bank	490,814	310,366	(276,675)	4,552	38,243	72,478
IDA 1759 GH	72,678	67,743	(16,049)	634	52,328	51,524
Saudi Fund	42,752	42,747	(35,651)	29	7,125	9,727
Rural Electrification						
Spanish Loan	45,149	45,149	(45,149)	1 150	-	2,317
Kuwait Fund Akosombo Retrofit	108,219	96,302	(91,371)	1,158	6,089	7,513
EIB-1	48,883	45,185	(29,555)	(1,509)	14,121	20,326
EIB-2	244,417	150,345	(109,451)	15,631	56,525	63,069
EIB-3	415,508	285,713	(31,800)	23,746	277,659	185,691
IDA -2109 GH	212,444	67,482	(7,913)	(522)	59,047	59,014
Takoradi Thermal Power						
Agence Francaise	307,404	245,252	(154,206)	45,598	136,644	155,076
IDA 2682 GH	1,685,016	1,527,172	(208,257)	(11,018)	1,307,897	1,264,311
EIB	488,833	326,539	(208,382)	29,757	147,914	174,207
CDC	219,711	190,293	(127,688)	(495)	62,110	76,995
Kuwait Fund	205,924	192,103	(79,811)	4,449	116,741	17,151
Badea National Electrification Project	90,297	76,030	(35,659)	-	40,371	44,406
IDA 2467	361,294	321,673	(45,188)	(8,474)	268,011	266,502
Other Loans	301,274	321,073	(43,100)	(0,474)	200,011	200,002
Agence Francaise - Techiman-Wa	167,238	144,613	(41,738)	10,010	112,885	110,084
Agence Francaise - Techiman-Sawla	46,576	43,868	-	-	43,868	39,829
Agence Francaise - Burkina	23,073	23,073	-	-	23,073	20,949
SIDA-Bulk Supply Point	81,215	27,740	(4,789)	-	22,951	22,382
	5,784,089	4,587,692	(1,833,175)	119,492	2,874,009	2,760,680
Loan Interest and Commitment Charges		24 500			24 500	40.155
Communent Charges		36,589			36,589	49,155
Medium Term Loan						
Ecobank		827,406	(779,280)		48,126	137,831
Barclays Bank Ghana Ltd		270,304	(268,575)		1,729	39,203
Merchant Bank		65,292	(59,501)		5,791	
Standard Chartered		674,548	(572,979)		101,569	177,355
		1,837,550	(1,680,335)		157,215	354,389
Short Term Loans						
Ghana International Bank		81,268	(36,119)		45,149	79,249
Overdraft		7,799	(50,117)		7,799	59,946
					, ,	,
Total	5,784,089	6,550,898	(3,549,629)	119,492	3,120,761	3,303,419



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NOTES TO THE FINANCIAL STATEMENT for the year ended December 31, 2004

13. Investment by the Republic of Ghana	2004	2003
	¢m	¢m
Capital Contribution at January 1	388	388
Non-Project Expenditure	(14)	(14)
	374	374

Non project expenditure was required to be defrayed by the Ghana Government under the Volta River Development Act 1961

The Investment by the Republic of Ghana has not shown any movement since 1987

14. Capital Surplus

The Capital Surplus arises as a result of carrying fixed assets in the Balance sheet at current replacement cost. The movement on the surplus is analysed as below:

	2004	2003
	¢m	¢m
At Beginning of Year	18,011,052	11,930,006
Deletions/Adjustments		496,294
Surplus for the Year	5,546,701	6,200,252
Transfer to Income Surplus Account	(850,202)	(615,500)
	22,707,551	18,011,052

15. Debt Contingency Fund Reserve

The amount of ¢201.23 billion (2003: ¢190.68 billion) represents the appropriation out of Income Surplus towards the building of an external fund (in foreign exchange) to be used by the Authority to meet its debt service obligations during years of operational difficulties

This is made up of a reserve on International Development Agency (IDA) / European Investment Bank (EIB) related loans of ¢147.61 billion (2003:126.0 billion) and Agence Francaise de Development (AFD) related loans of ¢53.62 billion (2003: 40.0 billion).

The appropriation has been made to satisfy the Authority's financial covenants with lending agencies.



16. Contingent Liabilities

There are contingent liabilities in respect of pending lawsuits involving the Authority of approximately ¢2.8 billion (2003: ¢2.96 billion)

17. Commitments

Significant commitments for expenditure contracted for but not provided for in the financial statements at the end of the year were ¢49.0 billion (2003: ¢ 205.15 billion)

18. Reconciliation of Operating Profit to Operating Cash Flows

16. Reconcination of Operating Front to Operating	ig Casii Flows	
	2004	2003
	¢m	¢m
Operating Profit / (Loss)	437,150	391,105
Adjustments for :		
Depreciation	1,008,014	771,652
Government Assistance	(283,617)	(614,865)
Exchange (Gain) / Loss	(34,729)	(35,324)
Interest received on investment	(10,325)	(10,641)
Profit on disposal of tangible fixed assets	(535)	(14)
Operating Profit before working capital changes	1,115,958	501,913
Decease/(Increase) in stocks	(8,788)	(57,755)
Decease/(Increase) in debtors	348,337	(586,381)
(Decease)/Increase in creditors	(923,475)	297,420
Cash generated from operations	532,032	155,197
Interest paid	(172,087)	(40,109)
Net cash inflow from operating activities	359,945	115,088
19. Cash and Cash Equivalents		
Cash in Hand and Balances with Banks	166,524	117,865
Short Term Investments	119,495	66,522
Bank Overdraft	(7,799)	(59,946)
Cash and cash equivalents	278,220	124,441



AGENCY SERVICES STATEMENT OF FINANCIAL POSITION as at December 31, 2004

	Notes Res	settlement	Lake Research	Lake Transport	Total 2004	Total 2003
		¢ ' 000	¢'000	¢'000	¢'000	¢'000
Grants & Equity Received	1	7,592	19,051	603,304,439	603,331,082	548,188,562
Loans Payable	2		-	116,494,134		105,799,020
		7,592	19,051	719,798,573		653,987,582
Less: Project Expenditure	3	(7,607)	(26,364)	(755,725,726)	(755,759,697)	(682,950,915)
Over-utilised Balance		(15)	(7,313)	(35,927,153)	(35,934,481)	(28,963,333)
REPRESENTED BY WORKING CAPITAL						
CURRENT ASSETS:						
Accounts Receivable		2	-	6,166	6,168	6,168
Cash/Bank Balances		-	202	52	254	254
Inter Current Account		575	(5,919)	5,343	(1)	(1)
	(a)	577	(5,717)	11,561	6,421	6,421
LESS: CURRENT LIABILITIES						
VRA Current Account		(592)	29,511	(1,385,820)	(1,356,901)	(1,356,901)
Deposit Account		-	(31,107)	(23,217)	(54,324)	(54,324)
Interest earned on						
VRA / Danida Bank Account		-	-	(75,733)	(75,733)	(75,733)
Interest on KFW Loans		-	-	(34,451,639)	(34,451,639)	(27,480,491)
Retention			-	(2,305)	(2,305)	(2,305)
	(b)	(592)	(1,596)	(35,938,714)	(35,940,902)	(28,969,754)
	(a)-(b)	(15)	(7,313)	(35,927,153)	(35,934,481)	(28,963,333)

Osei Asamoah Bonsu Board Chairman Joshua K. Ofedie Chief Executive



AGENCY SERVICES Notes to the Financial Statement

for the year ended December 31, 2004

1.0 .STATEMENT OF GRANTS AND EQUITY RECEIVED

1.1 GRANTS	Resettlement ¢' 000	Lake Research ¢' 000	Lake Transport ¢' 000	Total 2004 ¢' 000	Total 2003 ¢' 000	
Ghana Government	7,592	19,051	24,560	51,203	51,203	
K.F.W. Danida	- - 7,592	- - 19,051	441,797,885 4,242,000 446,064,445	441,797,885 4,242,000 446,091,088	441,797,885 4,242,000 446,091,088	
1.2 EQUITY K.F.W. Balance as at Dec.31, 2004	7,592	- 19,051	112,448,567 558,513,012	112,448,567 558,539,655	102,097,473 548,188,561	
2.0. LOANS ACCOUNT	Original Ioan facility	Net Drawings 01.01.2004	Upliftments	Transfers and Adjustment during the year	Balance as at 31.12.2004	Balance as at 31.12.2003
2.1 K.F.W Port Facilities &	¢' 000	¢' 000	¢' 000	¢' 000	¢' 000	¢' 000
Floating Units	60,885,424	77,124,935	7,819,268		84,944,203	77,124,935
2.2 K.F.W. Fuel Handling	22,383,118	28,365,764	2,875,847		31,241,611	28,365,764
2.3 VLTC Contribution	300,000	308,321	-		308,321	308,321
	83,568,542	105,799,020	10,695,115	-	116,494,135	105,799,020



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For The Year Ended December 31, 2004

AGENCY SERVICES Notes to the Financial Statement

for the year ended December 31, 2004

2.1 PORT FACILITIES & FLOATING UNITS

K.F.W. loan of DM13.6 million which is now converted to Euro 6.95 million (at E1 - DM 1.95583). This is approximately US\$9.41 million and converted at US\$1.00 to \$\psi_9,029.73\$ aggregating \$\psi_84,933.56\$ million of which an equivalent of \$\psi_84,944.2\$ million has be drawn and made available to the Republic of Ghana at interest rates of 2% and 0.75% per annum respectively on the principal amount withdrawn and outstanding from time to time. Proceeds of this loan the borrower (Republic of Ghana) has relent to VRA (the Project Sponsor) under subsidiary loan agreement at an interest rate of 6% per annum on the principal withdrawn and outstanding payable in cedis into counterpart fund. Prepayment of principal commences on 30th September 1987 and ends 30th September 2009 in 46 half yearly installments as per Amortisation Schedule attached to loan agreement.

2.2 FUEL HANDLING

K.F.W. (Kreditanstalt fur Wiederaufbau) loan of DM5.0million which is now converted to Euro 2.56 million (at the above rate). This is approximately US\$3.46 million and converted at US\$1.00 to \$\psi\$9,029.73 aggregating \$\psi 31,284.88 million which has fully been drawn and is made available to the Republic of Ghana at an interest rate of 0.75% per annum on principal amount withdrawn and outstanding from time to time and a commitment charge of 0.25% per annum on the undrawn balance.

2.3 VLTCCONTRIBUTION

This represents Volta Lake Transport Company's contribution of ¢308,321,000 financed by a loan granted by the Government of Ghana and guaranteed by VRA to meet all contractual obligations in local currency of the VLTS Projects. The terms and conditions of the loan are 10% interest per annum on amounts outstanding; 10 years grace period and 40 years repayment period (including grace period.)



AGENCY SERVICES Notes to the Financial Statement

for the year ended December 31, 2004

3.0 PROJECT EXPENDITURE	Balances as at 1st Jan 2004	Expenditure during the year	Balances as at 31st Dec 2004	Balances as at 31st Dec 2003
3.1 RESETTLEMENT	¢' 000	¢' 000	¢' 000	¢' 000
Land and buildings	651	-	651	651
Roads	224	-	224	224
Motor vehicles	149	-	149	149
Plant, equipment and Furniture	72	-	72	72
Other expenses	6,511	-	6,511	6,511
·	7,607	-	7,607	7,607
3.2 LAKE RESEARCH	\$'000	\$'000	\$'000	¢'000
Land and buildings	19	-	19	19
Motor vehicles	590	-	590	590
Floating craft	29	-	29	29
Plant, equipment and Furniture	71	-	71	71
Construction work in Progress	2,005	-	2,005	2,005
Other expenses	23,650	-	23,650	23,650
	26,364	-	26,364	26,364
3.3 LAKE TRANSPORTATION	\$'000	\$'000	¢'000	¢'000
Land and buildings	714	-	714	714
Roads	10	-	10	10
Landing Facilities and Slipways	183	-	183	183
Construction work in progress	682,895,324	72,808,784	755,704,108	682,895,324
Other expenses	20,711	-	20,711	20,711
	682,916,942	72,808,784	755,725,726	682,916,942
Grand Total	682,950,913	72,808,784	755,759,697	682,950,913

NOTES

- (a) The statement reflects the project expenditure incurred in respect of Agency Services.
- (b) No depreciation has been provided on Agency Services assets to date.