

ADMINISTRATION

(as at 1 January 1987)

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Electricity Council

J.B. Maree (Chairman)
P.J. Botes
T.R. Castle
Dr J.W.L. de Villiers
A.B. Dickman
Dr R.A.P. Fockema
B.J. Groenewald
J.F.W. Haak
Prof. D. Konar
Prof. I.J. Lambrechts
F.J. Malan
I.C. McRae
Dr D.C. Neethling
G.Y. Nisbet
R.B. Savage
Dr C.L. Stals
Prof. H.C. Viljoen
R.C. Webb
Prof. J.L. Weyers

Management Board

I.C. McRae
Senior General Manager and Chairman
of the Management Board
J.L. Rothman
Assistant Senior General Manager
H. Edeling
General Manager (Generation)
J.S. Els
General Manager (Operations)
R.A. Forbes
General Manager (Power Marketing and
Distribution Services)
L.C. Harper
General Manager (Finance and Data
Processing)
Dr G.F. Lindeque
General Manager (Human Resources)
P.J.T. Oosthuizen
General Manager (Services)
E.H. Ralph
General Manager (Engineering)

Head Office

Megawatt Park, Maxwell Drive, Sandton

Postal address

P.O. Box 1091,
2000 Johannesburg

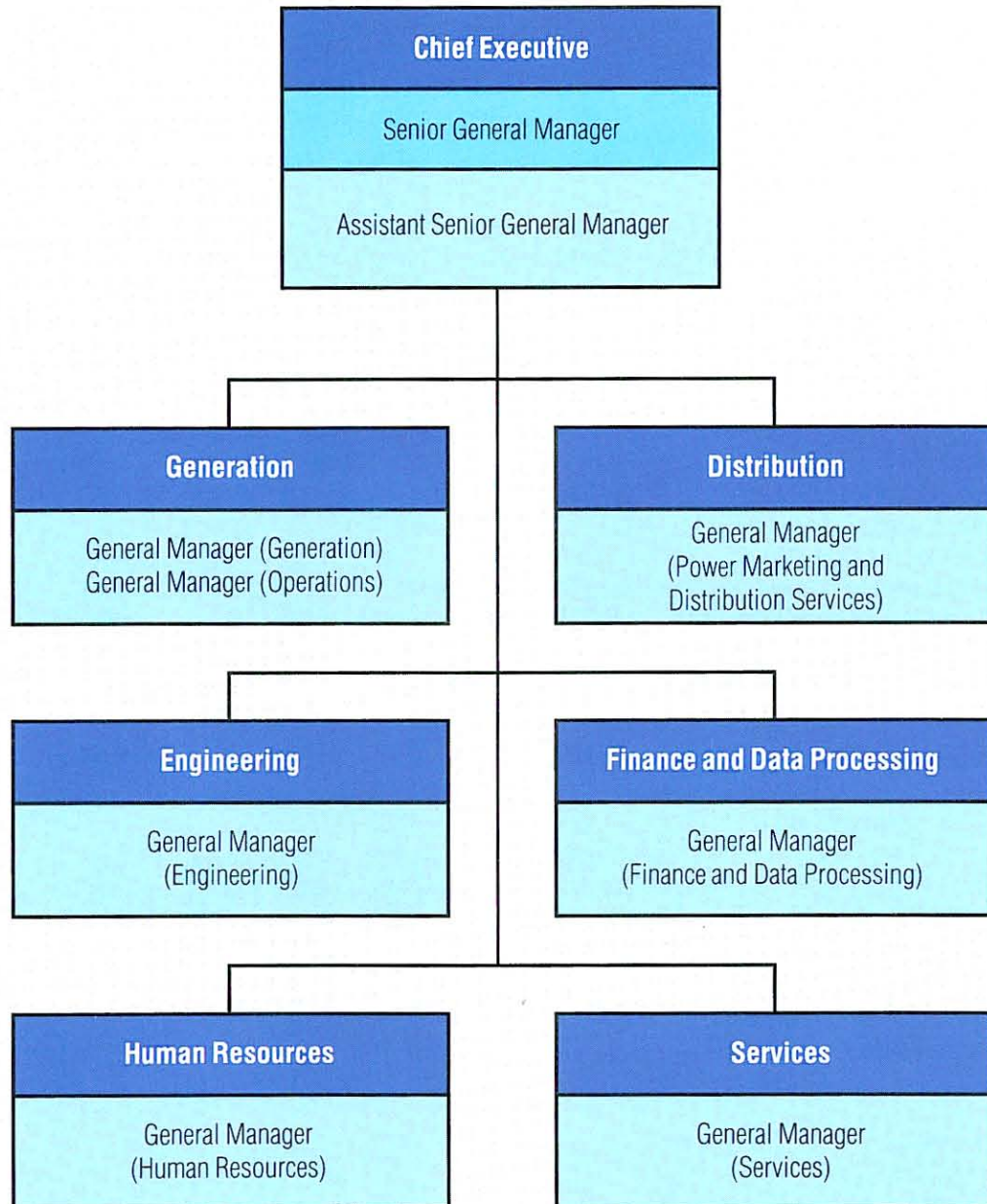
Copies of this report, as well as of Escom's Statistical Yearbook, may be obtained from the Communication Manager at the address above. These publications are also available in Afrikaans.

HIGHLIGHTS OF THE YEAR

	1986	1985	1984	1983	1982	1981	Change 1985-86 %	Average yearly increase 1981-86 %
Financial								
Revenue (R million)	5 845	4 625	3 832	3 302	2 695	2 141	26,4	22,2
Charges against revenue (R million)	5 645	4 585	3 995	3 405	2 753	2 218	23,1	20,5
Net expenditure on fixed assets (R million)	3 770	4 757	3 719	2 757	2 741	1 951	-20,7	14,1
Fixed assets at 31 December (R million)	27 633	23 969	19 261	15 591	12 858	10 144	15,3	22,2
Average price per kW.h sold (cents)	4,98	4,12	3,58	3,36	2,80	2,28	20,9	16,9
Average cost per kW.h sold (cents)	4,81	4,08	3,74	3,47	2,86	2,36	17,9	15,3
Average coal cost per ton (Rand)	14,87	13,25	12,55	12,44	11,75	9,71	12,2	8,9
Electricity sold by Escom (mill. kW.h)	117 353	112 306	106 904	98 251	96 136	93 844	4,5	4,6
Operating statistics								
Total electricity sent out by Escom (mill. kW.h)	126 766	122 494	117 086	108 321	104 920	100 425	3,5	4,8
Electricity available for distribution (mill. kW.h)	123 748	119 229	113 898	105 404	102 516	99 713	3,8	4,4
Coal burnt in Escom power stations (Mt)	58,9	59,5	58,7	55,0	55,2	53,9	-1,0	1,8
Water consumed in Escom power stations (Mℓ)	262 372	275 716	269 868	255 654	265 933	235 138	-4,8	2,2
Peak demand on integrated Escom system (MW)	18 278 (20/6/86)	17 852 (12/7/85)	17 296 (15/6/84)	15 639 (10/8/83)	15 532 (2/7/82)	14 674 (12/6/81)	2,4	4,5
Escom plant in service at 31 December								
Installed capacity (MW)	28 086	25 716	24 514	22 949	21 749	20 049	9,2	7,0
Assigned sent-out rating (MW)	26 682	24 359	23 168	21 673	20 523	18 989	9,5	7,0
<i>Transmission lines:</i>								
765 kV	427	—	—	—	—	—	—	—
533 kV (DC) (km)	1 030	1 030	1 030	1 030	1 030	1 030	—	—
400-220 kV (km)	18 012	17 488	16 842	16 017	15 251	14 998	3,0	3,7
165 kV and below (km)	153 103	142 528	130 425	121 343	111 535	105 344	7,4	7,8
Staff employed								
at 31 December	60 800	66 000	64 560	62 420	58 850	52 080	-7,9	3,1

ORGANISATION STRUCTURE

as at 1 January 1987



PROFILE OF ESCOM

Escom is the national electricity utility of South Africa. It ranks among the largest and technically most advanced utilities in the world. It has an installed capacity of more than 28 000 MW, operates 27 power stations and uses more than 172 000 km of high-voltage transmission lines.

It supplies more than 90% of the electricity used in South Africa and this represents nearly 60% of the electricity generated on the African continent. It serves the whole of South Africa and exports electricity to Bophuthatswana, Botswana, Ciskei, Lesotho, Mozambique, SWA/Namibia, Swaziland, Transkei, Venda and Zimbabwe.

Escom was established in 1923 as the Electricity Supply Commission. In 1985, the Electricity Amendment Act replaced the Commission with a body corporate known as Escom, which has a control and management structure consisting of the Electricity Council and the Management Board.

Electricity Council and Management Board

The Electricity Council is a non-executive body. Its members, appointed by the Minister of Economic Affairs and Technology, are drawn from organisations representing major electricity consumers and key Government and State departments. Members are appointed for their specialist knowledge and skills. The Council is responsible for policy, setting of objectives, planning and control. It also appoints the Management Board.

The Management Board, which is composed of the Senior General Manager (chairman), the Assistant Senior General Manager and seven general managers, is the executive body responsible for the day-to-day running of Escom, subject to the directives of the Electricity Council.

Mission

Escom's mission is to satisfy the electricity needs of customers in the most cost-effective way, subject to resource constraints and the national interest.

Strategy

The strategy adopted by the organisation is to develop Escom as a business that maximises the value of its products and services for the benefit of South Africa.

Escom's structure is based on a high degree of decentralisation and customer orientation.

The organisation is divided into six functional groups, each headed by a general manager. There are two main line functions, Generation and Distribution. These are supported by a further line function, Engineering, and three head-office service functions – Finance and Data Processing, Human Resources and Services. The General Manager (Generation) is assisted by a second general manager who is in charge of Operations.

Philosophy

Escom strives to provide customers with electricity and services of the greatest possible value, measured in terms of quality and price. It maintains good relations with customers through constant liaison and evaluation of their requirements, as well as the quality of service they receive.

The interdependence of Escom with its suppliers of goods, services and finance is recognised, and a healthy, long-term business relationship with them is pursued.

Escom is an equal-opportunity employer where remuneration and advancement are based on performance and market considerations, regardless of race, creed or sex. Employees are provided with an environment in which they can develop their full potential through education, training, work experience, problem solving and innovation.

Accounting policy

Escom uses a fund accounting convention at present. However, pending an amendment to the Electricity Act expected during 1987, it will in future report on its financial activities and position in conventional business accounting terms.

Under the fund accounting convention, there is no share capital. Capital expenditure is financed from borrowings and own funds,

as prescribed by the Electricity Act. Fixed assets are not depreciated but, instead, the debt used to finance them is amortised.

Borrowings are obtained by raising loans and issuing bonds in local and overseas capital markets, through local money-market operations and through trade finance arranged in conjunction with suppliers of capital equipment. Internally generated funds, obtained from tariff income as prescribed by the Electricity Act, is the other source of finance available to Escom.

There are at present three internal funds: the Capital Development Fund, the Reserve Fund and the Redemption Fund.

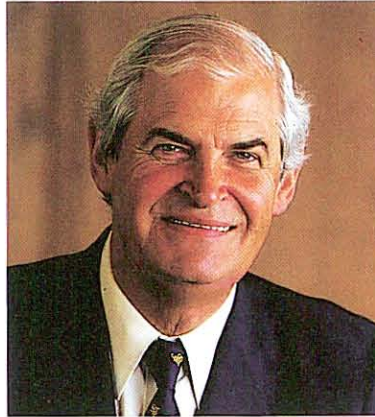
The Capital Development Fund finances capital expansion and the replacement of assets taken out of service. The Reserve Fund is for upgrading plant, exceptional repairs or emergencies. It is also used, to a limited extent, for self-insurance, thereby reducing expenditure on insurance premiums. The Redemption Fund provides for the redemption of local loans on a sinking-fund basis.

There is a secondary market in Escom's locally registered stock, which is actively traded on the Johannesburg Stock Exchange and by Escom itself. Escom is able to buy and sell such stock on behalf of its various Funds and, although a buyer of last resort, aims to be a net seller of its own stock. Proceeds from sales are reinvested by Escom, on behalf of its Funds, in new Escom stock issues.

Under the proposed system the practice of investing internal funds in Escom's own loan stock issues and the associated accounting mechanism for raising internal interest charges is to be abolished. Fixed assets in commercial operation will be depreciated. Costs, including depreciation charges, transfers which have been made to accumulated reserves and any appropriations which have been made from past accumulations, will be reported.

ELECTRICITY COUNCIL

(Members were all appointed in 1985, unless otherwise stated)



J.B. Maree (62)
Chairman. Director of Companies.



P.J. Botes (57)
Association of Municipal Electricity Undertakings of South Africa. City Electrical and Mechanical Engineer, Roodepoort.



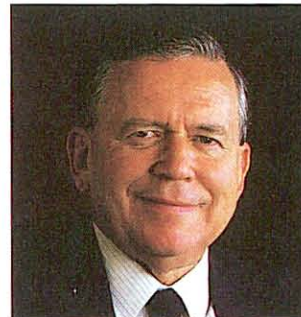
T.R. (Richard) Castle (50)
Independent Expert. Stockbroker and Director of Companies.



Dr J.W.L. de Villiers (57)
Independent Expert. Chief Executive Officer, Atomic Energy Corporation.



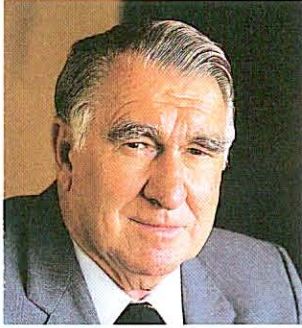
A.B. Dickman (56)
Association of Chambers of Commerce of South Africa. Senior Economic Consultant, Anglo American Corporation of South Africa Limited.



Dr R.A.P. Fockema (63)
South African Federated Chamber of Industries. Executive Chairman, Gypsum Industries Limited.



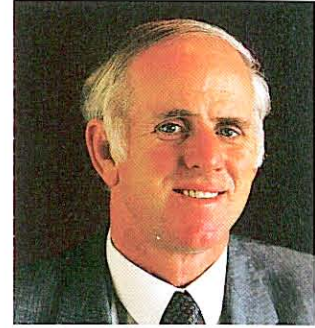
B.J. Groenewald (59)
South African Transport Services. Deputy General Manager (Technical, Planning and Harbours).



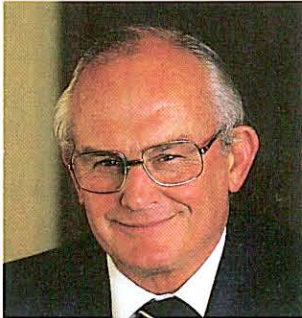
J.F.W. Haak (69)
Independent Expert. Attorney and
Businessman.



Prof. D. Konar (33)
Independent Expert. Associate Professor of
Accountancy, University of Durban-
Westville.



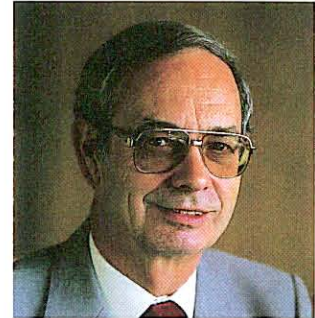
Prof. I.J. Lambrechts (44)
Afrikaanse Handelsinstituut. Professor of
Business Economics, University of
Stellenbosch.



F.J. Malan (58)
South African Agricultural Union. Farmer.



I.C. McRae (57)
Escom. Senior General Manager and
Chairman of Management Board.



Dr D.C. Neethling (53)
Department of Mineral and Energy Affairs.
Chief Director (Energy).



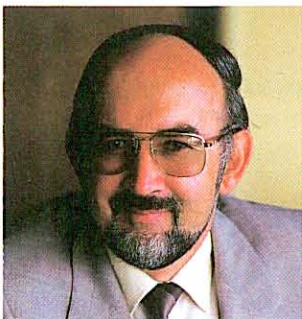
G.Y. Nisbet (63)
Chamber of Mines. Director, Johannesburg
Consolidated Investment Company
Limited.



R.B. Savage (43)
South African Federation of Steel and
Engineering Industries. Chief Executive
Officer, Electronics and Engineering
Division, Barlow Rand Limited.



Dr C.L. Stals (51)
Department of Finance. Director-General.



***Prof. H.C. Viljoen (49)**
Independent Expert. Dean, Faculty of
Engineering, University of Stellenbosch.



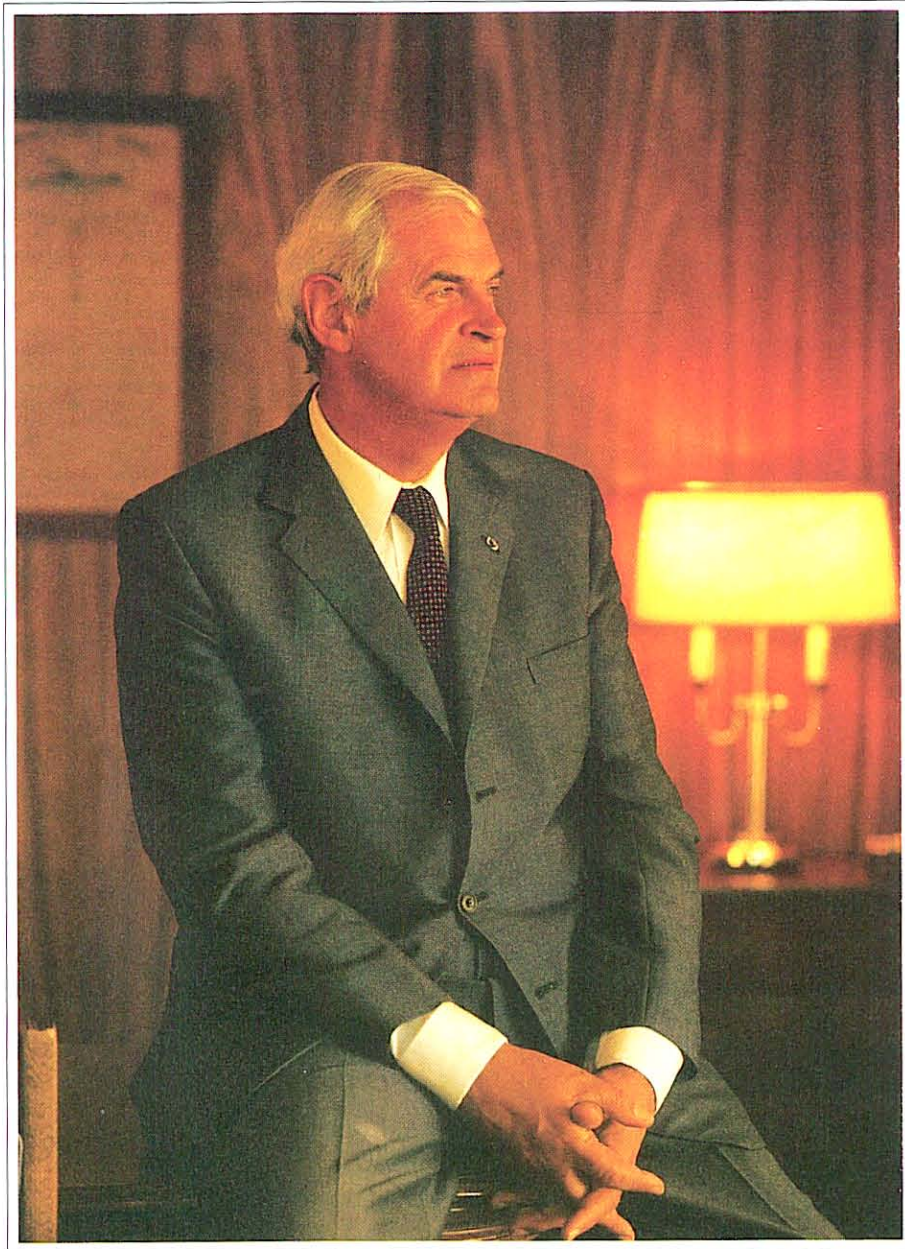
R.C. Webb (56)
Independent Expert. Director of Companies.



***Prof. J.L. Weyers (56)**
Coordinating Consumer Council. Dean,
Faculty of Economic and Management
Sciences, Unisa.

**(Appointed 1986)*

CHAIRMAN'S REVIEW



“We have set ourselves a huge task in remoulding Escom. We still have a long way to go. But I am satisfied that the first lap is successfully behind us and that we are well on the road to establishing a professionally managed, highly motivated, customer-oriented business.”

*John Maree
Chairman*

CHAIRMAN'S REVIEW

continued

1986 was a momentous year for Escom, marked by a new direction and vigorous programmes to set us firmly on the path of establishing an efficient, well-managed business with a clear emphasis on becoming a meritocracy rather than a bureaucracy.

Far-reaching internal changes resulted, and efforts were made to communicate these effectively to the organisation's many external audiences, both in South Africa and overseas.

We had previously defined our mission and the numerous areas which needed attention, and we started the year with clearly defined and agreed priorities which emphasised professional management and tight financial controls.

Determined adherence to these priorities enabled us to complete the year well within our budget targets and produced a surplus which reduced the deficit which had been accumulated over previous years. This was despite the lower-than-expected income from electricity sales.

Lower growth in electricity demand and the effects of the debt standstill, which made the raising of foreign loans extremely difficult, were the two issues which had a major impact on Escom's financial position in 1986.

This was also notable as the year in which Escom made a concerted, and successful, effort to move closer to our customers. Specific needs and gaps in Escom's service were identified and discussed with our customers and the results have been most encouraging.

The debt standstill

The inability to raise foreign loans following the imposition of the debt standstill in August 1985, forced a major rethink of our funding strategy. The R1 400 million we had planned to borrow overseas in 1986 was clearly not going to be available. Consequently, we had to balance our books without placing an undue burden on the limited local financial markets and pushing up interest rates.

A three-fold strategy was adopted, namely, stringent adherence to budgets,

a cut-back of R1 000 million in operating expenditure and R1 000 million in capital expenditure for the years 1986 to 1989, and two tariff increases of 10% each in January and July 1986.

As a result of our successful financial management programme we were able to keep our major projects on line. These were the power stations under construction, the expansion of the high-voltage transmission system and the rural electrification programmes.

Lower growth

The prolonged downturn in the South African economy has resulted in a significantly reduced growth rate in the demand for electricity. This means that generating plant now under construction will be required later than planned and Escom will, for some time, have surplus generating capacity.

Cancelling or truncating the already contracted expansion programme was unacceptable on both a funding and inflated cost basis and it was decided instead to pursue the option of managing the temporary excess capacity as cost effectively as possible.

Manpower

People are the backbone of any business, and in an organisation as large as Escom programmes related to manpower management are naturally a high and ongoing priority.

The most difficult task facing the Management Board in this regard was the need to reduce the number of employees by 10% – a figure agreed on after extensive consultations throughout Escom when it became clear that productivity and cost considerations required a concerted effort to establish a leaner organisation.

By offering generous early pensions and benefits to older employees and putting a bar on recruitment, employee numbers were significantly reduced.

Later in the year it became clear that the emerging excess of generating capacity would necessitate further staff reductions and after consultations with the trade unions

and employees, favourable separation packages for 3 600 people were negotiated.

The challenging manpower issue of equal employment opportunities was addressed during the year and the 12 trade unions representing Escom employees were closely involved in the implementation of policy and decisions regarding parity issues.

I want to pay tribute to the trade unions for their cooperation and the understanding and openness with which they approached the discussions.

The successful resolution of these difficult negotiations is particularly gratifying in the light of the urgent need to address problems associated with overcoming South Africa's skilled labour shortage.

Performance management

Performance management programmes are being introduced to encourage and monitor the upgrading of individual performance levels throughout the organisation. A key component is the acceptance of the need to move towards a meritocracy by suitably encouraging, recognising and rewarding high performance.

It is essential for the successful implementation of such a programme to involve all levels of management in determining policy and fixing objectives and priorities. To this end, frequent discussions were held with managers throughout the organisation and there were monthly meetings with the top 40 managers. These meetings were invaluable and much of the rapid progress made in reshaping Escom can be attributed to wide participation by the management corps.

Communication

Determined efforts were made during the year to communicate with our external audiences. The Senior General Manager, Mr Ian McRae, and I had discussions with many groups of leading bankers, businessmen, politicians and government officials, both overseas and in this country.

Senior executives in all departments maintained regular contact with their customers and employees.

CHAIRMAN'S REVIEW

continued

A comprehensive internal communication programme was launched to assist this process and ensure that employees at all levels were kept regularly informed of developments affecting the organisation.

A gratifying consequence of these efforts has been a better knowledge and understanding of Escom's activities. Internally, surveys of staff attitudes indicated a dramatic positive shift towards an understanding and acceptance of the new management style and the organisation's key objectives.

Skills

South Africa's ability to create prosperity is hamstrung by low productivity which, in turn, is contributing to our high rate of inflation. In terms of world markets, we have become uncompetitive in many fields and quality has suffered.

The way out of this malaise is to develop and motivate skilled manpower in a concerted way. Larger businesses, in particular, have people who are achievers, who have talent, who want to become better educated and want to progress. Every effort should be made to identify them and encourage them to develop their talents and skills to the full, by ensuring that the best quality education, training and employment opportunities are available to them.

Furthermore, it is clear that our white population alone will not be able to meet our skills requirements and South African business must urgently accept the need for a massive and sustained commitment to the education and training of black entrants to the workforce, on the one hand, and the training and upliftment of employees already in the system, on the other.

As important is the need to substantially increase the number of black managers who at present comprise less than 3% of the management corps. A ten-fold increase over the next decade is necessary if our businesses are to continue to function efficiently.

Escom has accepted this challenge.

Acknowledgements

The year under review was the first full year of operation for the new Electricity Council,

Management Board and the restructured organisation.

I would like to pay special tribute to my colleagues on the Electricity Council. Representing, as they do, all Escom's major customers, key Government and State departments they have made an invaluable contribution in the areas of strategic policy formulation, guidance and supervision.

In November 1986 the Council was further strengthened by the appointment of Professor Christo Viljoen, Dean of the Faculty of Engineering at Stellenbosch University, and Professor Leon Weyers, Chairman of the Coordinating Consumer Council and Dean of the Faculty of Economic and Business Sciences at the University of South Africa. The addition of these members is most welcome.

Escom's nine-member Management Board, which is responsible for the day-to-day running of the organisation, has been highly effective and their contribution towards the successful achievement of our initial goals needs to be recognised.

Mr Ian McRae, a 40-year Escom veteran who has advanced from the lowest rungs to the chief executive office, has played a key role in ensuring a smooth transition towards the new dispensation.

Indeed, the very real achievements of the last twelve months across such a broad spectrum of our activities is sufficient testimony to his leadership and the outstanding teamwork and dedication of all our people.

I would also like to thank the Minister of Economic Affairs and Technology, Mr Danie Steyn, for his very sincere and personal interest in the affairs and well-being of Escom and the organisation's customers. The excellent relationship between the Minister and Escom, and the cooperation we receive from his staff, is a positive factor in smoothing the path of change.

The future

I have indicated that 1986 was a challenging year for Escom, but strong financial controls are beginning to reap positive benefits. Cost-consciousness has become a watchword throughout the organisation.

With better planning, improved management information systems, new structures and cost-saving programmes we were able to announce a single tariff increase of 12% for 1987. Furthermore, we have indicated that increases of only 10% for each of the years 1988 and 1989 may be anticipated, provided the annual inflation rate does not exceed 15%.

With regard to overseas loans, it is expected that the debt standstill will continue and access to this source of funds will remain difficult, except in the context of project-related finance.

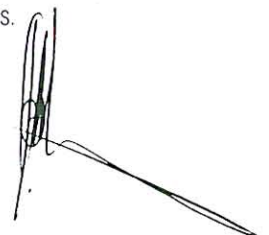
On the local front, Escom is aware that it cannot make good the loss of foreign funds by proportionately increasing its offtake from domestic markets. This would have a detrimental effect on interest rates. Thus we have already signalled our intention to limit capital market borrowings to a maximum of 25% of new prescribed assets requirements.

Additional funds will have to be obtained from revenue. However, the projected medium-term growth in electricity demand is not expected to exceed 5% a year. This is considerably down from the 7% projections which appeared reasonable a decade ago and revenue from this source is not expected to grow in real terms, particularly as we have committed ourselves to tariff increases below the inflation rate.

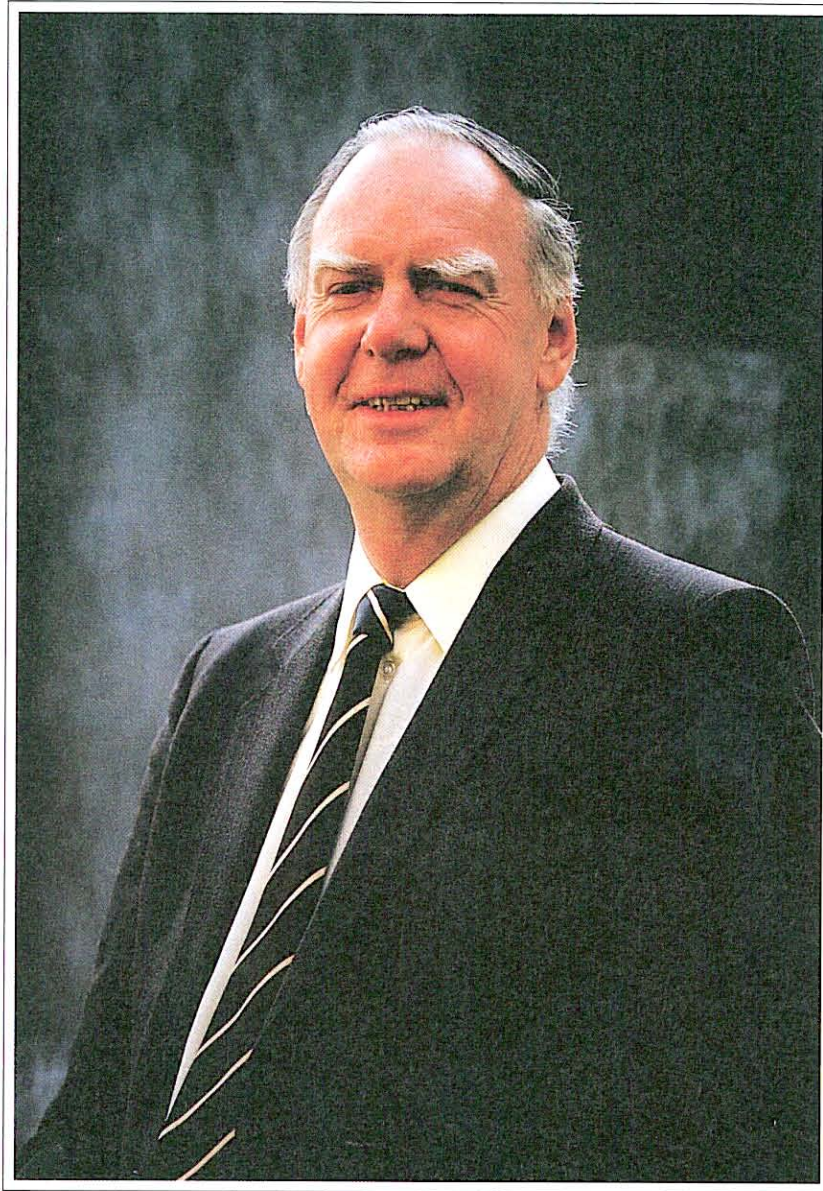
Our priorities for 1987, therefore, will continue to focus on raising standards of performance in Escom. Both the development of our people and technical programmes to enhance plant performance are expected to produce further cost savings.

We have set ourselves a huge task in remoulding Escom. We still have a long way to go. But I am satisfied that the first lap is successfully behind us and that we are well on the road to establishing a professionally managed, highly motivated, customer-oriented business.

John Maree
Chairman
9 March 1987



CHIEF EXECUTIVE'S REPORT



“Leanness, flexibility, professionalism and customer awareness are some of the key requirements necessary for Escom to meet the challenges that lie ahead. We are establishing an organisation which will meet its customers' needs without placing an undue financial burden on them.”

*Ian McRae
Senior General Manager*

CHIEF EXECUTIVE'S REPORT

continued

The volume of electricity sold by Escom in 1986 rose by 4,5% to 117 353 million kW.h. This growth, although lower than the 5,1% recorded in 1985, is relatively high when compared with overseas standards and occurred despite the sluggish economy, political uncertainty and a very mild winter.

Revenue in 1986 amounted to R5 845 million and was sufficient to cover the year's expenditure of R5 645 million. The surplus contributed towards a reduction of the accumulated deficit to R287 million.

The rate at which costs had been escalating during past years was contained and this achievement is directly attributable to programmes designed to limit both capital expenditure and operating costs. The capital expenditure budget was cut by more than R1 000 million for the period 1986 to 1989 by deferring extensions to the transmission system that are not immediately essential and delaying the strengthening of the system where feasible. Modifications to some plant at power stations, aimed at improving performance, were shelved and capital expenditure on buildings and facilities was deferred or cancelled.

Similar achievements in many other areas followed our decision in 1985 to move as quickly as possible to change the organisation into a flexible, efficient business that would meet the challenges of the new economic climate in which South Africa finds itself, while responding dynamically to the needs of our customers.

1986 saw the large-scale implementation of this programme and by the year end many of its benefits had already become obvious.

A key to the success of a very eventful year was the excellent relationship between the Electricity Council and the Management Board. The in-depth strength of the Council, which represents every aspect of our market, provided invaluable support for us to move through a very difficult period of change.

Specifically, I would like to thank the Chairman, Mr John Maree, for his exceptional leadership, untiring efforts and the major role he has played in cementing close bonds between the Electricity Council and the Management Board.

The priorities on which we focused

during the year were identified as the implementation of Escom's new Mission, Strategy and Philosophy; a new organisational structure; limiting expenditure and improving planning, budgeting, management information systems, communication, manpower management, assets management and supply-side management.

The new structure

The overriding management issue in 1986 was the restructuring of Escom, with an emphasis on maximum decentralisation and delegation of authority and responsibility to the lowest effective levels. This has led to the formation of 52 business units, each with its own support services.

The primary aims of the restructuring were to achieve greater operational efficiency and, in view of Escom's size and geographic dispersion, to establish closer contact with our customers.

By the end of the year, the management teams of the strategic business units had all been established and the process of decentralisation was fully under way. Most of the interim measures and advisory teams which were established to facilitate the fundamental changes were eliminated by year end.

The whole middle level of the previous reporting structure within the organisation was disbanded. Escom now has a flatter structure, with communication lines to top management considerably shortened. Furthermore, communication between head office and operational levels has been dramatically improved and the two key line functions of Generation and Distribution are now able to focus very much more clearly on customer requirements and service problems.

The delegation process is also well under way – business planning and the preparation of budgets are being done at strategic business unit level. This means that managers are now able to accept full responsibility for the management of their units and, with ongoing improvements to management information systems, control

and reporting throughout Escom is becoming more effective.

The rapid and efficient implementation of the mammoth restructuring process was entirely due to the motivation and commitment found at all levels of the organisation. While the pace of change inevitably led to a certain amount of insecurity and uncertainty, I am confident that in 1987 we will be able to consolidate the restructuring programme and reap further benefits from it.

Manpower

The success of any major programme of this nature depends on the ability of staff to adapt and support the new structure. I am extremely pleased that Escom staff have generally not only adapted well to the new management approach, but have actively helped to shape our new direction.

Although the year was dominated, as far as personnel matters are concerned, by the reduction in staff numbers, Escom's equal opportunity programme was given a major boost by the appointment of a special task force to ensure that our policy of non-discrimination and development for all was carried out at all levels of the organisation.

Closer to the customer

Solid progress was made in getting closer to our customers and suppliers. Ultimately, this involves a greater degree of flexibility in approach to such issues as tariff structures, quality of supply, plant maintenance and improved power systems.

A more flexible tariff policy spurred discussions with various consumer groups and large customers with a view to improving efficiency and controlling production costs, where possible.

The establishment of 61 district management offices has led to considerably more interaction between Escom and local communities.

Our demand-side management programme has important implications both for Escom itself and electricity users in South Africa. The programme underlines our commitment towards an integrated marketing approach for our product by

CHIEF EXECUTIVE'S REPORT

continued

looking not only at the efficient and cost-effective supply of electricity, but also at the efficient and cost-effective use of electricity. In other words, demand-side management looks at "the other side of the meter".

Long-term energy conservation is a keystone of this new approach, and suitable programmes are being developed to educate customers and encourage them in the wise and efficient use of electricity.

An opinion survey was undertaken among all categories of customers in order to identify specific needs and gaps in Escom's service. The results confirmed that there is generally a need for expert advice on electricity usage and application. We are gearing the organisation to provide such a service.

Every effort is being made to assist farmers in remote agricultural areas. During the year more than 16 000 km of rural lines were built, 40% more than in 1985, and 8 445 new supply points were provided in rural areas, an increase of more than 12%. Research into specific tariff requirements of low-load or seasonal customers such as irrigation farmers was undertaken and proposals will be discussed with customers during 1987.

Supply-side management

Forecasts indicate a maximum-demand growth rate within the Escom system of 5% a year until the year 2000. This is significantly lower than earlier projections of 7% a year and reflects the impact of the prolonged economic downturn.

Power stations at present under construction were planned to accommodate the expected higher growth rate.

Five coal-fired stations – Tutuka, Lethabo, Matimba, Kendal and Majuba – and a pumped-storage scheme at Palmiet are in various stages of completion. Although some of these projects could be delayed or deferred, careful analysis during the course of the year demonstrated that the advantages of completing the programme far outweighed problems associated with managing surplus capacity.

Our primary consideration was that

existing contracts are being financed at highly favourable rates, while the possibility of sanctions and increasing difficulties in raising new foreign loans could not be ignored.

Projections showed that costs associated with deferment and later reinstatement of the programme, or penalties attached to cancellations, would ultimately place a major financial burden on Escom. Moreover, at present growth rates, all the planned capacity will be fully utilised within ten years.

Having taken the decision to continue, we are faced with the task of managing the temporary excess capacity and minimising costs. Consequently, a comprehensive supply-side management programme has been launched: newer and more efficient power stations are running at near full capacity while operations at older and more expensive stations are being reduced. Some of the plant in these less efficient stations will be placed in reserve storage, which means that they will be kept in working condition by a small staff complement for re-introduction to the system when required.

Containing costs

The coal mining industry must be congratulated on maintaining a low price level. Coal is Escom's primary energy source and efforts of collieries to improve efficiencies and contain labour costs as far as possible have had a direct impact on our pricing strategies.

By virtue of its size Escom has a significant impact on the country's infrastructure and resources, and particular attention has been given to a reduction in water consumption. Matimba and Kendal, the new dry-cooled stations, will contribute further to these savings. Matimba will begin generation in 1987.

Plant availability has improved substantially and reached 78,5% in 1986, exceeding our target of 77% two years ahead of schedule. Our surplus capacity will further enhance availability and allow for better maintenance programmes.

Materials management has also been improved and there has been a noticeable reduction in stock levels.

Management changes

Mr F.J.W. Barnard, General Manager of the Resources Services Group, retired at the end of 1986. On behalf of the Management Board, I would like to thank him for his contribution over many years to Escom.

The Resources Group was subsequently restructured into the Human Resources Group with Dr G.F. Lindeque, formerly Personnel Manager, as its General Manager.

Outlook

The outlook for the immediate and longer term future is very encouraging. For the first time we have indicated expected tariff levels three years in advance. Only excessive increases in the rate of inflation and interest rates are likely to prevent us from meeting our tariff projections.

While Escom is reasonably self-sufficient in all the technical areas of power generation and transmission, embargoes could limit imports of plant and components. In view of this we will continue to encourage local manufacture wherever economically feasible.

With a GDP growth rate of 1% in 1986, the 4,5% growth in the volume of electricity sales last year is in line with the long-term trend in the relationship between growth rates in the national economy and demand for electrical energy. Since the 1950s the annual growth rate in electrical energy has fluctuated between 3% and 4% above the GDP rate.

We are in a strong position to meet future growth. Leanness, flexibility, professionalism and customer awareness are some of the key requirements necessary for Escom to meet the challenges that lie ahead. We are establishing an organisation which will meet its customers' electricity needs without placing an undue financial burden on them.



Ian McRae
Senior General Manager

9 March 1987

DISTRIBUTION GROUP



“The Distribution Group is the direct link between Eskom and its customers. Our role is to satisfy their electricity needs in the most cost-effective way, which will contribute towards enhancing the quality of life in Southern Africa.”

— Lood Rothman (60)

*Assistant Senior General Manager, and Head of the Distribution Group during the year under review.
Pr. Eng., BSc., BSc. (Eng.) (US). Joined Eskom in 1955 and appointed to Management Board in 1985.*

“We are building bridges between Eskom and its customers. Closer liaison has shown the need for revised tariffs and programmes which encourage savings through the efficient use of electricity, and these are now being developed in consultation with customer bodies.”

— Randolph Forbes (54)

*General Manager, Power Marketing and Distribution Services.
Pr. Eng., BSc. (Eng.) (RAND), MBL (SA). Joined Eskom in 1949 and appointed to the Management Board in 1985.*

DISTRIBUTION GROUP

continued

Electricity sales

Electricity sales increased by 4,5% in 1986 to 117 353 million kW.h. This growth is lower than the 5,1% recorded in 1985 which provided sales of 112 306 million kW.h. The second half of the year saw a significant slow-down in the growth rate, partly as a result of capacity constraints in the export-oriented industrial sector. This decline was offset to an extent by promotion of sales to the large self-generating municipalities.

As can be seen in the table, all categories except traction showed positive growth during the year.

Tariffs

There were two tariff increases in 1986, an average increase of 10% in January and 10% in July. This resulted in an average electricity price of 4,98 c/kW.h, compared with 4,12 c/kW.h in 1985.

The national uniform tariff structure was implemented in 1986, eliminating most of the regional price differences. Only a small transmission surcharge is still levied in areas remote from the main generating areas to recover transmission losses.

Relatively high annual tariff increases in 1985 and 1986 were necessary to bring the price of electricity to the level required for a sound financial structure. Escom has given an undertaking that future tariff increases will be below the ruling rate of inflation. The increase of 12% announced for 1987, and effective from January, is well below the expected inflation rate for the year.

The off-peak tariff introduced in 1986 has received general acceptance by large industrial and mining customers. The tariff has enabled these large energy-intensive customers to reduce their electricity costs and has also enabled Escom to make more efficient use of its base-load power stations.

Farm supplies

Number of supply points at 31 December
Farm supplies include supplies to agricultural and smallholdings which are primarily used for farming purposes

	1986	1985	1984	1983	1982	1981	Average	
							Increase 1985- 1986 %	yearly increase 1982- 1986 %
	78 809	70 364	65 018	59 098	53 467	49 238	12,0	9,9

Customer services

A major market research project undertaken in 1986 indicated that many Escom customers have a need for expert advice on electricity usage and application. We will be providing this service in future.

Closer contact with customers and customer groups has led to the identification of the need for a tariff which will allow customers to effect savings through the wise and efficient use of electricity. As a result, a new domestic tariff will be implemented in 1987, following discussions with various consumer bodies.

The unique requirements of customers with intermittent or seasonal usage were also studied, particularly the tariff conditions for low-load-factor customers, such as irrigation farmers. Proposals will be discussed with relevant customer groups early in 1987.

Regional and district managers were in the forefront of the drive to increase Escom's visibility and presence in the communities they serve. These managers met with local customers and community leaders during the year and the response has been most favourable, particularly in towns where new district headquarters were established. All regions have become members of the local Chambers of Industry.

Quality of supply

In 1986, generation capacity was adequate to meet the country's electricity needs. However, on three occasions, compared with one in 1985, temporary loss of generating plant caused underfrequency conditions which led to voluntary load shedding by customers. No mandatory underfrequency shedding (at 48,8 Hz) occurred in 1986, as compared with one in 1985.

The quality of supply of the main distribution network was generally good. The major factors adversely affecting the system were severe storms, sugar cane fires in the vicinity of power lines, pollution mainly in coastal areas and circuits taken out of service for maintenance. Where possible, action is being taken to minimise outages in the future.

The average supply availability for 1986 was 99,97%.

Distribution system

The distribution system generally covers circuits operating at voltages from 132 kV down to 33 kV. Despite the downturn in the economy an additional 759 km of line were constructed during the year, mainly to reinforce existing networks in preparation for future customer needs. The operation and maintenance of the system is carried out by regional personnel in the 61 districts located throughout the country. The development of more sophisticated maintenance systems, including the live-line technique, has contributed to better continuity of supply and service to customers.

Rural electrification

The rural electrification programme was further accelerated in 1986. In all, 16 000 kilometres of line operating at 22 kV and below were constructed, some 40% more than in 1985. Due to revised designs, costs per km of line constructed have shown a marginal decrease in the latter part of 1986. This augurs well for the future.

There was a general improvement in rural network performance after the introduction of more sophisticated sectionalising devices coupled with pre-storm maintenance. Since most of the electrical networks are situated in high lightning/storm frequency areas, the effort has been rewarding.

Other methods to reduce outages, such as live-tapping techniques, the use of radio-controlled supervisory/operating equipment and a computerised lightning plotter which gives early warning for threatened geographical areas, have proved most useful.

Energy efficiency and demand-side management

It is part of our strategy to develop programmes to extend advice on energy usage to all electricity end users through cooperation with other suppliers, including municipalities and manufacturers. Considerable assistance was obtained from overseas utilities on the marketing of demand-side programmes and the training of staff to provide customers with advice on

DISTRIBUTION GROUP

continued

energy saving technologies and practices. This service will be introduced in 1987.

One of the first aspects to be addressed will be the more effective use of electricity on farms. Among the major uses of energy on farms are pumping, cooling, drying and environmental control. Often a combination of energy carriers is used for these activities and our programme would be aimed at identifying the most cost-effective ones applicable in a particular situation.

We have undertaken to support a competition for energy-efficient design in buildings. This is part of a long-term strategy to reduce wastage and encourage wise and efficient use of electricity. Buildings are significant consumers of electricity and good design can achieve considerable savings, both for customers and Escom.

Supply agreements

Negotiations with the large self-generating municipalities on the allocation of substantial capacity from Escom were conducted during 1986. These municipalities will consume significantly more Escom power during 1987 than they did in 1986.

Mutual assistance and cooperation agreements between a number of neighbouring utilities, independent states and Escom were signed during the year. We intend developing this type of agreement with the utilities in each of our neighbouring states.

Sales to utilities in Southern Africa, 1986

	GW.h	MW
Becor (Bophuthatswana)	1 773,5	290
BPC (Botswana)	232,3	37
EDM (Mozambique)	303,8	57
LEC (Lesotho)	134,6	27
SEB (Swaziland)	277,0	45
Swawek (SWA/Namibia)	411	66
Tescor (Transkei)	84,8	16
ZESA (Zimbabwe)	15,6	3

Sales of electricity to categories of customers

Million kW.h

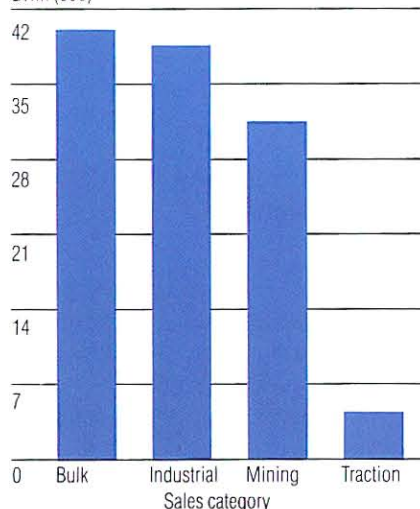
Category	Number of customers	1986	1985	1984	1983	1982	1981	Increase		Average price	
								1985-1986	% 1982-1986 %	cents/kW.h sold 1985	cents/kW.h sold 1986
Bulk sales ¹	535	40 570	37 568	35 541	32 729	32 349	29 961	8,0	6,3	4,127	4,874
Domestic ²	137 796	1 252	1 203	1 144	1 078	1 020	1 002	4,1	4,6	7,521	9,172
Industrial	108 261	39 170	38 123	36 118	32 286	30 959	31 091	2,7	4,7	4,112	5,028
Mining	541	31 860	30 825	29 506	28 021	27 372	27 131	3,4	3,3	3,795	4,716
Traction	46	4 501	4 587	4 595	4 137	4 436	4 659	(1,9)	(0,7)	5,368	6,236
Total	247 179	117 353	112 306	106 904	98 251	96 136	93 844	4,5	4,6	4,118	4,981

¹ Includes sales to municipalities and neighbouring countries.

² Includes street lighting. Escom supplies a relatively small number of domestic customers directly; most households are supplied by local authorities.

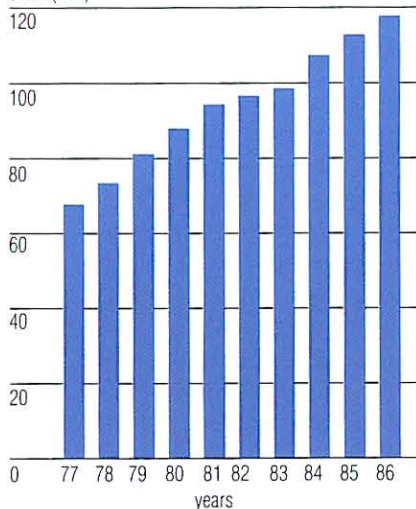
Sales by category, 1986

GW.h (000)



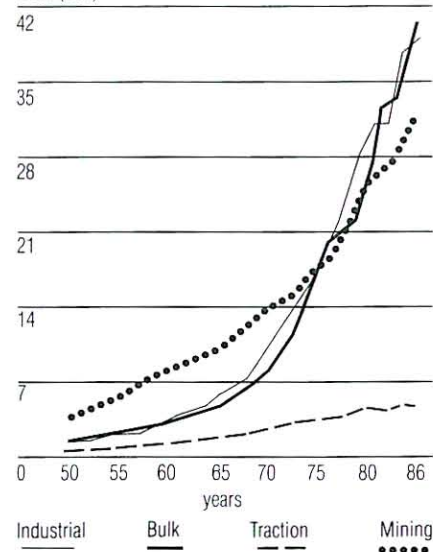
Total electricity sales, from 1977

GW.h (000)

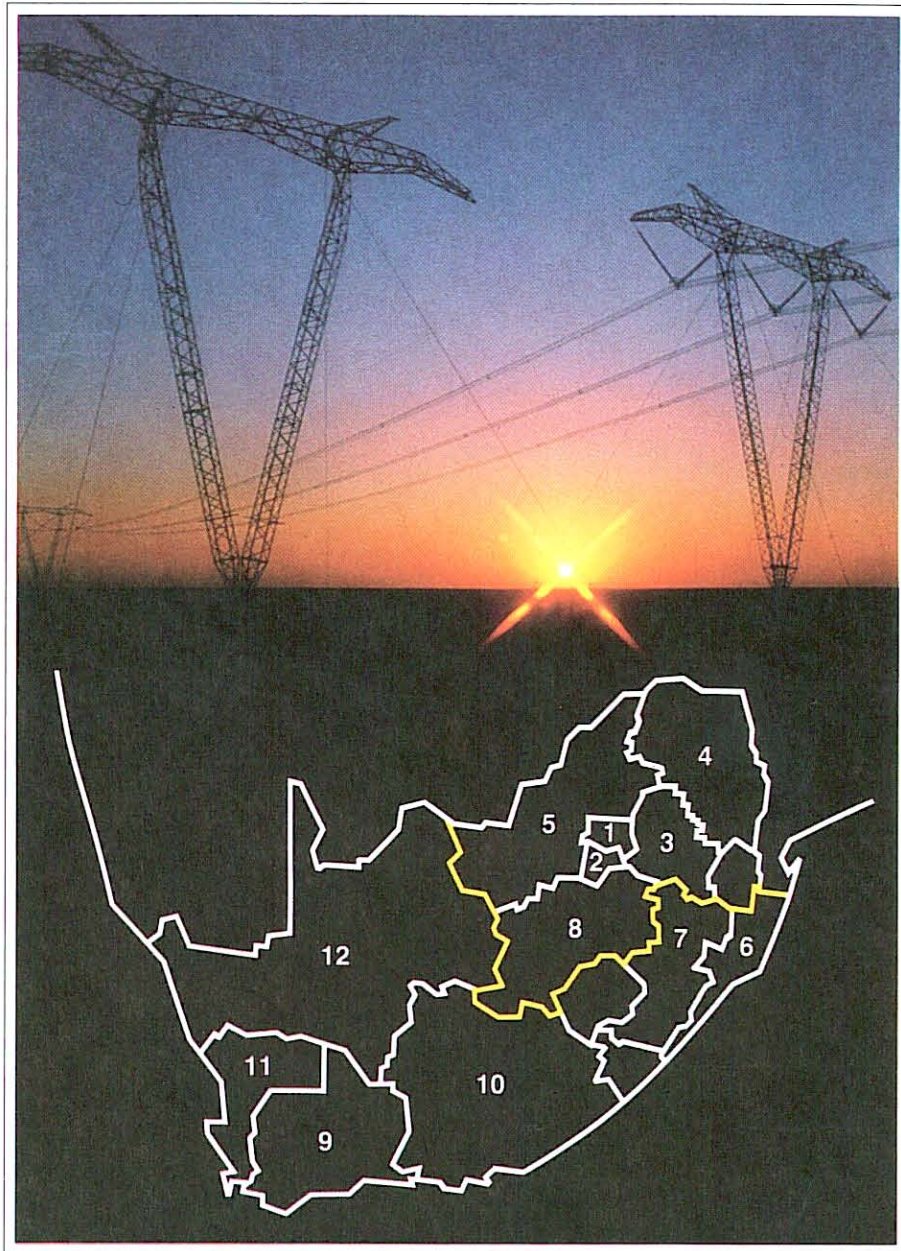


Sales growth by category, from 1950

GW.h (000)



ESCOM DISTRIBUTION REGIONS

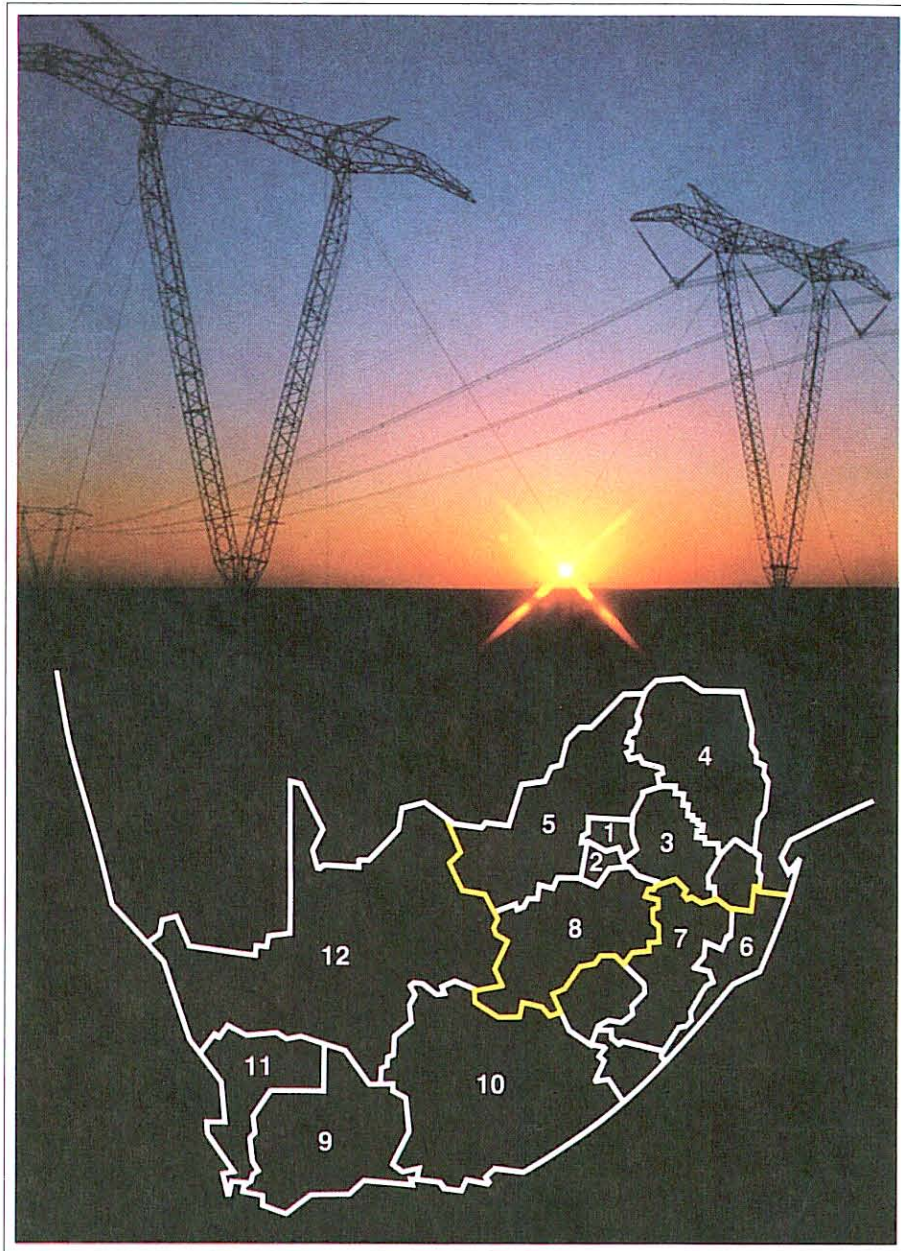


The distribution structure consists of 12 regions grouped into three distribution divisions. The 12 distribution regions have been divided into 61 districts. Each District Manager is responsible for ensuring that the electricity needs of his customers are met in the most cost-effective way, with the emphasis on customer service.

Regions

- | | |
|----------------------------|----------------------|
| 1. Central Transvaal | 7. Western Natal |
| 2. Southern Transvaal | 8. Orange Free State |
| 3. Eastern Transvaal | 9. Southern Cape |
| 4. North Eastern Transvaal | 10. Eastern Cape |
| 5. Western Transvaal | 11. Western Cape |
| 6. Eastern Natal | 12. Northern Cape |

ESCOM DISTRIBUTION REGIONS

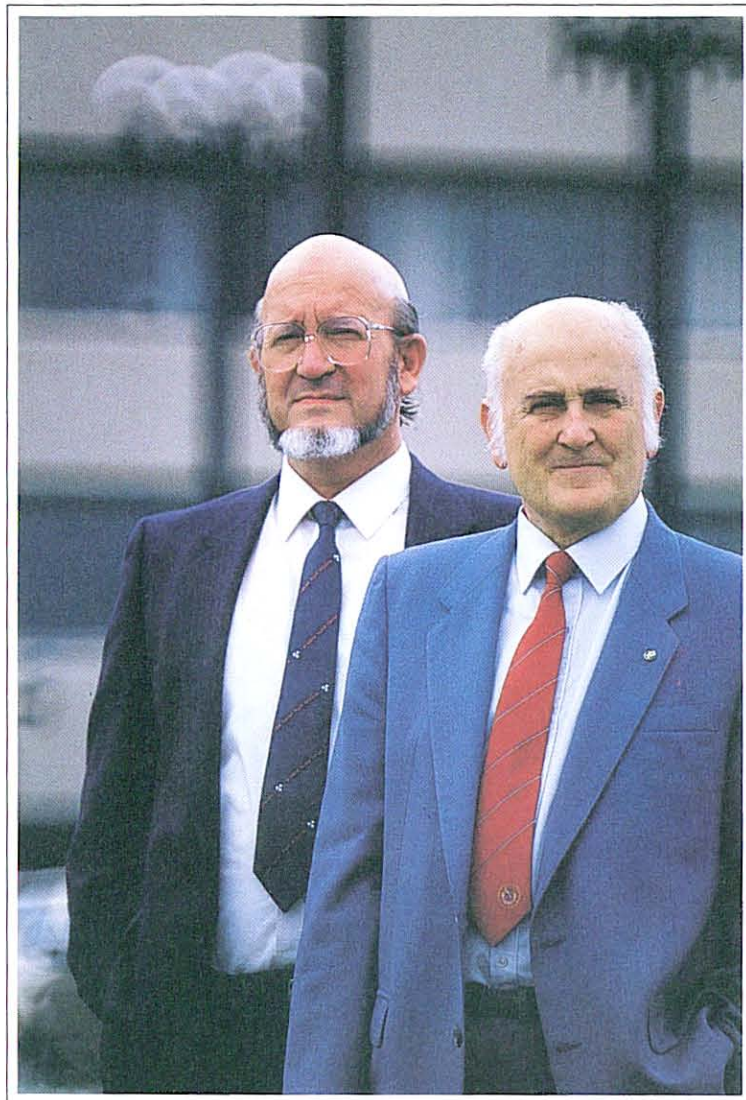


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| 4. North Eastern Transvaal | 10. Eastern Cape |
| 5. Western Transvaal | 11. Western Cape |
| 6. Eastern Natal | 12. Northern Cape |

GENERATION GROUP



“Generation is at the core of Eskom’s activities. Although ours is essentially a technological and capital-intensive business, we recognise the importance of the contributions of all our people and we continually strive to promote their development and improve their performance.”

*Herman Edeling (61)
General Manager, Generation*

Pr. Eng., BSc. (Eng.)(RAND). Joined Eskom in 1968 and appointed to the Management Board in 1986.

“Careful fine-tuning is necessary to produce the right balance between supply and demand. A well-planned and well-run interconnected transmission system and support groups unify and coordinate the vast orchestra of power stations to meet the electricity needs of customers.”

*Bussie Els (58)
General Manager, Operations*

Pr. Eng., BSc. (Eng.)(US), BSc. (Hons.)(SA), GDE (RAND). Joined Eskom in 1953 and appointed to the Management Board in 1985.

GENERATION GROUP

continued

Plant performance

The average availability of Escom's generating plant reached 78,5% for the first time since the mid-1970s. Availability had been declining since the introduction of the large 500 MW and 600 MW sets because of the initial poor performance of these units.

A comprehensive programme was launched to improve availability and the results are now being felt. The 23 large (500 MW to 600 MW) coal-fired generating units, which constitute almost half of Escom's total installed capacity, achieved a combined average annual availability

Water consumption

M ϵ in 000's

300

250

200

150

100

50

0

Thermal efficiency

%

35

30

25

20

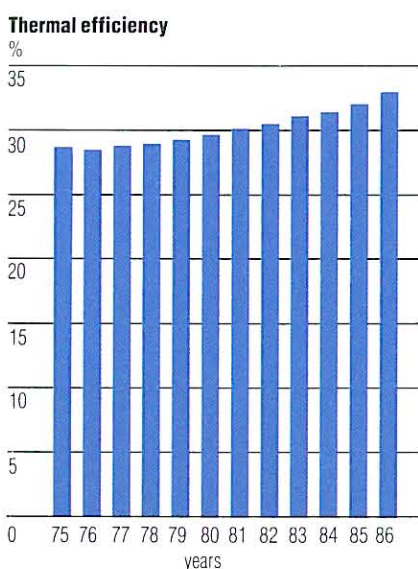
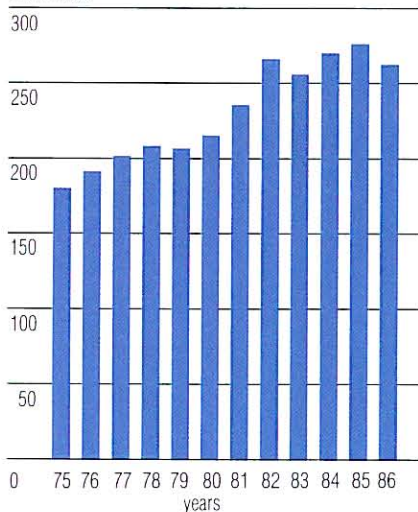
15

10

5

0

years



Plant availability

%

100

80

60

40

20

0

79 80 81 82 83 84 85 86

years

Sent-out capacity

MW in 000's

30

25

20

15

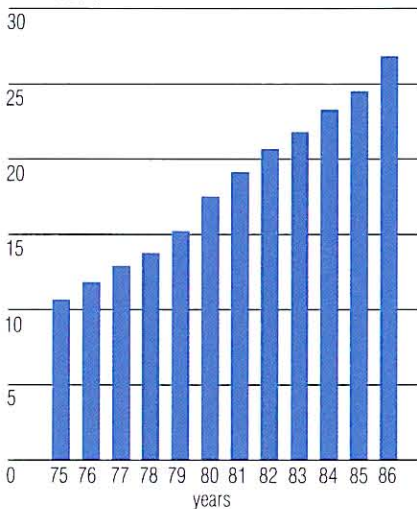
10

5

0

75 76 77 78 79 80 81 82 83 84 85 86

years



of 79,0%; the highest availability, 86,5%, occurred at Tutuka.

Compared with a World Energy Conference availability of 78,0% for large units, Escom's plant performance now ranks among the best in the world, even though we burn coal of an extremely poor quality with an average heat content of 21 MJ/kg and very adverse grinding and slagging properties. The overall thermal efficiency of our coal-fired stations was 32,9%, compared with 32% in 1985.

One 600 MW unit at Matla power station ran a record 181 days non-stop during the first half of 1986. Five power stations – Arnot, Hendrina, Kriel, Matla and Duvha –

have now joined the "10 000 Club" by producing more than 10 000 GW.h per year. Two stations – Duvha and Matla – have so far passed the 20 000 GW.h mark.

Matla and Tutuka tied for top honours as the stations with the highest overall performance rating, which takes into account availability, reliability, efficiency and performance over the critical peak. Hendrina won the performance merit award for stations with smaller units.

Koeberg nuclear power station achieved an available plant load factor of 90,4%. It performed extremely well during 1986, its first year of full operation which included a refuelling operation on Reactor 1.

The Generation Group employs about half of Escom's employees and has built up an excellent labour relations record. In spite of countrywide labour unrest and large-scale stay-aways on some critical days in 1986, turnout of staff was so good that supply of power was never in jeopardy.

Escom's reserve-storage programme, brought about by the slowdown in the electricity demand growth rate, is aimed at preserving older, less efficient plant during a long period of inactivity and reducing the cost of operating and maintaining these stations to the absolute minimum. This has resulted in an initial saving of about R50 million in 1986 and continued savings of this magnitude are expected in future years.

In March 1986 Klip power station was decommissioned after 50 years' operation. The station will be dismantled with due regard to the safe removal of the large amounts of asbestos present in the plant.

Escom has an installed capacity of 28 086 MW, with an assigned sent-out rating of 26 682 MW. In 1986, power stations sent out 126 511 GW.h of electricity while only 255 GW.h (less than 0,2%) was imported from other sources. No power has been received from Cahora Bassa since February 1985.

Of the total energy sent out, the Drakensberg pumped-storage scheme absorbed about 2 980 GW.h. An estimated 438 million cubic metres of water was pumped into Sterkfontein Dam on behalf

GENERATION GROUP

continued

of the Department of Environmental Affairs.

The net amount of energy sent out by Escom was 3,8% more than in 1985, but lower than the 4,7% growth recorded in that year. Although growth rates have been declining since the beginning of 1983, they appear to be bottoming out. Nevertheless, the pattern remains very volatile and no steady long-term trend has emerged.

Coal-fired generation contributed 90% of the total energy sent out on the Escom system, followed by nuclear power with a contribution of 6,9%. Generation from the Orange River hydro power stations and gas turbines made up the rest.

The one-hour maximum supplied demand on the interconnected Escom system was 18 278 MW, 2,4% more than in 1985.

Coal and water

During the year, Escom power stations used 59,0 million tons of coal, compared with 59,5 million tons in 1985. This slowdown flows from a greater use of the larger, more efficient power stations. We reduced the output of tied collieries associated with the smaller, less efficient stations.

Despite these difficulties, the high inflation rate, adverse exchange rates and labour problems at mines, the tied collieries performed extremely well. The cost of coal burnt increased by 12%, from R13,25 per ton in 1985 to R14,87. During the same period, the production price index rose by about 20%.

The quality of raw water has become more important because the cost of treatment has increased greatly. As a result, the concept of totally closed water circuits assumes even greater significance.

Maintenance

All maintenance planned for 1986 was carried out because reserve margins were adequate. However, considerable replanning was necessary to cope with unscheduled outages.

Our maintenance strategy is increasingly

being geared to a condition-based, rather than time-based, approach. This should bring benefits in terms of better performance, lower maintenance costs and lower manpower requirements.

Outlook

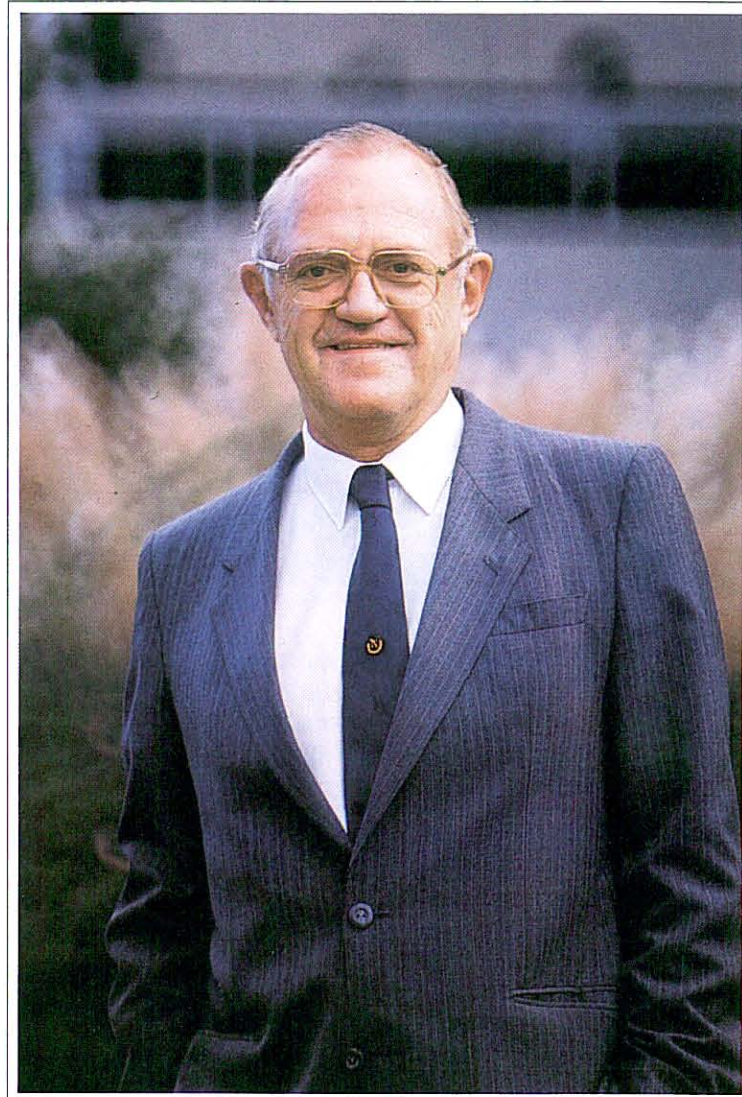
In the coming year, the emphasis will be on improved performance, increased productivity and the effective management of excess generating capacity brought about by the slowdown in growth rates. Training needs will also be addressed to ensure that the perceived skills shortages are dealt with through maximum utilisation of existing potential.

Structure

Since its formation on 1 January 1986, the Generation Group has matured rapidly and its structure reflects business orientation with new strengths particularly in the financial, manpower and commercial areas. There is great emphasis on decentralising as many functions as possible to the 23 strategic business units, which comprise 27 power stations and three large townships. These, in turn, make up four divisions, each headed by a divisional manager.

The main support for the Group is provided by Operations and Generation Services. These consist of generation and transmission planning, the interconnected system, generation maintenance, fuel and water and generation services.

ENGINEERING GROUP



“Engineering’s contribution is the provision of major plant and the enhancement of specialist knowledge and skills that will keep Eskom at the forefront of rapidly developing technologies so that electricity users reap the benefits of continuous improvements in reliability and availability.”

Ed Ralph (58)

General Manager, Engineering

Pr. Eng., BSc. (Eng.) (Natal). Joined Eskom in 1955 and appointed to the Management Board in 1985.

ENGINEERING GROUP

continued

Expansion programme

The sharply reduced demand for electricity in the Republic and the difficulties the country has encountered in the international political and economic environments have meant that project programmes now have to be as flexible as possible to meet sudden sharp fluctuations in the growth of energy demand. The Engineering Group will have to deal with a declining project work load over a fairly long period of time.

Maximum management involvement is necessary to rationalise manpower requirements and, at the same time, continuously improve the competence of staff to cater for Escom's long-term needs.

The pressure to reduce capital expenditure has placed a heavy burden on the design divisions, which face the difficult task of reducing costs without jeopardising reliability and availability. Considerable skill is required to meet the objectives of optimised designs for providing maximum availability with minimum cost. To this end, the Power Station System Engineering Optimisation Division was established in 1986. The Division has been integrating all cost-reduction exercises for projects under construction, and will continue to support power station performance enhancement projects on existing operating plant.

While Escom is quite self-sufficient in all the technical aspects of power generation and transmission, embargoes could limit imports of plant and components. In view of this, we encourage local manufacture wherever economically viable, particularly in the field of electronics.

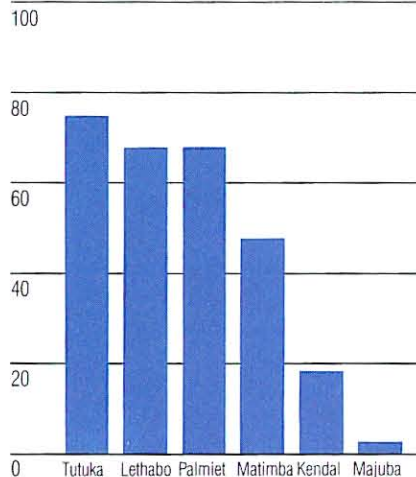
Projects

Five coal-fired power stations are at various stages of completion. They are Tutuka (Standerton), Lethabo (Vereeniging), Kendal (Witbank), Matimba (Ellisras) and Majuba (Volksrust). A pumped-storage scheme is under construction at Palmiet (Grabouw).

Tutuka – Set 3 of the eventual total of six was commissioned in September 1986. The fourth set will be commissioned in June 1987, and the fifth and sixth sets in December 1988 and 1990 respectively.

Power stations under construction

% of construction completed



Since November 1986, Set 1 has been undergoing its guarantee inspection. The project is 75% complete, with total cost from inception to end December 1986 approximately R2 900 million.

Lethabo – Good progress was made during the year and the station is now 68% complete. Set 2 went into service in July 1986 and Set 3 has been maintained on programme for completion in March 1987. The main concrete structure for all six boiler houses was completed during the year as projected in the original programme.

Majuba – The main civil works are expected to commence in April 1987. Certain portions of the boiler and turbines were manufactured earlier than the present programme demands and these will be stored. Building up of the resources, after the deferment, is progressing with a view to meeting the commissioning date for Unit 1 in 1991.

Matimba – This is Escom's and the world's largest direct dry-cooled power station and Set 1 will go into commercial operation in the second quarter of 1987. The project is 48% complete with capital expenditure to 31 December 1986 being R1 980 million.

Kendal – This is the world's largest indirect dry-cooled power station and Set 1 should go into commercial operation by June 1988.

The project is 18,5% complete with approximately R1 300 million spent since inception. In the latter part of 1986, the coal stockyard was commissioned and the first coal was transferred from Khutala mine.

Palmiet – The civil work is proceeding as scheduled and the two machine shafts have been handed over to the pump/turbine contractor who has commenced machine erection.

The watering-up date for the scheme is 1 September 1987 with the commissioning of Set 1 complete before the end of the year. Set 2 will be commissioned early in 1988.

Technical advances

During 1986 there were several significant engineering developments. The advanced power generation technology applied during the year at Lethabo reinforced Escom's reputation as a world leader in the field. The coal is of unusually low quality having an average calorific value of only 16 MJ/kg.

Lethabo power station therefore represents a major step in the use of low-quality coal which elsewhere in the world is used only in fluidised bed boilers. Experience gained at this station with 42% ash coal, will eventually have an enormous effect on the exploitation of South Africa's indigenous energy resources.

The standard size of generation set used by Escom is in the 600 MW range. Studies have indicated that the use of larger sets – 900 MW or greater – would have no benefits in economy of scale in the South African context, particularly if one takes into account the standard "six-pack" station arrangement, the logistics of dealing with low-quality coal and the disposal of larger amounts of ash.

A major effort has resulted in higher availability, smoother running and greater efficiency from the 10 MW drives for the Matimba feed pumps. The process control engineering systems introduced at Matimba are a milestone in the development of power station control systems using micro-processor-based technology. The Matimba generators' unique features contribute to a better dynamic performance of the turbo-generator.

ENGINEERING GROUP

continued

The first of two 765 kV transmission lines, 420 km long, between Tutuka power station, near Standerton, and Dealesville, midway between Bloemfontein and Kimberley, was completed during the year and will be commissioned, together with the second line and the 765/400 kV terminal substations, by mid 1987.

In 1986, the Engineering Group also undertook work of an essential nature for, and with, external organisations. As a sequel to the 1983 drought, there was cooperation with the Department of Water Affairs in reassessing the water yield and associated assurance of water supply to our thermal power stations in the Eastern Transvaal. In addition, work was also undertaken in designing the emergency water supply scheme to transfer water from the Vaal Dam to the Grootdraai Dam, near Standerton, over a distance of 208 km.

The Engineering Investigations Division is providing an increasingly important service. Highlights of 1986 include the determination of the residual life of superheater outlet headers with the concomitant saving of several million rands in replacement costs. In addition, the results of a three-year project to enhance the performance of electrostatic precipitators were presented at the International Symposium on Air Pollution held in New Orleans, USA. This presentation further confirmed Escom's international reputation for technical excellence.

Structure

The responsibilities of the Group centre mainly on the design, construction and equipping of our power stations, the main transmission system and related projects.

During 1986, the Group was restructured to support Escom's business approach. The key changes were:

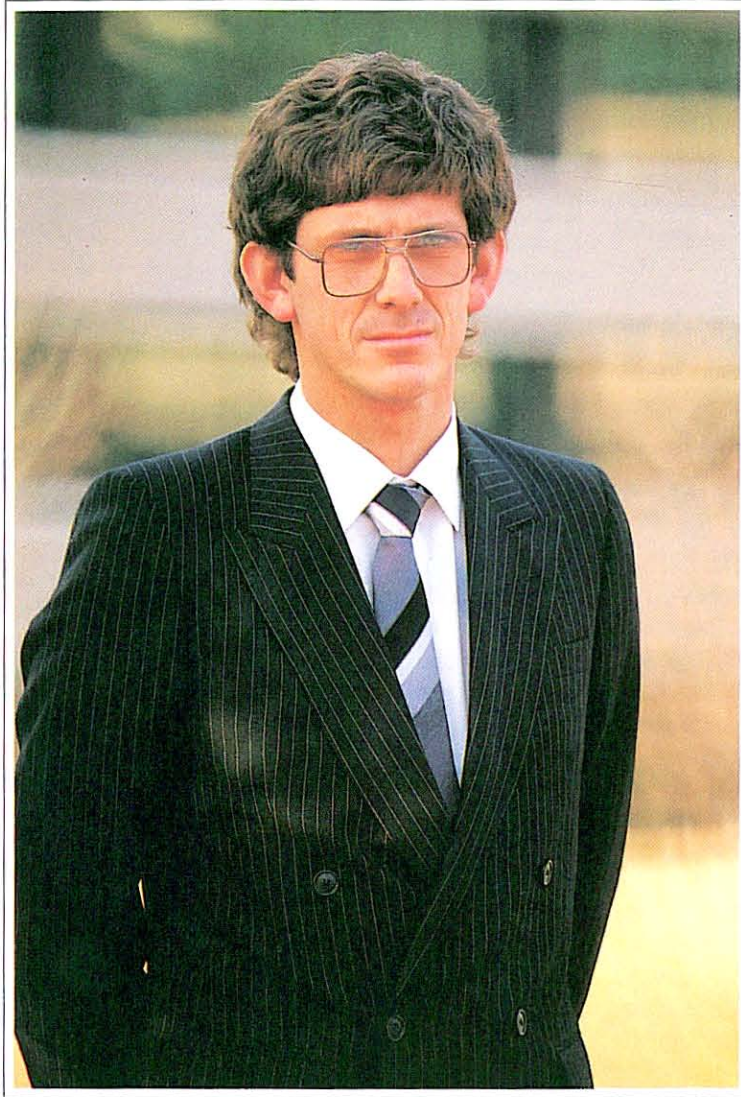
- rationalised Group modus operandi, decentralised support activities, establishment of the Engineering Finance and Engineering Manpower Divisions, and strengthened group planning and group communication functions in the Engineering Services Division;

- establishment of three line functions, each of which has technical and/or project management units grouped for optimal efficiency.

The incorporation of the project buying division into the Power Station Projects Department was further extended to the establishment of a project buying team, and the appointment of an accountant in each of the larger projects. This has resulted in a more efficient buying process and greatly improved contract handling.

In accordance with the drive for better control over capital expenditure, an integrated project management package has been chosen and converted for use on the Escom mainframe computer.

FINANCE GROUP



“Escom has adjusted to the changed financial conditions arising primarily from the introduction of the debt standstill. Budget cuts have been implemented and borrowings reduced. We believe that our requirements of the South African financial markets will not have an adverse effect on interest rates.”

*Larry Harper (37)
General Manager, Finance*

BCom. (RAND), BCom. (Hons.) (SA), MBA (Alabama-Birmingham). First joined Escom in 1973 and appointed to the Management Board in 1985.

FINANCE GROUP

continued

Highlights

Escom's financial wellbeing was strengthened in 1986 by improved internal financing, brought about by considerable savings in operating costs, the postponement of capital projects and higher revenue. Borrowings were substantially reduced and the demand for local capital and money market financing was cut to less than half the 1985 figure.

Liability management was improved leading to further increases in favourable borrowing cost variances from budget. There was a major drive to enhance financial control and reporting throughout the organisation. Steps, such as the implementation of improved planning and budgeting procedures and the appointment of additional financial staff, assisted in making Escom more efficient and cost effective.

Other functions of the Group to receive special attention during 1986 included a new accounting system, a proactive management approach, more self-insurance, a new risk-management philosophy, and the privatisation of the personnel insurance and home ownership schemes.

Operating surplus

Revenue from electricity sales exceeded charges to the income statement by R200 million in 1986.

The accumulated deficit of R380 million brought forward from 1985 and adjusted upwards to R487 million following accounting procedure changes (see Item 13 of the Notes to the Financial Statements on page 44), was reduced and an accumulated deficit of R287 million has been carried forward to 1987. The Reserve Fund, which is used for upgrading plant, exceptional repairs or emergencies and self-insurance, was strengthened by a contribution of R120 million. Along with interest earned of R64 million, it now has a balance of R479 million, representing 2,4% of total fixed assets in commercial operation.

Revenue

Electricity sales totalled R5 845 million and were R1 220 million or 26% more than the previous year. This increase was due to both a higher volume of sales, netting R208 million, and increases in the electricity tariff, which produced additional revenue of R1 012 million. These figures compare favourably with the forecasts made in the 1985 Annual Report and were necessary to meet charges and required internal financing levels.

Charges against revenue

Total charges against revenue rose by R1 048 million as compared with 1985, mainly as a result of the increase in loan charges. Operating expenditure increased by 15% to R2 465 million. After taking into account the growth in sales, the unit cost increase of 10% was well within the rate of inflation as measured by the production price index. This was achieved through a disciplined and comprehensive programme of cost control throughout the organisation.

Although total interest and finance costs increased by 10% to R3 475 million, loan charges against revenue rose by 33%. This was less than budgeted, mainly due to a marked reduction in short-term borrowing rates and a liability management programme.

Large amounts, in all R3 689 million, were transferred to capital in commercial operation, which increases the charges against revenue, but reduces interest capitalisation. Interest capitalised was reduced to R935 million from R1 235 million in 1985, mainly as a result of these transfers.

Capital expenditure

Net expenditure on fixed assets was R3 770 million in 1986, R987 million down from the figure for 1985. This increased Escom's investment in fixed assets to R27 633 million. Our curtailed expansion programme has had a marked effect on capital expenditure and will result in a continued decline in the level of capital expenditure in real terms until further power station projects are committed.

Financing from own resources

In 1986, Escom financed 32% of its total funding from internal sources, a level which became necessary in the light of South Africa's international debt standstill arrangement. In reducing expenditure and increasing internal financing, Escom removed pressure from local financial markets and contributed to the decline in domestic interest rates.

A major contributor to the increase of internally generated funds was the change of R700 million in forward cover and exchange adjustments. Foreign exchange swap transactions yielded a cash inflow of R931 million which, in accounting terms, is reflected as an internal source of funds.

Borrowings

At the beginning of the year there was considerable uncertainty concerning Escom's ability to raise sufficient funds to finance its ongoing capital development programme.

Because of the debt standstill arrangements with foreign creditors, we did not expect to receive any new funds from abroad, apart from import-financing facilities.

On the local market, expectations of substantial increases in public sector borrowing tended to push interest rates to record levels on the assumption that the demand for capital would exceed supply. However, by the second quarter of the year, increased borrowings did not materialise and favourable developments in the economy led to better liquidity and interest rates fell.

As a result, and in line with our funding requirement, Escom successfully raised R2 120 million from local and foreign sources in 1986. Local sources provided R1 749 million, while the balance of R371 million came from import-financing facilities. In addition, R931 million from swap transactions on the foreign exchange market contributed greatly to Escom's improved liquidity. We could, therefore, borrow less from traditional sources than was originally projected. The use of project-related and bankers acceptance facilities provided R764 million, which was substantially less than projected.

FINANCE GROUP

continued

Breakdown of borrowings

on cash proceeds basis
(in Rand million)

	1986	1985
Local financial markets		
Primary capital market	277	260
Secondary capital market	708	1 646
Net Project-related facilities	764	1 745
Total, local financial markets	1 749	3 651
Foreign financial markets		
Loans raised	Nil	922
Import-financing facilities	371	336
Total foreign financial markets	371	1 258
Total arranged, local and foreign markets	2 120	4 909
Less net loan repayments	848	1 588
Net amount raised	1 272	3 321

Local capital market

During the year Escom raised R277 million from two new issues on the primary capital market. Activities on the secondary capital market continued at a high level and total turnover exceeded R14 000 million in nominal terms. Net cash sales on the secondary market were R708 million, which was substantially lower than the R1 646 million raised in 1985. The R985 million raised on the local primary and secondary capital market was almost half the amount obtained in 1985.

Through its secondary market operations, Escom continued to provide the investment community with the facility to manage their investment portfolios effectively. In line with our objective to increase the marketability of our stock, a local option market in fixed interest rate instruments was opened. It is expected that the capital market will be affected during 1987 by a change in the basis of prescribed asset valuation and the possible scaling down of prescribed asset requirements of insurance companies and pension funds.

Foreign market

As a result of the debt standstill, activity in the foreign loan market was limited. The use of import-financing facilities was as originally projected and helped to finance the import component of projects.

The main objective of the debt standstill, namely that South Africa's borrowing activities should return to normality as soon as possible, was not realised because many overseas bankers adopted a "wait-and-see" attitude.

Escom executives undertook several visits overseas during 1986. Regular contact with foreign bankers is considered necessary in order to maintain lines of communication and to keep abreast of new developments. Three newsletters were sent to overseas organisations during the year to keep them informed of developments in South Africa in general and Escom in particular.

Foreign exchange

The weakening of the US dollar against the major currencies during 1986 resulted in a positive swap cash flow of R931 million on the rollover of forward exchange contracts covering long-term loan finance commitments.

The main focus of the Funding Department in 1986 was to improve the management of Escom's foreign currency commitments. The Foreign Exchange Division was expanded, a dealing desk and communication system was established and visits to many local and foreign bankers were undertaken to establish relationships with dealing room personnel and to formalise dealing procedures. A computer system was developed to process dealing data and produce management information.

Outlook

Cost savings and constrained capital expenditure programmes will continue during 1987 and beyond. This will enable Escom to maintain internal financing levels without putting pressure on electricity prices. Current price levels will be sufficient to meet our financing goals in 1987 and price increases in 1988 and 1989 will be below the inflation rate.

The borrowing programme for 1987 is well within the capacity of the financial markets, without pressure being placed on interest rates. Funding projections provide for some R2 200 million to be obtained from the domestic financial markets during 1987, which is less than two-thirds of the financing obtained from the same source in 1985.

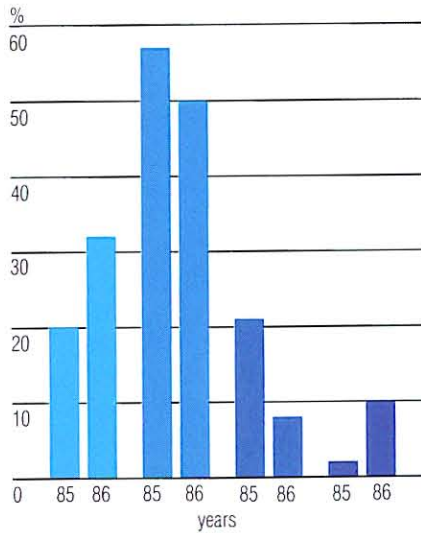
Financial management remains in the spotlight at Escom and we will increase our efforts to develop a strong and active team to meet the challenge of minimising financial costs and satisfying the ever increasing electricity demand.

Cash resources, insurance, foreign exchange and loan facilities will be managed aggressively, while information systems, planning and accounting will be improved to serve management better. A change in legislation is expected during the year which will enable Escom to report its 1987 financial results in business accounting terms.

FINANCE GROUP

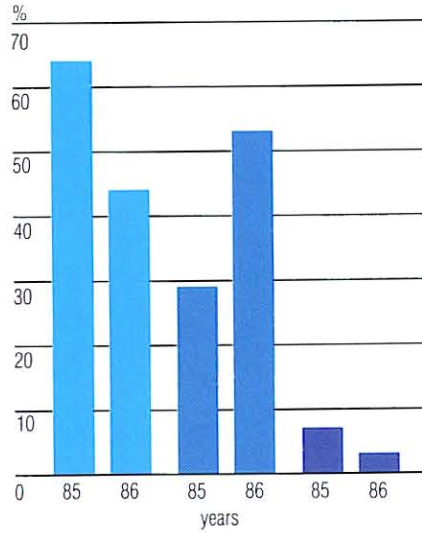
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Source of funds



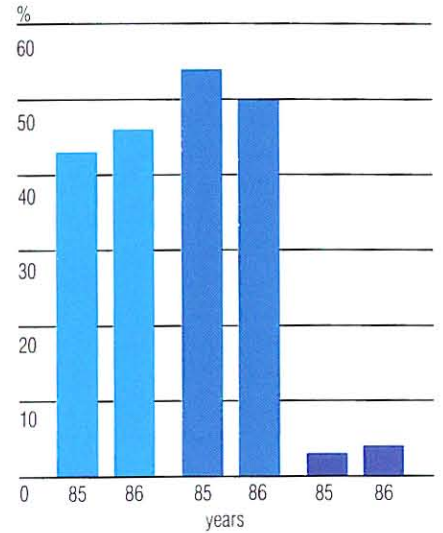
- Funds generated internally
- Loans and extended credit
- Net sale of Escom stock
- Other

Application of funds



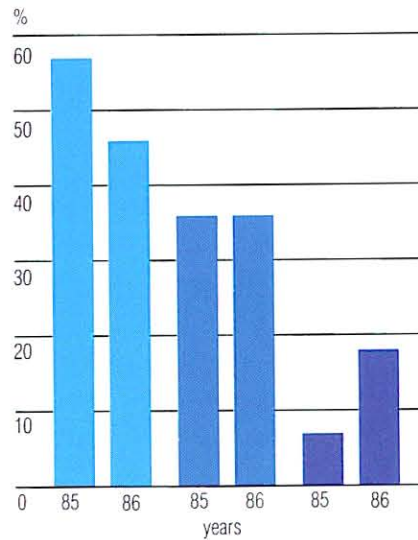
- Expenditure on fixed assets
- Repayment of loans and extended credit
- Other

Expenditure as a percentage of costs



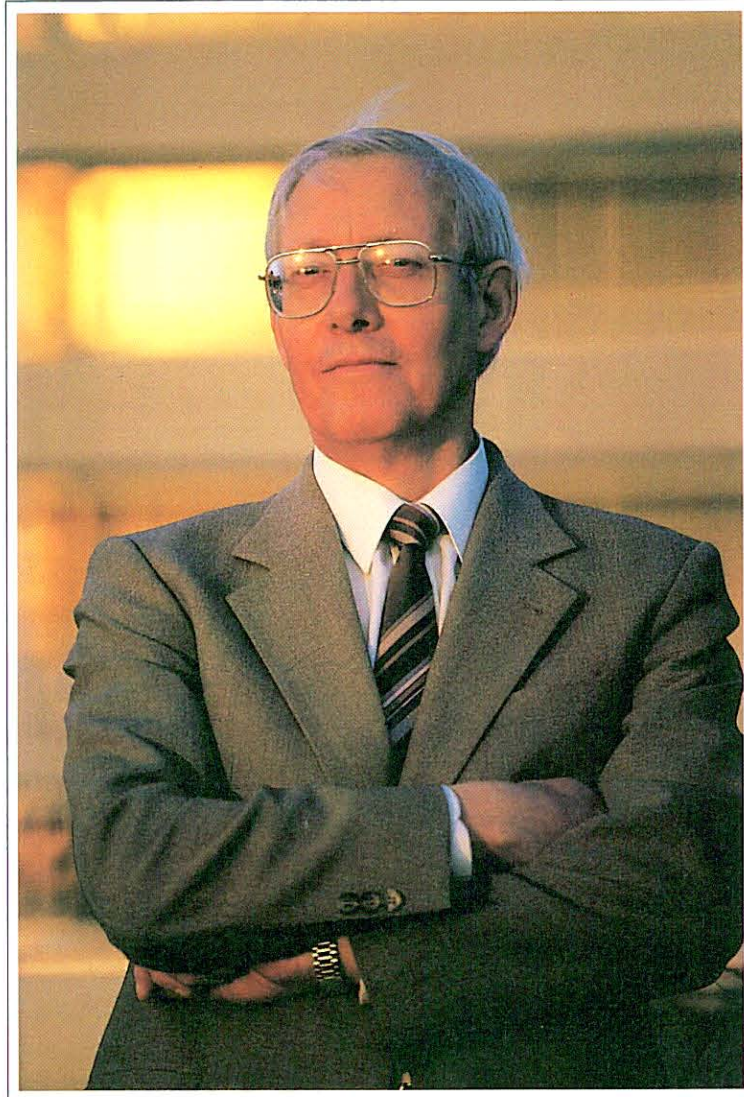
- Operating expenditure
- Loan charges
- Contribution to Reserve Fund and surplus

Type of debt



- Local and foreign loans
- Revolving credits and short-term advances
- Import financing and extended credit facilities

RESOURCES SERVICES GROUP



“Human resources are our most important asset. The new challenges facing Escom require the highest possible performance from our people. Management is committed to helping employees in every way to meet the goal of running an excellent organisation.”

Frans Barnard (58)

General Manager, Resources Services

Pr.Eng., BSc. (Eng.) (US), MBL (SA). Joined Escom: in 1960 and appointed to Management Board in 1985. Retired at the end of 1986.

RESOURCES SERVICES GROUP

continued

Personnel

Towards the end of 1985 the objective was set to reduce staff numbers from 66 000 to 60 000 by the end of 1986. As a result, no new appointments were made except in exceptional circumstances. An early-retirement package was also implemented. At the end of 1986, the total staff complement was 60 800, in spite of a slowdown in natural attrition, especially in the unskilled employee categories.

The decision to put a number of power stations in reserve storage, a downturn in other activities, as well as the reorganisation of Escom, led to a number of employees becoming redundant. A favourable separation package was agreed to after negotiations with the trade unions concerned, and about 3 600 employees had left Escom's service by the end of January 1987, of whom more than 2 000 were voluntary. This brought the staff complement to just under 58 000, at which level it is expected to stabilise.

In 1986, a number of objectives were formulated in line with Escom's declared policy of equal opportunities for all employees. During the year an additional 1 000 employees were put on the unified salary scales. Escom's home ownership scheme, which has been open to all races for some years, was extended to employees in the low-income group.

A new merit and pay-for-performance system was implemented for salaried staff. Employees are now committing themselves to achieving goals they themselves set in conjunction with their superiors, and their performance is measured accordingly.

A task force was appointed to investigate all aspects of employee training. Particular attention was given to customer service and contact. During the year, the Training and Development Department moved to the Escom college at Midrand. At the end of 1986, 950 apprentices and 632 pupil technicians were in training, and there were 558 Escom bursars.

Data processing

During 1986, an integrated data processing plan for Escom was put into operation. In the past, 26 computerised systems operated on 10 decentralised sites. These systems are now being converted for central processing. The overall objective is to improve the availability of operating information, facilitate control and consolidate management information to decentralised business units to the level determined by line management. The conversion process should be completed by July 1987.

Safety assurance

The lowest fatality rate to date was achieved by Escom in 1986. The injury rate was maintained at the very low figure of 2.2 disabling injuries per million manhours, compared with the all-industry average of 8.6.

The occupational hygiene programme concentrated on the control of standards achieved and received considerable praise from the Department of Manpower.

Productivity services

Business planning facilitation was provided to all strategic business units. Performance management processes were initiated, starting with the top 150 managers. The job-output modelling process was introduced to identify clear objectives and accountabilities, and for reviewing performance.

Employee participation using productivity and quality circles was consolidated and management teams initiated. Pilot areas for measuring productivity, using the REALST model and the Objective Matrix from the National Productivity Institute, were extended.

Commercial services

An efficient bulk buying service was established for strategic business units and 25 bulk orders were placed.

The development of an integrated materials management process to limit stocks and to improve the quality of service, is progressing well.

Organisation and business analysis

The Organisation and Business Analysis Department renders a staff support service to line management to help them optimise the use of their resources by way of organisation planning and job evaluation, business analysis and industrial engineering services.

Organisational structures and position descriptions for all senior and middle management positions were finalised in 1986 to help with the major reorganisation of Escom. The department also provided support and leadership to projects such as the integrated materials management process and the development and implementation of administrative systems for the management and operation of Escom's townships. It is already evident that this project, though in the initial stages, will bring about considerable cost savings.

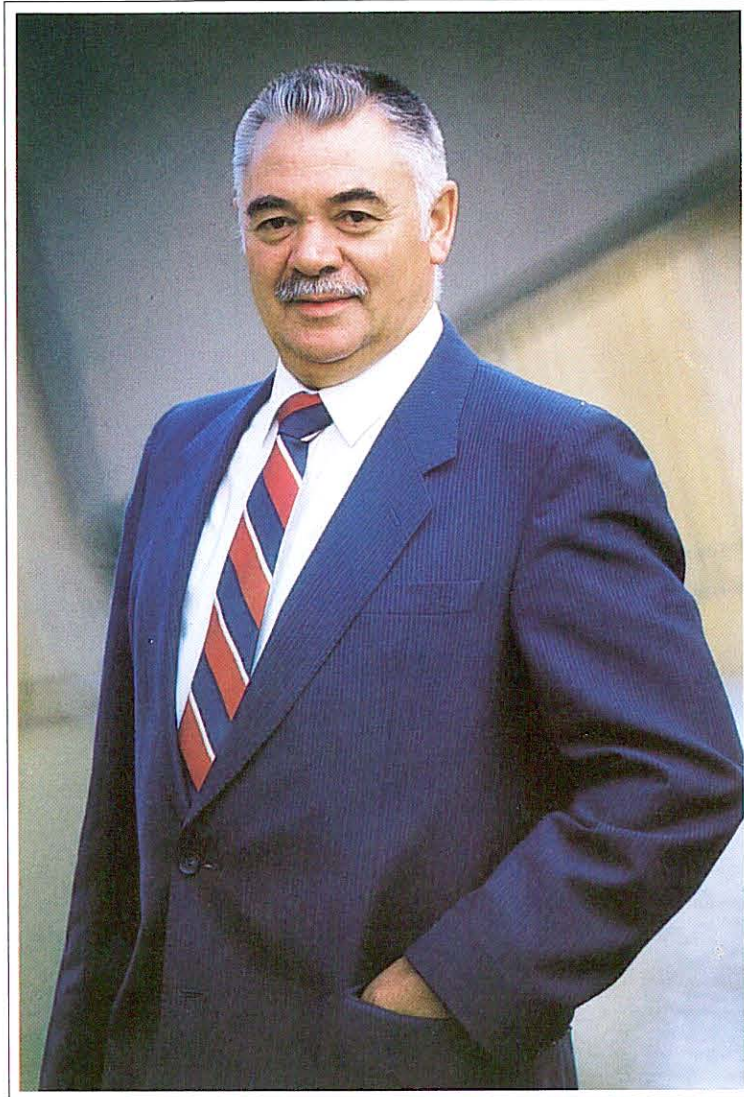
Reorganisation of the Group

The Resources Services Group was dissolved at the end of 1986. The Commercial Department and Organisation and Business Analysis Department were transferred to the Strategic Services Group and Data Processing to the Finance Group. A new group, Human Resources, was established with Dr G.F. Lindeque as General Manager. The Group consists of the Personnel, Industrial Relations, Performance Management and Development, Training, and Safety Assurance Departments.



Dr George Lindeque, General Manager of the newly formed Human Resources Group.

STRATEGIC SERVICES GROUP



“The objective of the Group is to create and maintain an environment which supports excellent performance throughout Escom. We assist all levels of the organisation by the provision of systems and services aimed at achieving Escom’s goals and promoting good relations between management, employees, customers, suppliers and interest groups on a national and international basis. The satisfaction of our customers is our prime motivation.”

*Ters Oosthuizen (57)
General Manager, Strategic Services*

BA LLB (UOFS). Joined Escom in 1959 and appointed to the Management Board in 1985.

STRATEGIC SERVICES GROUP

continued

Legal services

The Electricity Act of 1958 has been amended a number of times during the last few years to give effect to the De Villiers Commission of Inquiry report. The Legal Department contributed to the drafting of legislation which established Escom in its new form, as well as legislation dealing with matters relating to Escom and the general control of electricity supply in South Africa. Draft legislation to finalise the implementation of the recommendations of the Commission of Inquiry is due for consideration during the 1987 Parliamentary session.

Other activities during the past year include the continued renegotiation of contracts, following changes in Escom's generation expansion programme and the resultant changes in funding requirements. Assistance and guidance were also given to the newly formed strategic business units on legal and administrative procedures and actions.

Management appraisal

A number of operational audits and management appraisal studies were completed in 1986 which led to some rationalisation and reorganisation measures to improve cost effectiveness.

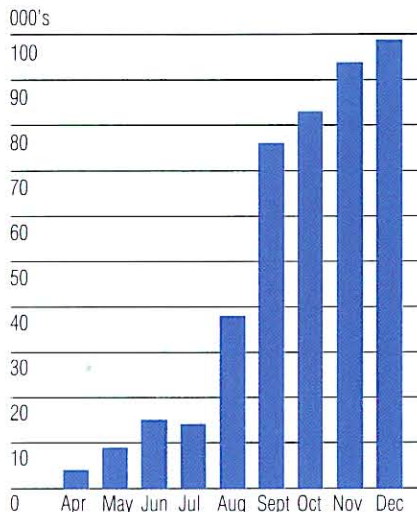
Communication

Escom's commitment in its new philosophy to a frank, open-door approach towards communication saw the development of vigorous and effective programmes to explain the organisation and its activities to its many internal and external audiences.

Senior executives made presentations to leading businessmen, politicians and local government officials at major centres around the country; several press conferences were held in addition to many television, radio and newspaper interviews. Key media representatives were invited on a regular basis for informal briefings.

A major publications programme aimed at key audiences was launched. The success of this programme, which is based on a comprehensive series of informative documents covering the entire spectrum of

Publications distributed during 1986



Escom's activities, is indicated by the fact that since the first brochures appeared in February 1986, the mailing list has grown to 80 000 a month. Most notably, these brochures, pamphlets, educational posters, fact sheets and newsletters are produced and sent out in response to specific requests from the public. The mailing list now includes addresses throughout South Africa, Africa and overseas.

A quarterly financial newsletter aimed at an international audience of bankers and investors has also been well received.

In addition to the publications programme, Escom information centres in Johannesburg, Cape Town, at Koeberg and at the Drakensberg pumped-storage scheme attracted a total of 60 000 visitors during 1986. A museum was opened in Durban, where an information centre will be established in 1987, and a museum is planned in Johannesburg. Visitor centres are planned at several other power stations.

A comprehensive internal communication programme was established to keep employees informed on a regular basis of developments within the organisation. Escom News, the fortnightly tabloid staff newspaper, was upgraded and now has a regular distribution of more than 50 000 copies per issue. A video news programme is seen by employees at locations throughout the country every two months.

On a personal level, senior executives held regular meetings with employees at all levels to explain the changes in Escom and receive feedback on the impact of the new developments. This programme of direct contact will be further expanded in 1987.

A gratifying consequence of these intensive communication efforts is that a better understanding of Escom's activities has been achieved, both externally and internally. A survey of staff attitudes indicated a dramatic positive shift within the organisation towards an understanding and acceptance of the new management style and Escom's objectives.

Escom International

Escom's quality inspection office in London was upgraded during the year to become an international office, retaining its engineering and technical quality inspection role but adding to it the very important aspects of communicating with suppliers and financiers on an international basis.

Security

As part of Escom's continued cost savings, the privatisation of the breeding and training of Escom's security dogs was finalised during 1986 and implemented from January 1987. In addition, improved security methods are under investigation in order to ensure cost-effective systems which remain compatible with the need to protect facilities and life.

Emergency preparedness

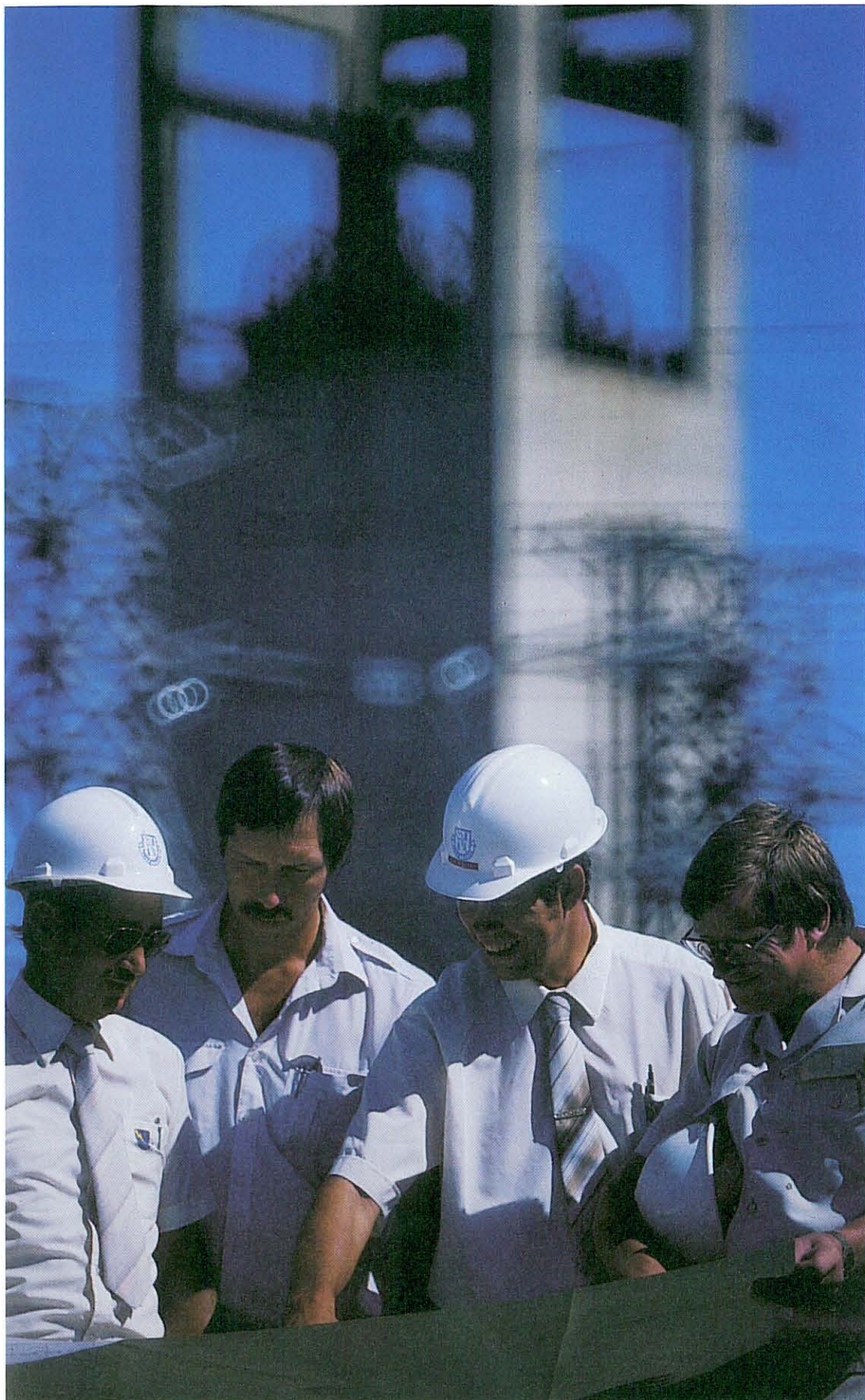
By means of a centralised service of counselling and advice, assistance was rendered to improve emergency preparedness at various Escom facilities and centres.

Restructuring

Strategic Services was restructured into the Services Group in January 1987 and now also includes the Commercial Department and Organisation and Business Analysis Department of the disbanded Resources Services Group.

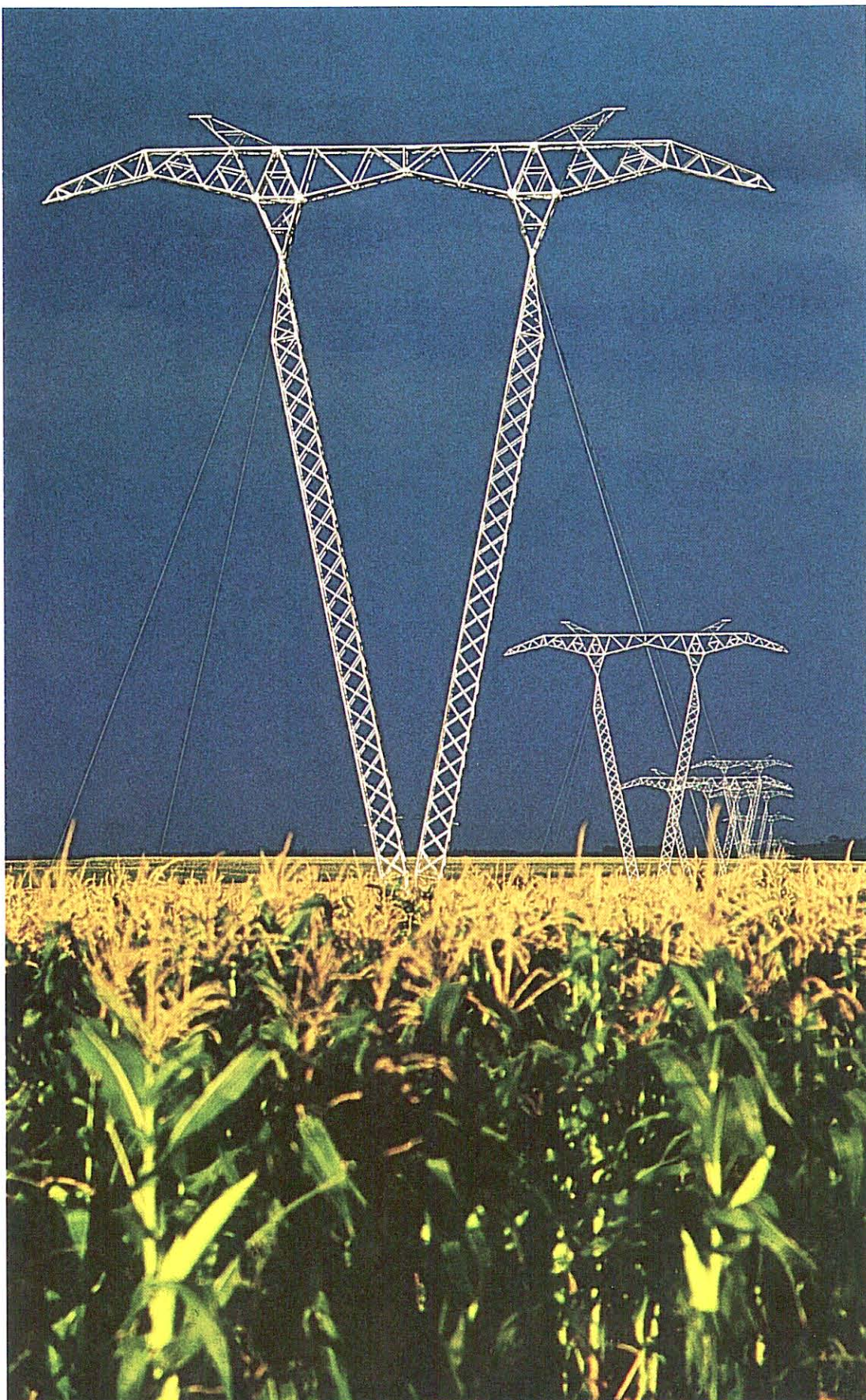


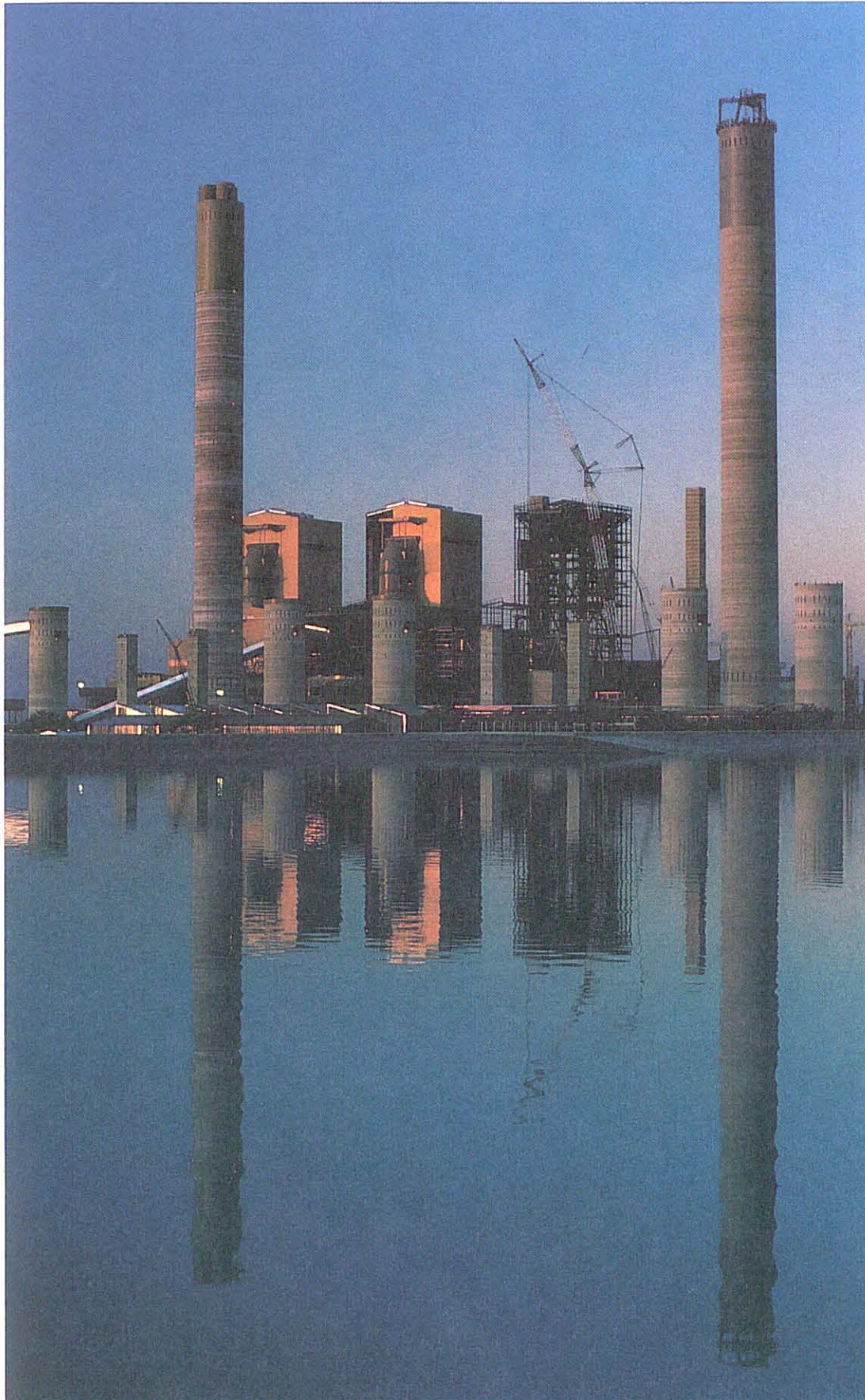
In an organisation as large as Escom, strategies related to manpower management remain a high and on-going priority. Performance management programmes are being introduced to encourage and monitor the upgrading of individual performance levels throughout the organisation. A key component is acceptance of the need to move towards a meritocracy where the concept of equal opportunities and advancement on merit is firmly entrenched.



Escom's new business approach focuses attention on the customer and his needs. Close liaison and consultation aimed at supplying electricity in the most cost-effective way brings the organisation into daily contact with large industrial users, the mining industry, farmers, municipalities and domestic customers.

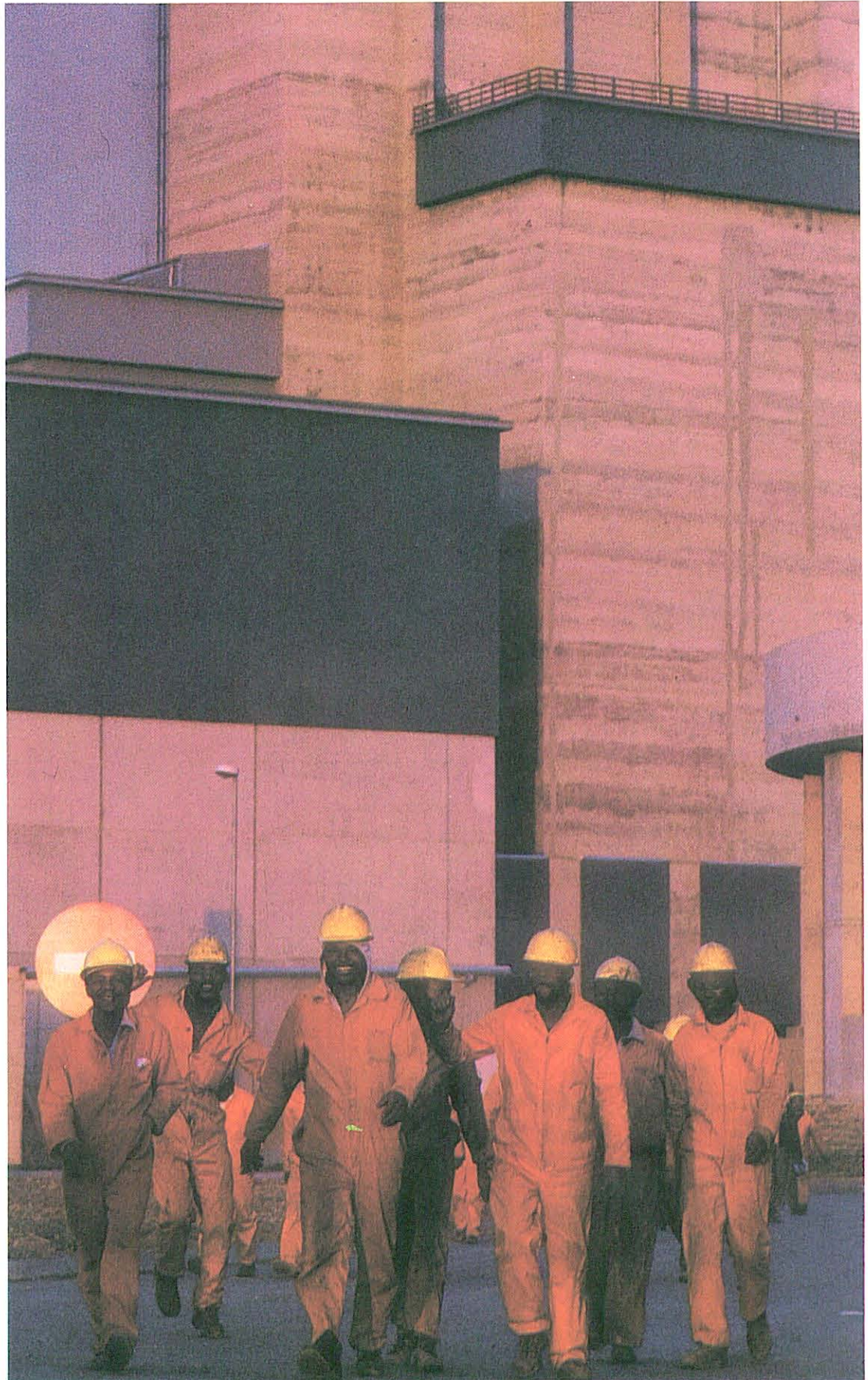
The national grid that brings electricity to every corner of South Africa and its neighbouring states employs over 170 000 km of high-voltage power lines spanning an area larger than Western Europe. The recent introduction of 765 kV extra-high-voltage power lines places Escom among world leaders in this field of technology.





*R*apidly advancing technology has enabled Escom to make a major contribution towards the preservation of South Africa's scarce water resources. New power stations use considerably less water for cooling than their older counterparts and the introduction of dry-cooled stations will have a further dramatic impact on savings. Matimba (seen here) and Kendal, which will soon be taken into commission, employ air-cooling technology on a scale never before attempted – they are each ten times bigger than similar stations operating elsewhere in the world.

Massive power station construction programmes have long been a feature of Eskom's activities as the utility has kept pace with South Africa's burgeoning demand for electricity. Contracts associated with diverse aspects of power station construction have a major impact on local industry and create thousands of job opportunities in the private sector. Precision, quality and demanding standards are priorities in any Eskom undertaking and have ensured that technology and efficiency remain equal to the best in the world.





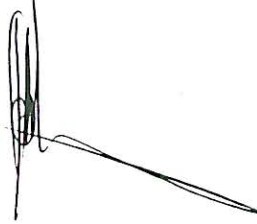
The introduction of nuclear power heralded the dawn of a new era for the development of South Africa. Koeberg Power Station, which has operated at high levels of efficiency during its first full year of operation, represents the first step in the inevitable transition from fossil fuel to nuclear energy. As the country's coal reserves become depleted during the next century, more nuclear stations can be expected to follow in Koeberg's pioneering wake.

FINANCIAL STATEMENTS

for the year ended 31 December 1986

The annual financial statements set out on pages 38 to 49 have been approved by the Electricity Council and were signed on its behalf on 9 March 1987 by:

J.B. Maree, *Chairman of the Electricity Council*



I.C. McRae, *Senior General Manager of Escom*



B.M. Murray, *Accounting Manager of Escom*



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REPORT OF THE AUDITORS

The Members of the Electricity Council

We have examined the financial statements of Escom set out on pages 38 to 49. Our examination was made in accordance with generally accepted auditing standards and, accordingly, included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

In our opinion, the financial statements fairly present the financial position of Escom at 31 December 1986 and the results of its operations for the year then ended in conformity with generally accepted accounting practice applied on a consistent basis, and in the manner required by the Electricity Act.

We further report that, in terms of the Electricity Act:

- (i) due provision has been made for the redemption and repayment of moneys borrowed by or advanced to Escom and the Redemption Fund has been properly maintained, and
- (ii) a sum fixed by Escom has been set aside to the Reserve Fund.

Deloitte Haskins & Sells Aiken & Carter

Chartered Accountants (S.A.), Auditors

Johannesburg
9 March 1987

BALANCE SHEET

as at 31 December 1986

<i>(All figures in Rand millions)</i>	Notes	1986	1985
Fixed assets	2	27 633	23 969
Non-current assets	3	6 339	5 749
Current assets		1 692	1 427
Stores, materials and fuel	4	969	868
Accounts receivable and payments in advance		609	487
Cash		114	72
		35 664	31 145
Financed by			
Loans and extended credit	5	19 348	18 153
Local registered stock, bond issues and direct placings (Schedule 1)		28 657	25 006
Escom stock held internally	6	(12 279)	(10 270)
		16 378	14 736
Other financing facilities and extended credit		1 986	1 906
Revolving credits and short-term advances		2 750	2 391
		21 114	19 033
Current portion of long-term liabilities		(1 766)	(880)
Current liabilities		3 302	2 321
Creditors and accrued liabilities		1 105	1 036
Interest accrued		431	405
Current portion of long-term liabilities		1 766	880
Total net debt		22 650	20 474
Statutory funds	7	9 373	7 948
Capital Development Fund (Schedule 5)		6 953	6 074
Reserve Fund (Schedule 5)		479	344
Redemption Fund (Schedule 6)	7.2	1 941	1 530
Reserves		3 641	2 723
Capital reserve	8	1 271	1 053
Provision for repayment of foreign loans		163	139
Other reserves	9	2 494	2 018
Accumulated deficit		(287)	(487)
		35 664	31 145

INCOME STATEMENT

for the year ended 31 December 1986

<i>(All figures in Rand millions)</i>	Notes	1986	1985
Electricity sold		5 845	4 625
Industrial		1 968	1 574
Bulk		1 976	1 545
Mining		1 504	1 169
Traction		281	247
Domestic and lighting		116	90
Operating expenditure		2 465	2 144
Operations		1 266	1 078
Plant maintenance		361	388
Administrative and related expenses		838	678
Operating income		3 380	2 481
Loan charges		3 060	2 303
Interest and finance charges	10	2 540	1 934
Redemption of local loans		477	323
Redemption of foreign loans		43	46
Contribution to Reserve Fund		120	150
Net income		200	28
Accumulated deficit at beginning of the year		(487)	(420)
Prior year adjustment	13	(287)	(392)
Accumulated deficit at end of the year		(287)	(95)
			(487)

STATEMENT OF SOURCE & APPLICATION OF FUNDS

for the year ended 31 December 1986

<i>(All figures in Rand millions)</i>	1986	1985
Source of Funds		
Funds generated internally	2 782	1 497
Net income	200	28
Items not affecting the flow of funds		
Forward cover and exchange adjustments	569	(131)
Depreciation	61	55
Amortisation of expenditure to secure future fuel supplies	19	15
Loan amortisation charges	870	603
Repayment of foreign loans	43	46
Redemption of local loans	477	323
Interest credited to the Redemption Fund	350	234
Amounts credited to Capital Development and Reserve Funds	1 063	927
Contribution to Reserve Fund	120	150
Interest	943	777
Proceeds of external finance	5 041	5 783
Loans and extended credit	4 379	4 228
Net sale of Escom stock	662	1 555
Sale of Escom stock	5 832	6 591
Purchase of Escom stock	(5 170)	(5 036)
Increase in net current liabilities	716	256
Deferred expenditure	113	(150)
Other	21	14
Total Source of Funds	8 673	7 400
Application of Funds		
Repayment of loans and extended credit	4 625	2 177
Fixed assets, net	3 770	4 757
Expenditure to secure future fuel supplies	169	357
Increase in housing loans to employees	60	56
Reserve Fund expenditure	49	53
Total application of funds	8 673	7 400

NOTES TO THE FINANCIAL STATEMENTS

for the year ended 31 December 1986

(All figures in Rand millions)

1. Accounting policies

The financial statements are prepared on the historical cost basis and incorporate the following principal accounting policies, which are, except as indicated in Note 13, consistent in all material respects with those of the previous year.

1.1 Fixed assets

(a) Fixed assets in commission

Fixed assets in commission are not depreciated but are reflected at historical cost. Loans are raised to finance these assets. The charge to revenue for loan amortisation takes the place of depreciation in recognition of the relationship between the loans so raised and the fixed assets.

(b) Decommissioning of nuclear plant

An annual provision is made for future decommissioning costs.

(c) Works under construction

Interest and a charge for corporate overhead expenses are capitalised during the period of construction.

(d) Equipment, vehicles and furniture

Equipment, vehicles and furniture are depreciated at rates considered appropriate to write them off over their estimated useful lives.

(e) Certain expenditure on fixed assets, as provided for in Section 13(1)(a) of the Electricity Act, is written off in full against the Reserve Fund.

1.2 Stores, materials and fuel

Stores and materials, excluding fuel, are valued at standards which approximate the latest purchase price. A provision for obsolescence is made where appropriate. Coal stocks are valued at average cost. Stock of nuclear fuel is valued at cost on a first-in-first-out basis.

1.3 Foreign currencies

Assets and liabilities in foreign currencies are translated to South African currency at rates of exchange ruling at balance sheet date or at forward exchange contract rates where appropriate. Unrealised gains and losses relating to the translation of foreign loans not covered are written off to the income statement over the remaining periods of the loans on a straight-line basis. All other translation gains and losses are expensed.

1.4 Deferred expenditure

Discount on loans is amortised on a sinking-fund basis over the period of each loan through the full provision for redemption of the relevant loans. The amortised portion of the discount is set off against the Redemption Fund and is transferred to the Capital Reserve on repayment of the loans.

Expenditure to secure future fuel supplies is amortised over appropriate periods and commences once related power stations are commissioned.

The difference between the book value and the proceeds of stock sold is written off over the remaining life of the original investment and is accounted for as interest in terms of Note 1.7.

Other deferred charges are amortised over appropriate periods.

1.5 Amortisation of borrowings

A Redemption Fund has been established in terms of the Electricity Act and provision for the redemption of local loans is made over periods not exceeding 25 years.

The State President, in terms of Section 10(2) of the Act, has directed that the provisions relating to the establishment of the Redemption Fund should not apply to foreign loans. Provision for repayment of such loans is made over periods not exceeding 25 years.

The Redemption Fund provisions are not applied to revolving credits and short-term advances, as these are made under the provisions of paragraph 1(3) of the Schedule to the Act.

1.6 Operating revenue and expenses

Meters are read on a cyclical basis and sales of electricity are accounted for concurrently. The revenue related to supplies between the date of the last reading and the end of the accounting period is not included in sales, whereas the related expenses are charged as incurred.

1.7 Interest capitalisation

Interest and finance charges on funds borrowed to finance works under construction and expenditure to secure future fuel supplies, are capitalised.

NOTES (continued)

	1986	1985	
2. Fixed assets			
Assets in commission, at cost			
Land and rights	242	233	
Buildings and facilities	1 834	1 597	
Production plant	17 831	13 667	
Total in commission	19 907	15 497	
Works under construction	7 514	8 278	23 775
Equipment, vehicles and furniture, at cost	480	410	
Accumulated depreciation	(268)	(216)	194
	27 633		23 969
3. Non-current assets			
Unamortised loan discount	3 587		2 883
Expenditure to secure future fuel supplies	1 484		1 334
Unrealised exchange losses	4		225
Difference between book value and proceeds of Escom stock sold	552		542
Housing loans to employees secured by first mortgage	296		236
Other deferred charges	416		529
	6 339		5 749
4. Stores, materials and fuel			
Maintenance and consumable stores	333		240
Construction material	239		274
Fuel	397		354
	969		868

5. Loans and extended credit

5.1 The current portion of long-term liabilities excludes revolving credits and short-term advances.

5.2 Options have been given to certain investors to hold their investment of R607 million in either capital project bills or Escom local registered stock numbers 154, 160 and 164. These options are available until 1992, at which time the investors are obliged to convert remaining capital project bills into local registered stock.

Escom has undertaken, at the option of the investors, to repurchase on 1 May 1989 Escom local registered stock number 165 of R180 million which was issued at a rate yielding 15,5% and to sell back to these investors on that date at a yield rate equal to the Public Investment Commissioners' valuation as at 31 March 1989.

5.3 In accordance with the provisions of the Electricity Act, stock issued in respect of loans raised, together with interest thereon has a first charge on all the assets of Escom.

6. Escom stock held for

	Schedule	1986		1985	
		Book Value	Nominal Value	Book Value	Nominal Value
Capital Development Fund	2	7 083	8 603	6 171	7 478
Reserve Fund	3	541	676	383	443
Redemption Fund	4	2 151	2 981	1 685	2 330
Repayment of foreign loans		16	19	18	19
		9 791	12 279	8 257	10 270
Difference between nominal and book value			2 488		2 013

NOTES (continued)

7. Statutory funds

7.1 The statutory funds are credited with amounts as provided for in the Electricity Act. These amounts are invested mainly in Escom stock and the interest accrues to the respective funds.

The Redemption Fund provides, on a sinking-fund basis, for the repayment of local loans.

The Reserve Fund is used, when required, for the replacement of obsolete machinery or plant and generally for the betterment of plant or for or in lieu of insurance, or for exceptional repairs or emergencies.

The Capital Development Fund provides internal financing for capital expansion.

	1986	1985
7.2 The Redemption Fund at the end of the year is stated as follows:		
Redemption Fund (Schedule 6)	2 350	1 737
Amortised loan discount	(409)	(207)
	1 941	1 530

8. Capital reserve

Loans repaid	1 487	1 226
Cost of commissioned assets scrapped or sold	(216)	(173)
	1 271	1 053

9. Other reserves

Difference between nominal and book values of Escom stock held internally	2 488	2 013
Deferred proceeds of reticulation systems sold	6	5
	2 494	2 018

10. Supplementary information

Total interest and finance charges	3 475	3 169
Amounts capitalised	(935)	(1 235)
	2 540	1 934

Lease charges on equipment		
Operating	18	17
Finance	2	—
Depreciation	61	55
Interest and other costs, related to damage and delays in commissioning of plant, written off	112	86

11. Commitments

11.1 Capital expenditure contracted for, excluding contract price adjustments and general sales tax, amounts to approximately

	7 052	9 122
--	--------------	-------

This expenditure will be financed from external borrowings and from cash generated internally and is expected to be incurred as follows:

1987	1 922	
1988	1 377	
1989	1 102	
1990	903	
1991	675	
thereafter	<u>1 073</u>	

Foreign commitments are translated to South African currency at rates of exchange ruling at balance sheet date.

NOTES (continued)

	1986	1985
11.2 Payments in respect of housing loans granted to employees of approximately	35	11
11.3 Lease commitments		
Finance lease in respect of computer equipment		
Payable in 1987	14	—
Payable in 1988–1991	62	—

12. Contingent liabilities

12.1 Escom has indemnified the Electricity Supply Commission Pension and Provident Fund against any loss resulting from the negligence, dishonesty or fraud of the Fund's officers or of the Trustees.

12.2 There is a contingent liability in respect of assessments raised by the Commissioner for Inland Revenue for the payment of general sales taxes on certain capital expenditure contracts. Management is of the opinion that the General Sales Tax Act has been complied with and has objected to the assessments raised.

13. Change in basis of accounting

In order to comply with the recent statement of generally accepted accounting practice with regard to the premiums on long-term forward cover, Escom has, with effect from 1 January 1986, written such premiums off over the period of the cover instead of over the life of the loan.

The application of the new policy resulted in a net increase of R107 million in the accumulated deficit at the beginning of 1986 and is shown by way of a restatement of the 1985 results by R12 million and an adjustment for prior years of R95 million.

BORROWINGS

as at 31 December 1986

Schedule 1 (All figures in Rand millions)

Loan	%	Repayment date/s	1986	1985	Loan	%	Repayment date/s	1986	1985		
Local registered stock					Brought forward						
45	17	5.5	1980/86	—	17	130	50	11.5	1989	50	50
46	16	5.875	1981/86	—	16	131	250	11.15	2002	250	250
47	18	6.25	1981/86	—	18	132	2 500	11.75	2002	250	250
49	18	6.125	1982/87	18	18	133	60	10.9	1988	60	60
50	22	5.25	1982/87	22	22	134	170	10.75	2003	170	170
51	29	5	1983/88	29	29	135	270	11.3	2003	270	270
58	30	6.5	1989/91	30	30	136	7	7.25	1985/7	2	6
60	35	6.75	1991	35	35	137	60	9.7	1986	—	60
61	35	6.875	1992	35	35	138	150	9.7	2003	150	150
64	12	6.5	1992	12	12	139	340	10.25	2003	340	340
65	37	6.875	1992	37	37	140	120	8	1986	—	120
70	10	6.5	1993	10	10	141	130	8.65	2004	130	130
71	70	6.875	1993	70	70	142	350	9.15	2004	350	350
75	22	6.5	1993	22	22	144	130	9.05	2005	130	130
76	48	6.875	1993	48	48	145	270	9.55	2005	270	270
78	20	6.5	1994	20	20	146	70	8.1	1987	70	70
79	30	6.875	1994	30	30	147	100	9.05	1992	100	100
81	10	6.5	1994	10	10	148	100	9.05	2005	100	100
82	25	6.875	1994	25	25	149	230	9.55	2005	230	230
83	18	7.5	1995	18	18	150	150	10.25	1990	150	150
84	3	7	1995	3	3	151	275	10.95	2004	275	275
85	35	8.75	1995	35	35	152	100	12.8	1993	100	100
86	10	8.5	1995	10	10	153	400	12.95	2006	400	400
87	45	9.25	1996	45	45	154a	250	10	2007	250	250
88	10	8.75	1996	10	10	154b	250	10	2007	250	250
89	20	9.25	1996	20	20	154c	595	10	2007	595	595
90	30	9.25	1996	30	30	154d	505	10	2007	505	505
91	10	8.75	1996	10	10	154e	400	10	2007	400	400
92	20	9.25	1997	20	20	155a	700	13.2	2007	700	700
93	22	9.125	1997	22	22	155b	900	13.2	2007	900	900
94	5	8.75	1997	5	5	156	300	15.15	1987	300	300
95	25	8.5	1997	25	25	157	650	14.25	2008	650	650
96	28	8.25	1997	28	28	158a	250	9.25	1994	250	250
97	7	8	1997	7	7	158b	410	9.25	1994	410	410
98	45	8.25	1997	45	45	158c	45	9.25	1994	45	45
99	30	8.25	1998	30	30	158d	200	9.25	1994	200	200
100	20	8.375	1998	20	20	159a	800	12	2008	800	800
101	5	8	1998	5	5	159b	800	12	2008	800	800
103	24	8	1998	24	24	159c	1 300	12	2008	1 300	1 300
104	6	7.625	1998	6	6	160a	995	11	2009	995	995
106	45	8	1998	45	45	160b	1 900	11	2009	1 900	1 900
107	27	9	1999	27	27	160c	900	11	2009	900	—
108	3	8.5	1999	3	3	161	500	14	1989	500	500
110	30	9.5	1999	30	30	162	600	14.25	1991	600	600
111	11	10.75	2000	9	9	163a	2 100	10.5	2004	2 100	2 100
112	29	10.75	2000	29	29	163b	600	10.5	2004	600	—
113	40	10.75	2000	40	40	164	700	14	1992	700	700
114	25	10.75	2000	25	25	165a	820	11	1995	820	—
115	5	10.25	2000	5	5	165b	180	11	1995	180	—
116	30	10.75	2000	30	30	166	1 000	11	1993	1 000	—
118	55	11	2000	55	55						
119	10	10.75	1980/95	6	6					23 964	20 714
120	4	11	1986	—	4						
121	40	11.4	2001	40	40						
122	6	11.1	1986/96	2	3						
123	40	12.75	1996	40	40						
124	10	12.65	1986	—	10						
126	40	12.5	2001	40	40						
127	150	12.6	1999	150	150						
128	20	12.45	1987	20	20						
Carried forward				1 467	1 533						
					Foreign Bond Issues						
					Average interest rate						
					11.04						
					Repayable in 1987						
					123						
					Repayable thereafter						
					1 434						
					25 521						
					22 021						
					Direct Placings						
					Average interest rate						
					8.37						
					Repayable in 1987						
					916						
					Repayable thereafter						
					2 220						
					28 657						
					25 006						

INVESTMENTS OF THE CAPITAL DEVELOPMENT FUND

at 31 December 1986

Schedule 2 (All figures in Rand millions)

Description	Loan No.	Nominal Value	Book Value
Escom local registered stock			
%			
6,125 1982/87	49	3	3
5,25 1982/87	50	5	5
5 1983/88	51	2	2
6,5 1989/91	58	2	2
6,75 1991	60	3	2
6,875 1992	61	7	5
6,5 1992	64	2	1
6,875 1992	65	9	6
6,5 1993	70	1	1
6,875 1993	71	36	26
6,5 1993	75	4	3
6,875 1993	76	15	11
6,5 1994	78	2	2
6,875 1994	79	4	3
6,5 1994	81	2	1
7,5 1995	83	2	1
8,75 1995	85	16	11
8,5 1995	86	1	1
9,25 1996	87	8	6
8,75 1996	88	1	1
9,25 1996	89	3	2
9,25 1996	90	13	9
8,75 1996	91	1	1
9,25 1997	92	4	3
9,125 1997	93	5	4
8,5 1997	95	12	8
8,25 1997	96	8	6
8,25 1997	98	6	4
8,25 1998	99	3	2
8,375 1998	100	6	4
8 1998	103	5	3
8 1998	106	26	15
9 1999	107	4	3
8,5 1999	108	1	1
9,5 1999	110	10	7
10,75 2000	111	4	3
10,75 2000	112	3	2
10,75 2000	113	3	2
10,75 2000	114	5	3
10,75 2000	116	8	6
11 2000	118	7	5
10,75 1995	119	3	3
11,4 2001	121	16	15
12,75 1996	123	4	4
Carried forward		285	208

Description	Loan No.	Nominal Value	Book Value
Brought forward			
		285	208
%			
12,5 2001	126	11	9
12,6 1999	127	7	5
12,45 1987	128	3	3
11,5 1989	130	7	7
11,15 2002	131	202	186
11,75 2002	132	156	147
10,9 1988	133	20	20
10,75 2003	134	119	104
11,3 2003	135	224	215
9,7 2003	138	113	98
10,25 2003	139	257	216
8,65 2004	141	113	89
9,15 2004	142	228	177
9,05 2005	144	85	72
9,55 2005	145	190	150
8,1 1987	146	19	19
9,05 1992	147	34	27
9,05 2005	148	38	34
9,55 2005	149	121	93
10,25 1990	150	42	37
10,95 2004	151	249	244
12,8 1993	152	18	16
12,95 2006	153	333	317
10 2007	154	690	418
13,2 2007	155	1 370	1 260
15,15 1987	156	78	78
14,25 2008	157	49	46
9,25 1994	158	183	141
12 2008	159	1 896	1 409
11 2009	160	309	217
14 1989	161	185	186
14,25 1991	162	121	123
10,5 2004	163	168	109
14 1992	164	192	197
11 1995	165	107	89
11 1993	166	365	317
Other		6	—
Total (Note 6)		8 603	7 083
Interest accrued			218
Market value	6 679		

INVESTMENTS OF THE RESERVE FUND

at 31 December 1986

Schedule 3 (All figures in Rand millions)

Description	Loan No.	Nominal Value	Book Value
Escom local registered stock			
%			
6,875 1993	71	1	1
7,5 1995	83	1	1
8,75 1995	85	1	1
8,1 1987	146	3	3
10 2007	154	60	44
9,25 1994	158	1	1
11 2009	160	81	56
14 1989	161	2	2
14,25 1991	162	13	12
10,5 2004	163	96	59
14 1992	164	190	179
11 1995	165	132	100
11 1993	166	94	81
Other		1	1
Total (Note 6)		676	541
Municipal stock			
Cape Town:			
5,5% 1983/88	219	1	1
External investments		1	1
		677	542
Interest accrued			14
Market value		574	

INVESTMENTS OF THE REDEMPTION FUND

at 31 December 1986

Schedule 4 (All figures in Rand millions)

Description	Loan No.	Nominal Value	Book Value
Escom local registered stock			
%			
6,125 1982/87	49	4	4
5,25 1982/87	50	2	2
6,5 1989/91	58	2	2
6,75 1991	60	7	6
6,875 1992	61	12	9
6,5 1992	64	1	1
6,875 1992	65	4	3
6,5 1993	70	3	2
6,875 1993	71	4	3
6,5 1993	75	2	1
6,875 1993	76	1	1
6,5 1994	78	3	2
6,875 1994	79	9	6
6,5 1994	81	2	2
6,875 1994	82	4	3
7,5 1995	83	2	2
7 1995	84	2	1
8,75 1995	85	5	4
8,5 1995	86	7	6
9,25 1996	87	9	6
8,75 1996	88	5	4
9,25 1996	89	6	5
9,25 1996	90	3	3
8,75 1996	91	5	4
9,25 1997	92	1	1
9,125 1997	93	9	7
8,75 1997	94	3	2
8,5 1997	95	7	5
8,25 1997	96	4	3
8 1997	97	3	2
8,25 1997	98	6	4
8,25 1998	99	6	4
8,375 1998	100	5	4
8 1998	101	2	1
7,625 1998	104	3	2
8 1998	106	4	2
9 1999	107	5	4
8,5 1999	108	1	1
9,5 1999	110	7	6
10,75 2000	111	3	3
10,75 2000	113	10	8
10,25 2000	115	1	1
10,75 2000	116	7	6
11 2000	118	17	14
10,75 1995	119	3	2
11,4 2001	121	14	12
11,1 1996	122	1	1
12,5 2001	126	1	1
12,6 1999	127	25	22
12,45 1987	128	2	2
11,5 1989	130	8	7
11,15 2002	131	35	34
11,75 2002	132	21	18
10,9 1988	133	1	1
10,75 2003	134	36	28
Carried forward		355	290

Description	Loan No.	Nominal Value	Book Value
Brought forward		355	290
%			
11,3 2003	135	33	26
9,7 2003	138	33	24
10,25 2003	139	43	30
8,65 2004	141	1	—
9,15 2004	142	54	33
9,05 2005	144	25	17
9,55 2005	145	49	31
8,1 1987	146	17	17
9,05 1992	147	8	7
9,05 2005	148	10	7
9,55 2005	149	54	34
10,25 1990	150	8	6
10,95 2004	151	22	20
12,8 1993	152	5	4
12,95 2006	153	7	6
10 2007	154	185	115
15,15 1987	156	7	7
9,25 1994	158	5	3
12 2008	159	117	110
11 2009	160	324	225
14 1989	161	2	2
14,25 1991	162	3	3
10,5 2004	163	902	548
14 1992	164	48	43
11 1995	165	287	216
11 1993	166	377	327
Total (Note 6)		2 981	2 151
Interest accrued			58
Market value	2 202		

CAPITAL DEVELOPMENT AND RESERVE FUNDS

for the year ended 31 December 1986

Schedule 5 (All figures in Rand millions)

	Capital Development Fund		Reserve Fund	
	1986	1985	1986	1985
Balance at beginning of year	6 074	5 329	344	215
Contributions	—	—	120	150
Interest earned	879	745	64	32
Subtotal	6 953	6 074	528	397
Expenditure	—	—	49	53
Balance at end of year	6 953	6 074	479	344

REDEMPTION FUND

for the year ended 31 December 1986

Schedule 6 (All figures in Rand millions)

	1986	1985
Amounts contributed	477	323
Proceeds of sales of fixed property	36	12
Interest earned	350	234
	863	569
Repayment of local registered stock	250	162
5,375 % 1979/85 (Loan 43)	—	16
5,375 % 1980/85 (Loan 44)	—	16
5,500 % 1980/86 (Loan 45)	17	—
5,875 % 1981/86 (Loan 46)	16	—
6,250 % 1981/86 (Loan 47)	18	—
5,875 % 1983/85 (Loan 55)	—	32
6,500 % 1983/85 (Loan 56)	—	38
10,875 % 1985 (Loan 117)	—	5
10,750 % 1980/95 (Part Loan 119)	—	3
11,000 % 1986 (Loan 120)	4	—
11,100 % 1986/96 (Part Loan 122)	1	—
12,650 % 1986 (Loan 124)	10	—
7,250 % 1985/87 (Part Loan 136)	4	2
9,700 % 1986 (Loan 137)	60	—
8,000 % 1986/96 (Loan 140)	120	—
7,550 % 1985 (Loan 143)	—	50
	613	407
Balance at beginning of year	1 737	1 330
Balance at end of year (Notes 7.2)	2 350	1 737

TABLES

1. Power stations in service as at 31 December 1986

Name of station	Type	Location	No. and rating of generator sets MW	Total installed rating MW ¹	Total sent-out rating MW ¹
Acacia	Gas-turbine	Cape Town	3 × 57	171	171
Arnot	Coal-fired	Middelburg, Tvl	6 × 350	2 100	1 980
Camden	Coal-fired	Ermelo	8 × 200	1 600	1 520
Drakensberg	Pumped-storage	Bergville	4 × 250	1 000	1 000
Duvha	Coal-fired	Witbank	6 × 600	3 600	3 450
Grootvlei	Coal-fired	Balfour	6 × 200	1 200	1 130
Hendrik Verwoerd	Hydro-electric	Norvalspont	4 × 80	320	320
Hendrina	Coal-fired	Hendrina	10 × 200	2 000	1 900
Hex River	Coal-fired	Worcester	3 × 20; 2 × 30	120	111
Highveld	Coal-fired	Sasolburg	8 × 60	480	412
Ingagane	Coal-fired	Newcastle	5 × 100	500	465
Koeberg	Nuclear	Cape Town	2 × 965	1 930	1 840
Komati	Coal-fired	Middelburg, Tvl	5 × 100; 4 × 125	1 000	906
Kriel	Coal-fired	Bethal	6 × 500	3 000	2 850
Lethabo	Coal-fired	Sasolburg	2 × 618	1 236	1 186
Matla	Coal-fired	Bethal	6 × 600	3 600	3 450
Paratus ²	Gas-turbine/diesel	Walvis Bay	1 × 22,4; 4 × 6,4	48	48
Port Rex	Gas-turbine	East London	3 × 57	171	171
Salt River	Coal-fired	Cape Town	4 × 30; 2 × 60	240	228
Taaibos	Coal-fired	Sasolburg	8 × 60	480	440
Tutuka	Coal-fired	Standerton	3 × 609	1 827	1 755
Umgeni	Coal-fired	Pinetown	4 × 30; 2 × 60	240	222
Vaal ³	Coal-fired	Viljoensdrif	9 × 33	318	270
Vanderkloof	Hydro-electric	Petrusville	2 × 110	220	220
Vierfontein	Coal-fired	Viljoenskroon	12 × 30	360	336
West Bank	Coal-fired	East London	3 × 15; 2 × 20	85	80
Wilge	Coal-fired	Witbank	2 × 30; 3 × 60	240	221
Total in service, 27 Escom stations⁴				28 086	26 682
Subtotal, coal-fired (20 stations) ⁵				24 226	22 912
Subtotal, gas-turbine (3 stations) ⁶				390	390
Subtotal, hydro-electric (2 stations) ⁷				540	540
Subtotal, pumped-storage (1 station) ⁸				1 000	1 000
Subtotal, nuclear (1 station) ⁹				1 930	1 840
Total in service, 27 Escom stations				28 086	26 682

¹Differences between generator rating and total station rating, and installed and sent-out rating reflect auxiliary power consumption and reduced capacity caused by age of the plant and/or low coal quality.

²Taken over from Swawek in 1986.

³Includes three 7 MW house sets.

⁴In addition to its own installed capacity, Escom also has a firm contractual capacity of 1 355 MW from Cahora Bassa, which was not available during 1986. It also has agreements to purchase electricity from Swawek and some municipalities.

⁵Base-load stations, except in the case of older, uneconomical plant, which are used only for peak demands or in emergencies.

⁶Used only for peaking or in emergencies.

⁷Use restricted to peaking and emergencies and availability of water in Hendrik Verwoerd and P.K. le Roux dams.

⁸Pumped-storage facilities are net users of electricity and are used for peaking. Water is pumped during off-peak periods to generate electricity during peak periods.

TABLES

continued

2. Power stations on order as at 31 December 1986

Name of station	Type	Location	No. and rating of generator sets MW	Total installed rating MW	Total sent-out rating MW	Year of completion	
						first set	last set
Kendal	Coal-fired	Kendal	6 × 686	4 116	3 780	1988	1993
Lethabo	Coal-fired	Vereeniging	4 × 618	2 472	2 372	1986	1990
Majuba	Coal-fired	Volksrust	6 × 657	3 942	3 690	1991	1995 ²
Matimba	Coal-fired	Ellisras	6 × 665	3 990	3 690	1987	1991
Palmiet	Pumped-storage	Grabouw	2 × 200	400	400	1987	1988
Tutuka	Coal-fired	Standerton	3 × 609	1 827	1 755	1985	1990
Power stations under construction¹				16 747	15 687		
Plant on order at 31 December 1985				18 583	17 450		
Less plant taken into commercial service during 1986 ³				1 836	1 763		
Plus plant placed on order in 1986				—	—		
Total, plant on order at 31 December 1986				16 747	15 687		

¹Dates on which sets on order will be taken into commercial service may change, depending on growth in electricity demand. See report of the General Manager, Engineering on page 20.

²Construction of sets 4, 5 and 6 has been deferred.

³During 1986, the following plant was taken into commercial service:

	Installed rating	Sent-out rating
Lethabo, Set 2:	618 MW	593 MW
Tutuka, Set 2:	609 MW	585 MW
Tutuka, Set 3:	609 MW	585 MW
Total for 1986	1 836 MW	1 763 MW

3. Transmission and distribution equipment in service as at 31 December 1986¹

	Total 1985	Additions 1986	Total 1986
Overhead lines, in circuit km			
765	—	427	427
533 kV DC (monopolar)	1 030	—	1 030
400 kV	9 914	371	10 285
275 kV	6 334	153	6 487
220 kV	1 240	—	1 240
165 kV to 132 kV	14 243	2 832	17 075
88 kV to 33 kV	21 001	(508)	20 493
22 kV and below	107 284	8 251	115 535
Total	161 046	11 526	172 572
Underground cables, in circuit km			
165 kV to 132 kV	80	1,3	81,3
88 kV to 33 kV	378	857	1 235,0
22 kV and below	7 920	(4 035,3)	3 884,7
Total	8 378	(3 177)	5 201
Transformers			
Capacity MVA	169 112	(59 717)	109 395
Number in service	97 298	835	98 133

¹ With the reorganisation of Distribution into smaller, more manageable regions, the statistics for 1986 have been collected by each region using the zero-base method. In previous years, the annual growth was added onto the totals and it would appear that no allowance was made for decommissioned plant or circuits sold to other supply authorities.

Since fairly substantial differences now appear it is the intention to carry out a "census" type assessment this year and this will be repeated at 3-yearly intervals.

TABLES

continued

4. Operating statistics

	1986	1985	1984	1983	1982
Plant performance					
Total power station capacity, installed rating, MW	28 086	25 716	24 514	22 949	21 749
Total power station capacity, assigned sent-out rating, MW	26 682	24 359	23 168	21 673	20 523
Peak demand on integrated Escom system, MW	18 278	17 852	17 296	15 639	15 532
Average station availability ¹	78,5	77,5	74,9	71,9	74,3
Station load factor, per cent ²	55,5	58,0	58,1	55,6	59,3
Integrated Escom system load factor, per cent	77,3	76,2	75,0	76,9	75,3
Coal burnt, thousands of tons	58 915,9	59 488,6	58 703,6	55 010,2	55 198,4
Coal burnt, kg/kW.h sent out	0,515	0,522	0,533	0,546	0,551
Average heat rate of coal-fired stations, MJ/kW.h sent out	10,95	11,26	11,45	11,57	11,82
Average heat content of coal (as received), MJ/kg	21,19	21,52	21,38	21,11	21,39
Overall thermal efficiency, sent-out basis	32,9	32,0	31,4	31,1	30,5
Average coal cost, R/ton	14,87	13,25	12,55	12,44	11,75
Average coal cost, c/kW.h sent out	0,6815	0,691 6	0,669 2	0,679 3	0,647 1
Electricity output					
Total electricity sent out in South Africa, million kW.h ³	130 083	125 962	120 835	112 366	109 536
Escom electricity sent out as percentage of South African total	95,1	94,7	94,3	93,8	93,6
Total electricity sent out on Escom system (Escom stations and purchased), million kW.h ⁴	126 766	122 494	117 086	108 321	104 920
Total sent out from Escom stations, million kW.h	126 511	121 987	116 581	103 295	102 769
Subtotal, from coal-fired stations, million kW.h	114 298	113 941	110 094	100 738	100 217
Subtotal, from hydro-electric stations, million kW.h	1 623	624	560	595	1 016
Subtotal, from pumped-storage station, million kW.h	1 785	2 107	1 994	1 957	1 519
Subtotal, from diesel and gas-turbine stations, million kW.h	2	0	8	5	17
Subtotal, nuclear power station, million kW.h	8 803	5 315	3 925	—	—
Total purchased by Escom and sent out on Escom system, million kW.h	255	507	505	5 026	2 151
Total consumed by Escom, million kW.h ⁵	3 018	3 265	3 188	2 917	2 404
Total available for distribution, million kW.h	123 748	119 229	113 898	105 404	102 516
Total sold, million kW.h ⁶	117 353,0	112 305,9	106 904,1	98 251,1	96 135,9
Growth in kW.h sales, per cent	4,5	5,1	8,8	2,2	2,4
Employees					
Total number at 31 December	60 800	66 000	64 560	62 420	58 850
Ratio number/million kW.h sold	0,518	0,588	0,604	0,635	0,612
Fixed assets					
In commission at 31 December, Rand millions	19 907	15 497	12 058	9 219	7 689
Ratio Rand thousands/million kW.h sold	169,64	137,99	112,79	93,83	79,98

¹Capacity hours available × 100/total capacity hours in year.

²kW.h sent out × 100/(assigned sent-out rating × hours in year).

³Electricity sent out by Escom and municipalities which generate all or part of their electricity requirement.

⁴Includes Escom electricity sent out to neighbouring countries.

⁵In respect of pumped-storage facilities and synchronous condenser mode of operation. See Table 1, Note 8.

⁶Difference between electricity available for distribution and electricity sold is due to transmission losses.

	1981	1980	1979	1978	1977	1976	1975	1974	1973	1972
20 049	18 349	15 974	14 434	13 556	12 444	11 242	10 692	10 142	9 551	
18 989	17 339	15 056	13 595	12 756	11 688	10 522	10 002	9 482	8 849	
14 674	13 668	12 855	11 490	10 735	10 085	9 185	8 552	7 350	6 630	
74,2	74,7	78,8	77,4	78,5	82,3	85,0	83,7	82,5	—	
62,2	57,8	60,9	60,7	61,9	66,8	68,6	66,3	62,6	59,6	
77,6	77,5	76,4	77,3	75,8	76,1	76,5	75,1	77,3	76,4	
53 903,7	46 755,0	43 264,9	39 589,5	37 505,6	37 257,4	34 231,7	30 891,4	27 907,9	24 952,8	
0,563	0,568	0,580	0,574	0,576	0,579	0,567	0,560	0,563	0,571	
12,01	12,16	12,33	12,44	12,55	12,66	12,59	12,56	12,65	13,07	
21,25	21,34	21,22	21,61	21,78	21,87	22,21	22,42	22,47	22,89	
30,0	29,6	29,2	28,9	28,7	28,4	28,6	28,7	28,5	27,5	
9,71	8,12	6,96	6,67	6,22	5,39	4,05	2,92	2,39	2,25	
0,547 3	0,461 4	0,404 5	0,382 4	0,358 2	0,312 2	0,229 5	0,163 7	0,134 8	0,128 5	
106 135	99 905	92 615	84 812	79 352	75 381	70 111	66 412	60 700	55 332	
93,9	93,0	92,8	91,7	89,8	89,4	87,8	84,7	82,0	80,4	
100 425	93 021	86 037	77 826	71 291	67 414	61 533	56 259	49 770	44 485	
97 824	83 362	75 643	70 902	67 050	66 188	61 498	56 251	49 759	44 475	
95 675	82 342	74 485	69 004	65 114	64 309	60 400	55 141	49 570	43 662	
1 653	992	1 144	1 887	1 924	1 853	1 098	1 110	189	813	
415	—	—	—	—	—	—	—	—	—	
81	28	14	11	12	26	—	—	—	—	
—	—	—	—	—	—	—	—	—	—	
2 601	9 659	10 394	6 924	4 241	1 226	35	8	11	10	
712	71	58	52	27	—	—	—	—	—	
99 713	92 950	85 979	77 774	71 264	67 414	61 533	56 259	49 770	44 485	
93 844,0	87 539,3	80 582,8	72 780,4	67 125,4	63 355,7	57 869,2	52 585,1	46 578,4	41 648,9	
7,2	8,6	10,7	8,4	5,9	9,5	10,0	12,9	11,8	9,5	
52 080	47 490	43 690	41 040	39 112	36 915	33 999	29 891	28 559	26 937	
0,555	0,542	0,542	0,564	0,583	0,583	0,588	0,568	0,613	0,647	
6 323	5 604	4 256	3 565	2 851	2 312	2 009	1 847	1 699	1 527	
67,38	64,02	52,81	48,98	42,47	36,49	34,71	35,13	36,48	36,66	

TABLES
continued

5. Summary of consolidated revenue and expenditure account

Year	Total Escom million kW.h sold		Interest and finance charges	Redemption and other provision for loan repayment	Reserve Fund	Capital Development Fund
1968	28 885.0	R000	43 282	23 884	12 300	—
		cents/kW.h sold	0,149 8	0,082 7	0,042 6	—
		% of total cost	26,72	14,74	7,59	—
1969	31 505,6	R000	50 943	20 809	13 605	—
		cents/kW.h sold	0,161 7	0,066 0	0,043 2	—
		% of total cost	29,05	11,87	7,76	—
1970	34 890,6	R000	59 484	23 654	15 202	—
		cents/kW.h sold	0,170 5	0,067 8	0,043 6	—
		% of total cost	30,37	12,08	7,76	—
1971	38 040,0	R000	70 266	30 928	8 568	—
		cents/kW.h sold	0,184 7	0,081 3	0,022 5	—
		% of total cost	31,99	14,08	3,90	—
1972	41 648,9	R000	86 631	30 575	3 056	13 596
		cents/kW.h sold	0,208 0	0,073 4	0,007 3	0,032 6
		% of total cost	33,58	11,85	1,18	5,27
1973	46 578,4	R000	101 858	34 200	3 760	15 366
		cents/kW.h sold	0,218 7	0,073 4	0,008 1	0,033 0
		% of total cost	33,27	11,17	1,23	5,02
1974	52 585,1	R000	114 308	27 151	66	28 114
		cents/kW.h sold	0,217 4	0,051 6	0,000 1	0,053 5
		% of total cost	31,40	7,46	0,02	7,72
1975	57 869,2	R000	136 963	30 814	1 400	40 730
		cents/kW.h sold	0,236 7	0,053 2	0,002 4	0,070 4
		% of total cost	28,12	6,33	0,29	8,36
1976	63 355,7	R000	173 829	41 470	1 700	53 584
		cents/kW.h sold	0,274 4	0,065 5	0,002 7	0,084 6
		% of total cost	26,49	6,32	0,26	8,16
1977	67 125,4	R000	224 418	63 403	900	224 000
		cents/kW.h sold	0,334 3	0,094 5	0,001 3	0,333 7
		% of total cost	22,51	6,36	0,09	22,47
1978	72 780,4	R000	308 970	76 036	900	300 000
		cents/kW.h sold	0,424 5	0,104 4	0,001 2	0,412 1
		% of total cost	25,03	6,16	0,07	24,30
1979	80 582,8	R000	373 718	88 800	900	380 000
		cents/kW.h sold	0,463 7	0,110 1	0,001 1	0,471 5
		% of total cost	24,72	5,87	0,06	25,14
1980	87 539,3	R000	504 732	101 629	900	426 400
		cents/kW.h sold	0,576 6	0,116 1	0,001 0	0,487 1
		% of total cost	26,99	5,44	0,05	22,80
1981	93 844,0	R000	603 546	117 088	900	435 478
		cents/kW.h sold	0,643 1	0,124 8	0,001 0	0,464 0
		% of total cost	27,21	5,28	0,04	19,63
1982	96 135,9	R000	721 948	154 758	26 000	450 000
		cents/kW.h sold	0,751 0	0,161 0	0,027 0	0,468 1
		% of total cost	26,22	5,62	0,95	16,34
1983	98 251,1	R000	939 553	274 027	50 000	450 000
		cents/kW.h sold	0,956 3	0,278 9	0,050 9	0,458 0
		% of total cost	27,59	8,05	1,47	13,22
1984	106 904,1	R000	1 283 742	281 730	70 000	450 000
		cents/kW.h sold	1,200 8	0,263 5	0,065 5	0,420 9
		% of total cost	32,14	7,05	1,75	11,27
1985	112 305,9	R000	1 922 053	369 129	150 000	—
		cents/kW.h sold	1,711 4	0,328 7	0,133 6	—
		% of total cost	41,93	8,05	3,27	—
1986	117 353,0	R000	2 539 852	520 504	120 000	—
		cents/kW.h sold	2,164 3	0,443 5	0,102 3	—
		% of total cost	44,99	9,22	2,12	—

¹Basis of allocation changed in 1975.

Subtotal capital- related costs	Purchase of electricity	Fuel	Other power station operating and maintenance costs	Distribution, operating and maintenance costs	General expenses	Total costs	Total revenue
79 466	121	45 117	17 016	8 097	12 176	161 993	161 475
0,275 1	0,000 4	0,156 2	0,058 9	0,028 0	0,042 2	0,560 8	0,559 0
49,06	0,07	27,85	10,50	5,00	7,52	100,00	99,68
85 357	102	48 035	19 038	9 264	13 578	175 374	176 106
0,270 9	0,000 3	0,152 5	0,060 4	0,029 4	0,043 1	0,556 6	0,559 0
48,67	0,06	27,39	10,86	5,28	7,74	100,00	100,42
98 340	89	49 440	21 955	10 594	15 448	195 866	193 475
0,281 9	0,000 3	0,141 7	0,062 9	0,030 4	0,044 3	0,561 4	0,554 5
50,21	0,05	25,24	11,21	5,41	7,89	100,00	98,78
109 762	82	53 587	26 276	11 492	18 440	219 639	219 584
0,288 5	0,000 2	0,140 9	0,069 1	0,030 2	0,048 5	0,577 4	0,577 2
49,97	0,04	24,40	11,96	5,23	8,40	100,00	99,97
133 858	95	57 259	31 586	13 486	21 737	258 021	254 394
0,321 4	0,000 2	0,137 5	0,075 8	0,032 4	0,052 2	0,619 5	0,610 8
51,88	0,04	22,19	12,24	5,23	8,42	100,00	98,59
155 184	117	68 634	38 685	17 082	26 460	306 162	302 034
0,333 2	0,000 3	0,147 4	0,083 1	0,036 7	0,056 8	0,657 3	0,648 4
50,69	0,04	22,42	12,64	5,58	8,64	100,00	98,65
169 639	86	92 530	48 572	20 617	32 611	364 055	358 768
0,322 6	0,000 2	0,176 0	0,092 4	0,039 2	0,062 0	0,692 3	0,682 2
46,60	0,02	25,42	13,34	5,66	8,96	100,00	98,55
209 907	114	141 913	44 980 ¹	18 477 ¹	71 758 ¹	487 149	460 073
0,362 7	0,000 2	0,245 2	0,077 7	0,031 9	0,124 0	0,841 8	0,795 0
43,09	0,02	29,13	9,23	3,79	14,73	100,00	94,44
270 583	2 399	208 316	62 477	19 712	92 835	656 322	656 381
0,427 1	0,003 8	0,328 8	0,098 6	0,031 1	0,146 5	1,036 0	1,036 0
41,23	0,37	31,74	9,52	3,00	14,14	100,00	100,01
512 721	15 501	239 228	76 294	19 859	133 494	997 097	1 030 552
0,763 8	0,023 1	0,356 4	0,113 7	0,029 6	0,198 9	1,485 4	1,535 3
51,42	1,55	23,99	7,65	1,99	13,39	100,00	103,36
685 906	26 364	271 222	89 193	23 677	138 106	1 234 468	1 301 829
0,942 4	0,036 2	0,372 6	0,122 5	0,032 5	0,189 7	1,696 1	1,788 7
55,56	2,14	21,97	7,22	1,92	11,19	100,00	105,46
843 418	36 061	319 428	95 887	28 689	188 203	1 511 686	1 529 474
1,046 6	0,044 7	0,396 3	0,118 9	0,035 6	0,233 5	1,875 9	1,898 0
55,79	2,39	21,13	6,34	1,90	12,45	100,00	101,18
1 033 661	35 806	405 630	117 968	36 824	240 078	1 869 967	1 772 000
1,180 8	0,040 9	0,463 3	0,134 8	0,042 1	0,274 2	2,136 1	2,024 2
55,28	1,91	21,69	6,31	1,97	12,84	100,00	94,76
1 157 012	4 106	569 949	170 206	43 034	273 756	2 218 063	2 140 689
1,232 9	0,004 4	0,607 3	0,181 4	0,045 9	0,291 7	2,363 6	2,281 1
52,16	0,19	25,70	7,67	1,94	12,34	100,00	96,51
1 352 706	3 615	693 979	261 842	59 852	381 348	2 753 342	2 695 422
1,407 1	0,003 7	0,721 9	0,272 3	0,062 3	0,396 7	2,864 0	2,803 8
49,13	0,13	25,21	9,51	2,17	13,85	100,00	97,90
1 713 580	9 603	726 534	418 138	66 227	470 815	3 404 897	3 301 905
1,744 1	0,009 8	0,739 4	0,425 6	0,067 4	0,479 2	3,465 5	3,359 1
50,33	0,28	21,34	12,28	1,95	13,83	100,00	96,98
2 085 472	4 201	852 591	432 160	81 576	538 569	3 994 569	3 831 713
1,950 7	0,003 9	0,797 5	0,404 3	0,076 3	0,503 8	3,736 5	3,584 2
52,21	0,11	21,34	10,82	2,04	13,48	100,00	95,92
2 441 182	4 240	893 102	463 577	104 313	678 288	4 584 702	4 624 672
2,173 7	0,003 8	0,795 2	0,412 8	0,092 9	0,604 0	4,082 4	4,117 9
53,25	0,09	19,48	10,11	2,28	14,79	100,00	100,87
3 180 356	3 145	1 054 533	469 766	98 760	839 095	5 645 655	5 844 510
2,710 1	0,002 7	0,898 6	0,400 3	0,084 2	0,715 1	4,810 8	4,980 3
56,33	0,06	18,68	8,32	1,75	14,86	100,00	103,52