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FINAL REPORT

TECHNICAL AND ECONOMIC CHANGE IN THE SOUTH AFRICAN STEAM BOILER STOCK

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ABSTRACT

This report describes the results of a survey of industrial boilers in South Africa. The source of the data was the records of the Department of Manpower which keep details of operating boilers as part of the boiler registration procedure.

Of the 6 101 boilers analyzed, 46% are situated in the Transvaal, 27% in the Cape, 20% in Natal, and 7% in the OFS. Of the total capacity, 75% are based on coal, 21% on oil, and electricity, gas and other fuels make up the remaining 4%.

Most of the boilers analyzed were less than 30 years old, but five boilers were constructed in the last century and the oldest boiler was manufactured in 1843.

1. INTRODUCTION

A survey has been carried out of the stock of boilers in operation in South Africa. The survey was carried out by analyzing the records of the Department of Manpower who keep account of the specifications of all boilers under the Machinery and Works Act. The records are kept in each of eleven centres and reflect the boilers operating in that region. The regions are:

Benoni	Bellville	Bloemfontein
Germiston	Cape Town	
Johannesburg	East London	
Pretoria	Port Elizabeth	Durban
Vereeniging		

The records include details of the boiler manufacturer, physical characteristics of the boiler, the use to which it is put, and the address of the operator. Time did not permit an individual visit to the boilers, and the results reflect only the information available in the offices of the Department of Manpower.

The boilers included all units with the exception of utility boilers and the large boilers of organizations such as Sasol and AECI.

A total of 6 101 boilers were identified, although not all the required information was available for each boiler and a number of the records had therefore to be discarded. In certain cases information was missing in one or other area and therefore the information could be used in part of the analysis but not for all of it.

The boilers were categorized by a number of parameters such as:

** Type of boiler - e.g. water-tube, shell, or electrode
** Fuel used - coal, gas, oil, electricity, or other
** Capacity of boiler
** Operating pressure
** Dimensions of boiler

In addition, the location of the boiler, the type of industry in which it is operated, its manufacturer's and Government numbers, and the registering Manpower office are also included. Details of the information which was captured is given in Appendix A. The information is stored in a data-base and any of the parameters can be accessed(1).

2. ANALYSIS

2.1 Number

Altogether 6 101 boiler details were obtained from the records of the Department of Manpower. These boilers did not include utility boilers. The survey also included only boilers producing steam at capacities between 2 and 300 000 kg/hr (from and at 100°C). It therefore did not include hot water producers, the boilers of the chemical complexes such as that of Sasol and AECI, nor the bagasse boilers of the sugar mills.

The survey also did not include the boilers under the control of the Department of Mineral and Energy Affairs, which include those boilers situated at mines, nor of boilers operated by ISCOR and the Railways. This later group represents some 10% of boilers and would not significantly alter the analysis of

boiler population. It is estimated that the boilers covered by the survey use approximately one-third of the coal sold for final consumption and approximately one-third of oil consumed for non-transport applications.

The geographical disposition of the boilers is shown in Table 1.

Table 1. Geographical distribution of boilers

Area	Percentage of boilers
Eastern Cape	10,4
Natal	20,7
Orange Free State	7,1
Transvaal	46,4
Western Cape	15,4

2.2 Type of boiler

The boilers have been divided into four types:

Water-tube boilers
Shell boilers (horizontal)
Shell boilers (vertical)
Electric boilers

Water-tube boilers are more expensive than shell boilers in the low pressure market and only become competitive in applications where high pressure process steam is required or where very large quantities are required. In the USA and UK the split between water-tube and shell boilers occurs at a size of between 5 and 10 MW[2].

Shell boilers are normally limited to pressures below 20 bar and to capacity up to 20 MW (31 900 kg/hr) for oil and gas firing, and up to 12,5 MW (19 940 kg/hr) for coal firing.

The percentage of boilers in each of the type categories is given in Table 2.

Table 2. Distribution of boilers by type (percentages)

Type	By numbers	By capacity
Water-tube	8,8	36,1
Shell	77,1	60,4
Vertical (shell)	10,0	2,9
Electric	4,1	0,7

2.3 Age of boilers

Some of the boilers registered are very old, with one being registered in 1843 and a total of five being registered in the last century. The age spread is shown in Figure 1. Most of the boilers are however less than 30 years old. Boiler sales peaked in the early 1970's, with a steady decline in number of boilers installed since then. From a peak of 234 boilers registered in 1971, it fell to 100 registrations in 1985, the last year for which complete records were available to the survey. If a histogram is plotted of boiler ages in ten-year bands (see Figure 2), the decrease in boilers constructed over the last decade is evident.

If the boiler statistics are plotted on a capacity basis rather than on a number basis, then the total capacity of boilers by age is as given in Figure 3. Again the decrease over the last decade is evident.

2.4 Capacity

Most of the boilers are small, with 35% being below 1000 kg/hr capacity, 20% being in the range 1 000 to 2 000 kg/hr, and only 3% being above 20 000 kg/hr. The total capacity of all the boilers in the survey is estimated at 29 000 tons of steam (from and at 100^{o}C).

Although there is a wide spread in the average boiler capacity from year to year, there is nevertheless a significant increase, as shown in Figure 4 where the 7-year moving average line shows an increase from around 3 000 kg/hr in the 1930's to the present 6 000 kg/hr.

2.5 Fuel

The fuel inputs into the boilers have been divided into five categories, namely, coal, oil, gas, electricity, and other.

The category "other" includes mainly fuel from within an industry, and most of the boilers reported as using "other" fuel are at refineries or in chemical plant producing essential oils, resins, plastics, and similar products. A number of the boilers using "other" fuel are at dry-cleaning works.

In areas away from the Cape the cost of coal is far lower than that of oil and it would be expected that most boilers would be coal fired. However, oil is the fuel of convenience since the smaller operators are unable to cope with the handling of coal even if it were cheaper. Therefore it may be expected that more of the smaller users would use oil. The analysis has shown that more shell boilers (40,0%) use oil than coal (35,4%). If however this is translated into boiler capacity, then much more coal is used. The two Tables below show the details of capacity, which is synonymous with energy requirement, and boiler numbers, in terms of the type of boiler and the type of fuel used.

Table 3. Details of fuel and boiler type (percentages)

Boiler Type	Coal	Oil	Gas	Elec	Other	Total
Numbers						
W/Tube	7,3	1,1	0,1	0,0	0,3	8,8
Shell	35,4	40,0	0,9	0,0	0,7	77,0
Vertical	6,2	3,7	0,1	0,0	0,1	10,1
Electric	0,0	0,0	0,0	4,1	0,0	4,1
Total	48,9	44,8	1,1	4,1	1,1	100,0
Capacity						
W/Tube	30,0	4,6	0,1	0,0	1,3	36,0
Shell	42,3	16,5	0,4	0,0	1,2	60,4
Vertical	2,5	0,3	0,0	0,0	0,0	2,9
Electric	0,0	0,0	0,0	0,7	0,0	0,7
Total	74,8	21,5	0,5	0,7	2,5	100,0

2.6 Usage

An analysis was made of the usage of boilers by economic activity. The result, on a broad category basis, is shown in Table 5. The basis of the division was the Industrial Classification as given in reference (3).

Table 4. Boiler usage, by number, by economic activity

Economic Category	Percent of total boilers
Agriculture, forestry, fishing	2,2
Mining, quarrying	0,2
Manufacture	60,7
Electricity, gas, water	1,6
Construction	0,1
Wholesale & retail, accommodation	2,2
Transport, storage, communication	0,4
Business	0,3
Community, social, personal services	32,2

3. DISCUSSION

In view of the old age of a significant portion of the boiler stock in South Africa, it was decided to compare this distribution with other countries. One such comparison is shown in Figure 5 where the values are compared with the age distribution of industrial boilers in France[3] in 1975. The South African boiler data have been truncated to enable them to be compared with the French data of the same period. It is seen that the age distribution is similar to that in France. The trend in other European countries also appears to be similar.

As is to be expected, coal is the main fuel with some 75% of the market in terms of capacity (and energy input). However a large number of boilers, especially those of the smaller size, use oil. It has been calculated that the oil boilers covered by this survey use 1,2 million tons of oil per year. In 1986 the consumption of residual oil in South Africa amounted to an estimated[3] 900 000 tons. The figure of 1,2 million tons is based on the boilers steaming at full load, although at a load factor commensurate with the size of the boiler. It is to be expected therefore that the actual consumption would be less than the calculated one since boilers rarely steam at full load, and it is known that certain of the boilers are normally kept as back-up and are used only for a few months per year. The coal-fired boilers of the survey use an estimated 6,7 million tons per year, or 30% of the reported total industrial use.

The largest proportion of oil boilers is in the Western Cape where 52% are oil-fired compared to a national average of 39%.

There is a relationship between the installation of boilers and the country's economic activity. This is illustrated in Figure 6 which is a graph of the capacity of boilers installed in successive years plotted against the economic activity of the country as reflected in its Gross Domestic Product (GDP). Since economic activity could rise in the primary sector where little steam would be used, or in agriculture where again little steam is used, the boiler capacity has also been plotted against the manufacturing component of the GDP. It is obvious however that the manufacturing component of GDP has grown at the same rate as total GDP, since both curves in Figure 6 show similar trends.

4. REFERENCES

(1) Botha, P.C. and Dutkiewicz, R.K. Technical and economic change in the South African steam boiler stock - Explanatory note on the boiler data files. Energy Research Institute. Report No. INT 135, July 1989.

(2) Coal Industry Advisory Board. The use of coal in Industry. IEA, Organization for Economic Co-operation and Development, Paris, May 1982.

(3) International Energy Agency. World energy statistics and balances 1971-1988. IEA, Paris, 1989.

5. ACKNOWLEDGEMENTS

The work of analyzing the boiler data was carried out initially by Dr A. Pouris and Mr G. Vicatos, and completed by Mr P.C. Botha. Their work is gratefully acknowledged. The project was made possible with financial support from the National Energy Council whose support is appreciated.

The project could not have been carried out without the excellent co-operation of the Regional Offices of the Department of Manpower in the various centres. Their assistance and forbearance are also greatly appreciated.

6. MICRO-COMPUTER DATABASE

The following are the data obtained from the Department of Manpower records. This information has been set up in a database from which the analysis was carried out. Details of the database are available from the National Energy Council.

FIELD	DEFINITION
Maker	Boiler manufacturer
Type	Water-tube, shell, vertical, electrode.
Fuel	Coal, oil, gas, electricity, other
Year	Of boiler manufacture
Work	Boiler works number
Capacity	Steam capacity (kg/hr)
Pressure	Design pressure (kPa)
Grates	Number of grates (coal fired)
Shape	Shape of grate
Area	Grate area (m^2)
Surface	Boiler heating surface (m^2)
Government	Government boiler number
Industry	SIC* code for industry
Place	Place of boiler installation
Division	Government registering office
Address	Address of company owning the boiler
Usage	Nature of industry using the boiler
Status	Whether the boiler was new or used

* Standard Industrial Classification Code

FIGURE 1. BOILERS REGISTERED IN EACH YEAR, OPERATING IN 1986.

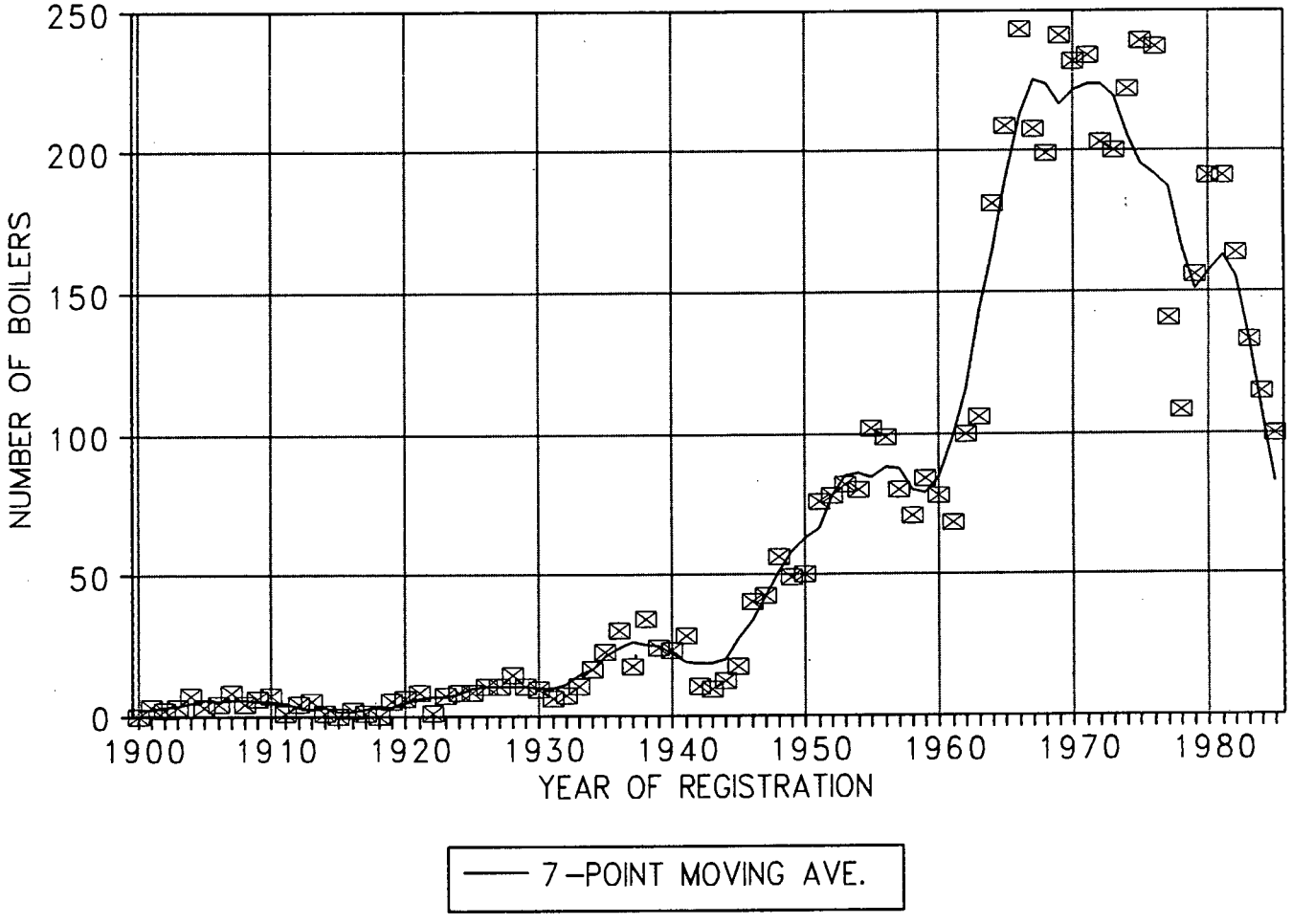


FIGURE 2. CAPACITY OF BOILERS IN FIVE YEAR BANDS

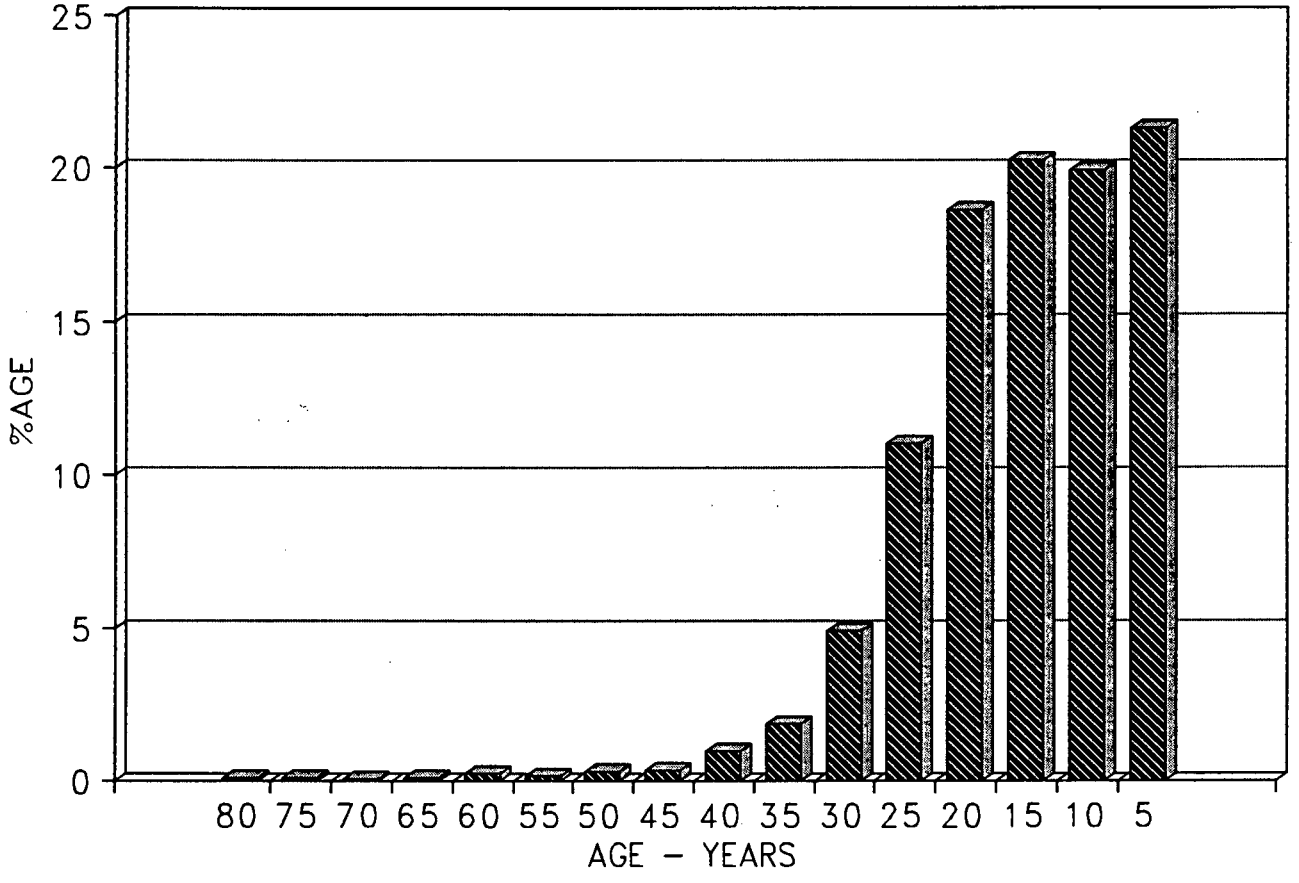


FIGURE 3. TOTAL CAPACITY OF BOILERS IN 1986, BY YEAR OF REGISTRATION

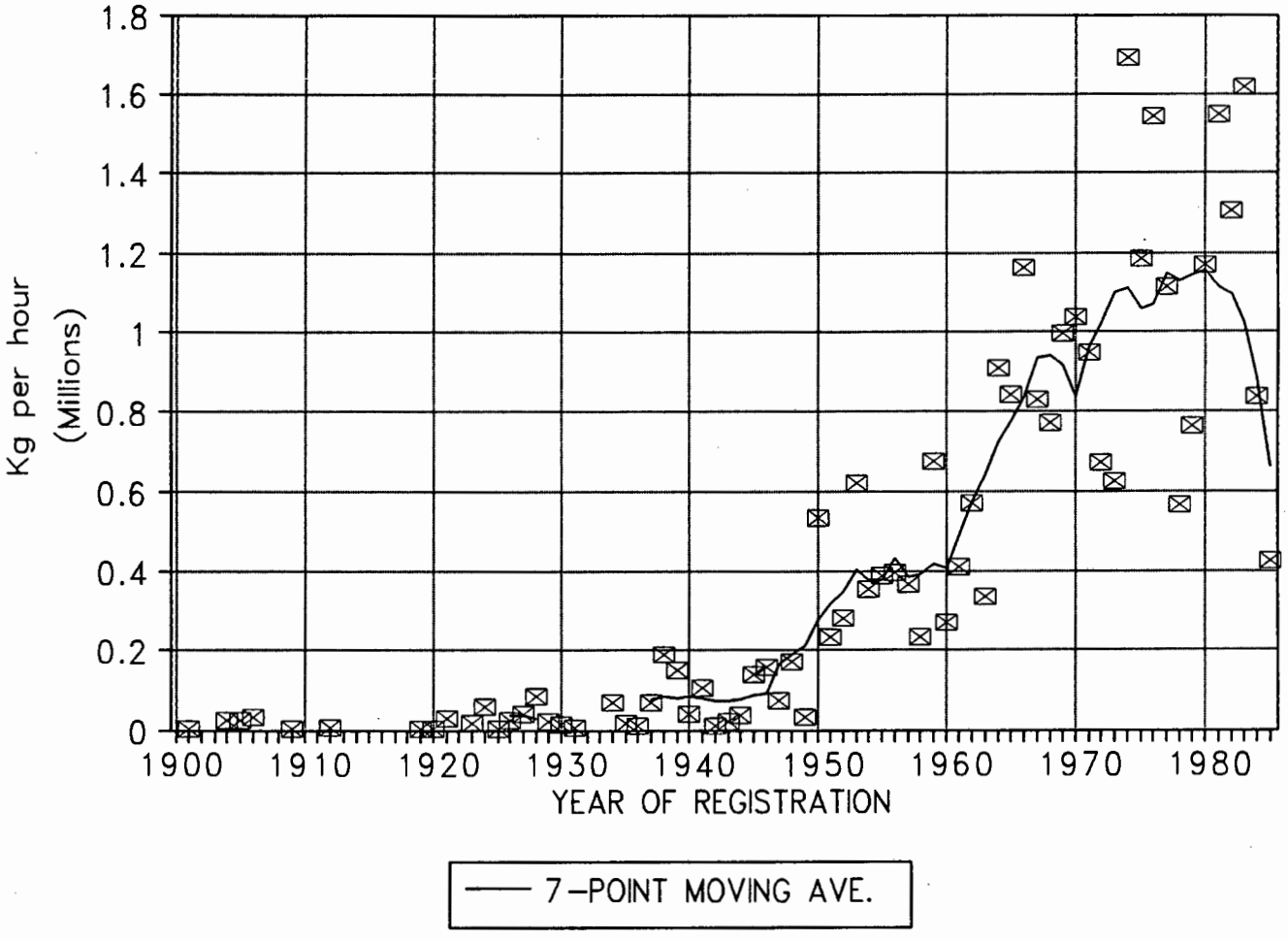


FIGURE 4. AVERAGE CAPACITY OF BOILERS BY YEAR OF REGISTRATION

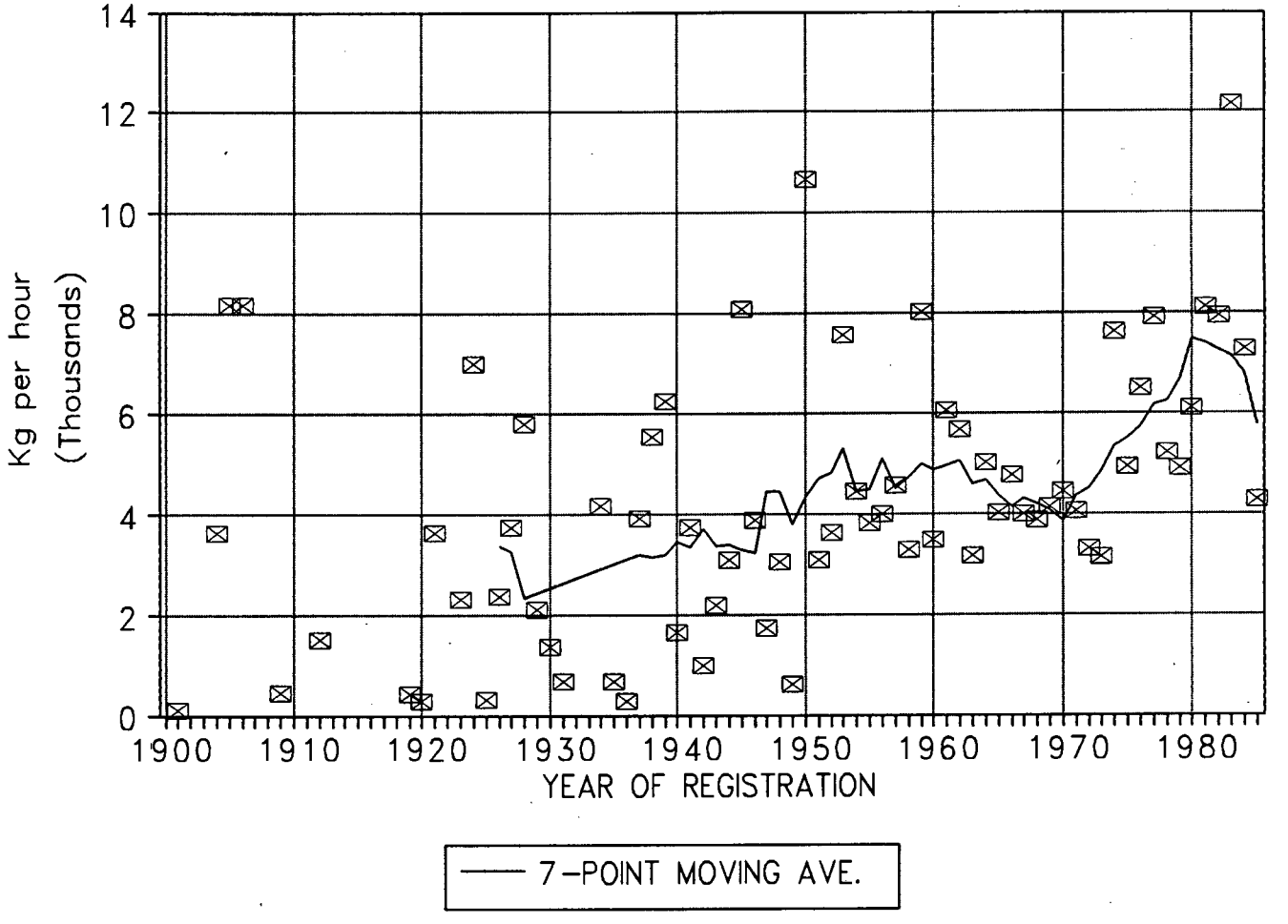


FIGURE 5. AGE OF BOILERS BY CAPACITY FOR SOUTH AFRICA AND FRANCE IN 1975

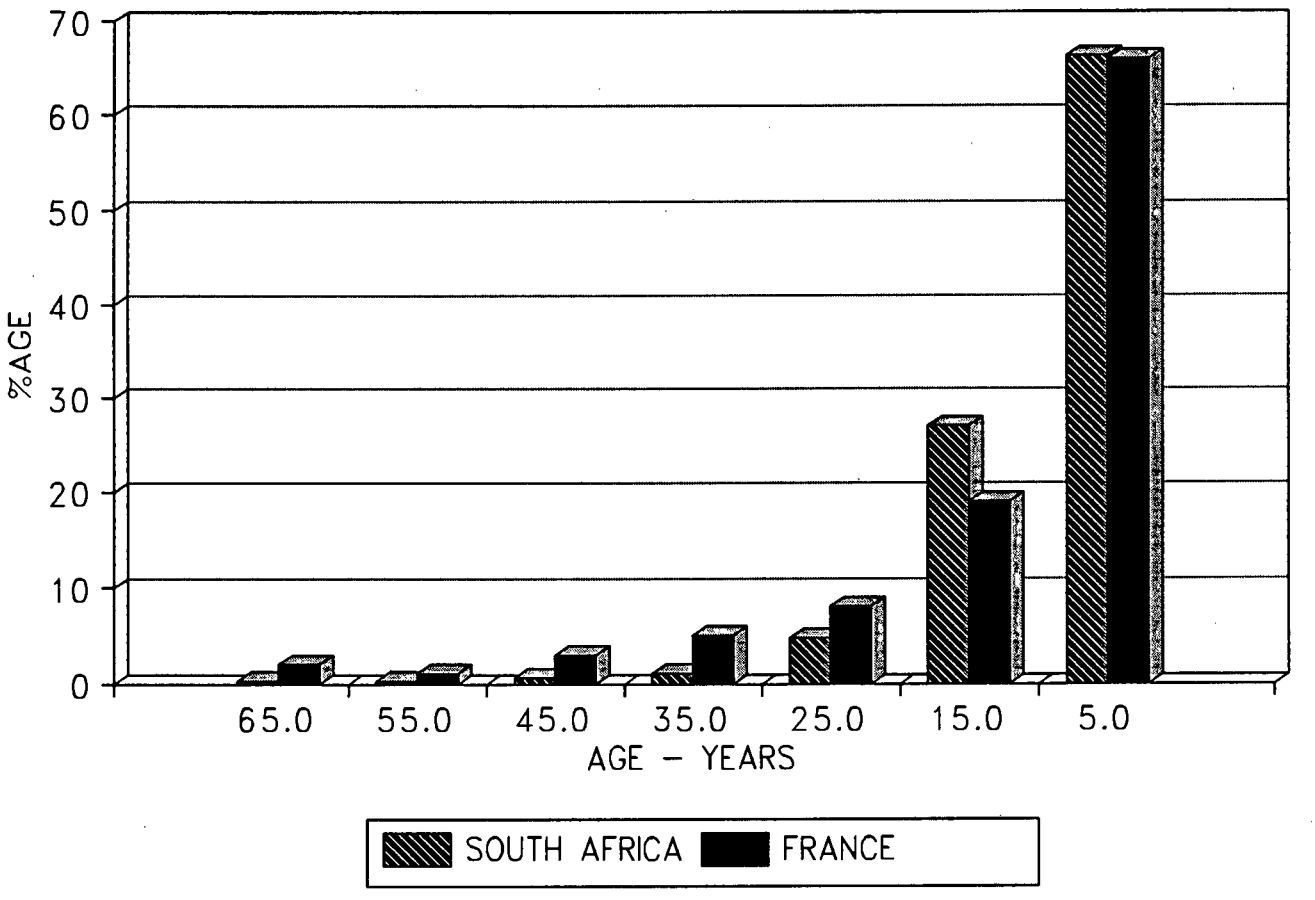
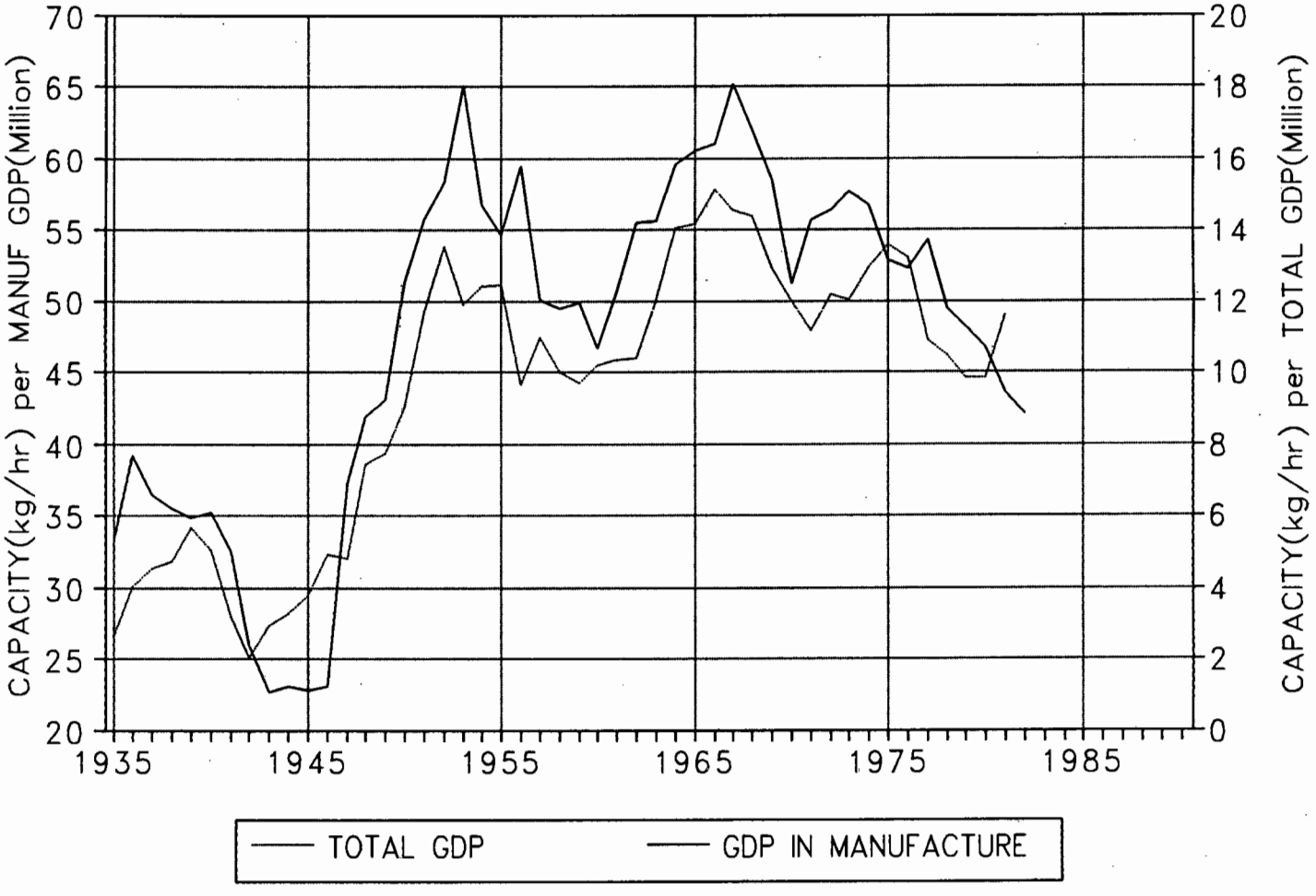


FIGURE 6. BOILER CAPACITY PER MILLION RAND OF GDP - 7-POINT MOVING AVERAGE



APPENDIX A

INTRODUCTORY NOTES TO THE BOILER DATA ANALYSIS

An analysis has been made of the boiler population in South Africa. This analysis has included all boilers with the exception of large utility boilers.

The data on the boilers has been obtained from the records of the Department of Manpower which collects the information in connection with the requirements of the Factories, Machinery, and Building Work Act (1941). This information includes various technical details and is kept by the various regional offices of the Department. The analysis has therefore been carried out on a regional basis as well as for the country as a whole. The regional offices include: Bellville, Benoni, Bloemfontein, Cape Town, Durban, East London, Germiston, Johannesburg, Port Elizabeth, Pretoria, and Vereeniging. For the purpose of this analysis these regions have been combined under the following groupings:

- Transvaal
- Orange Free State
- Natal
- Eastern Cape
- Western Cape

The detailed information was obtained from the individual records kept by the Department of Manpower, two typical copies of which are attached as Appendix 1.

The technical details as well as the location of each boiler was abstracted and stored as a computer based data-base. The data-base contains information on 6101 boilers

The computer database contains information on the following characteristics of each boiler:

i	Boiler manufacturer
ii	Type of boiler
iii	Type of fuel used
iv	Year of boiler manufacture
v	Boiler works number
vi	Boiler capacity
vii	Boiler design pressure
viii	Number of grates
ix	Shape of grate
x	Grate area
xi	Boiler heating surface
xii	Government boiler number
xiii	Standard Industrial Classification code for industry
xiv	Place of boiler erection
xv	Government registration office
xvi	Address of company owning boiler
xvii	Nature of industry using boiler
xviii	Whether the boiler is new or used

This report summarises only certain of the above mentioned boiler characteristics. The relevant data is represented by pie charts and histograms. The data fields that are analysed in the figures are: (boiler type, fuel type, age of boiler, boiler capacity (kg/h), boiler design pressure (kPa), and the boiler usage in terms of the industrial classification.

Since the database was generated directly from the government application forms it could only be as complete as the original forms. A large percentage of the application forms were incomplete and thus the database did not have all the characteristics of all 6101 registered boilers. Tests were however performed on the original data to make it complete as possible. For example, if an oil fired boiler was registered with a missing grate area, a test performed on the data would have inserted 'not applicable' under the grate area for this

particular boiler. If however a coal fired boiler was registered without a grate area, the test would have inserted 'missing' under this boilers grate area.

Since there was data missing, the analysis, that is represented in this report, was done in such a way that all results are represented in terms of percentage of complete data. For example, in catergorising boilers by fuel type, 481 of the fuel types out of 6101 boilers were unknown. Thus in the representation of boiler breakdown by fuel type, the number of coal, oil, gas and electrical boilers were expressed as a percentage of the total number of boilers with known fuels, being 5620 boilers in this case. When the water tube boiler were catergorised by pressure it was known that 931 of the boilers were water tube boilers. Of these water tube boilers, 913 of their pressures were known. Thus the percentage of boilers within a given pressure range was expressed as a percentage of 913.

The boiler breakdown by boiler type was divided into the following categories: Water tube boilers, shell boilers, vertical (shell) boilers and electrical boilers. In further analysis done on individual types of boilers, shell and vertical boilers were grouped together.

Categorization of boilers by fuel type included:- coal, oil, gas, electrical and other fuel types. The detailed analysis of electrical boilers was considered together with the detailed breakdown of boilers by the same boiler type and not under the analysis of boilers having the same fuel. When the quantity of boilers having the same fuel type was too low, no individual analysis was done for that particular fuel categry.

The representation of boilers by age was done, by grouping the boilers by the same year of manufacture rather than by their exact age. Boilers were divided into 10 year divisions starting from the year 1900.

The representation of boiler capacities was in increments of 1000 kg/h. The increments ranged from 0 kg/h to 20000 kg/h and all boilers above 20000 kg/h were grouped together.

The representation of boiler by pressure was in increments of 200 kPa. The increments ranged between 0 kPa and 2000 kPa. All boilers above 2000 kPa were grouped together.

The distribution of boilers by usage was carried out using the Standard Industrial Classification of All Economic Activities (the 3rd edition, -January 1981). Boilers were classified using a 3 digit code for the industry concerned. The major divisions in this code together with the abbreviation used in the graphs are:

i.	Agric.	Agriculture, hunting, forestry and fishing
ii.	Mining	Mining and quarrying
iii.	Manuf.	Manufacturing
iv.	Elect.	Electricity, gas and water
v.	Constr.	Construction
vi.	W/sale	Wholesale and retail trade and trading and accommodation services
vii.	Xport	Transport, storage and communication
viii.	Business	Financing, insurance, real estate and business services
ix.	Community	Community, social and personal services

The exact numerical values for all of the graphs that follow are shown in tabular form in the tables, starting on page 97.

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OTHER FUELS BOILER BISTRIBUTION BY:

AGE

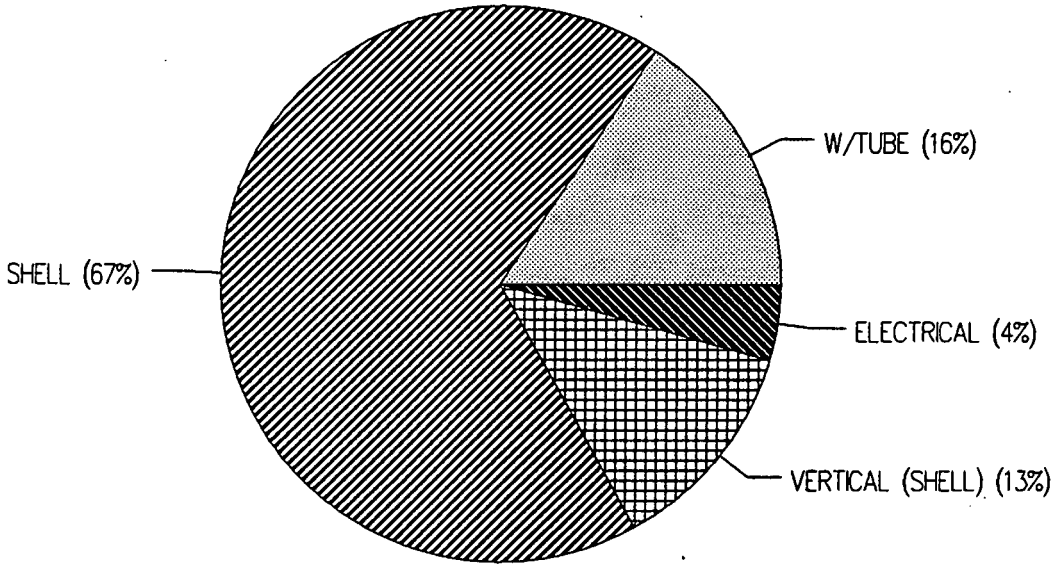
CAPACITY

PRESSURE

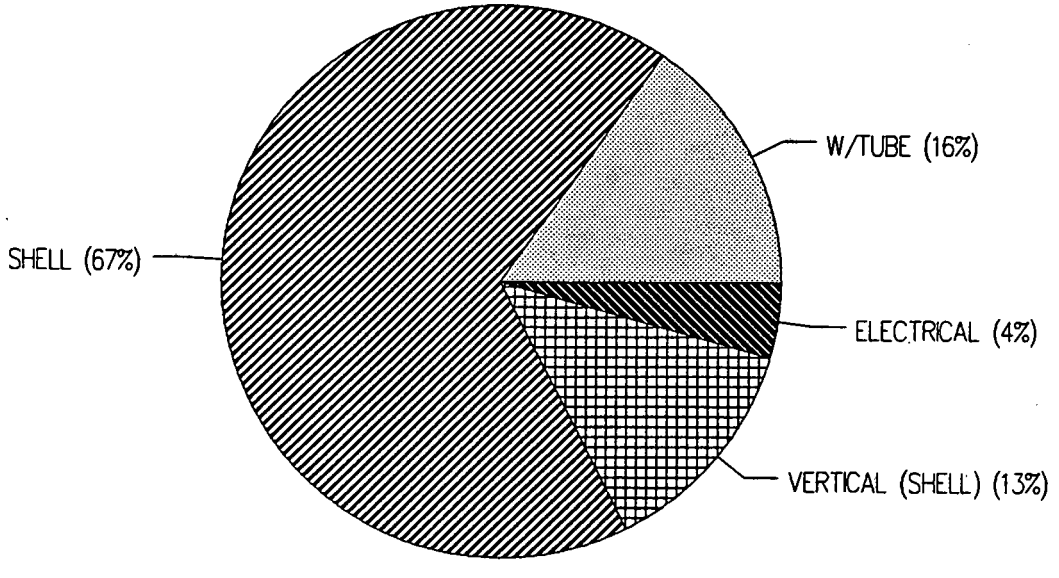
USAGE

INDEX TO TABLES

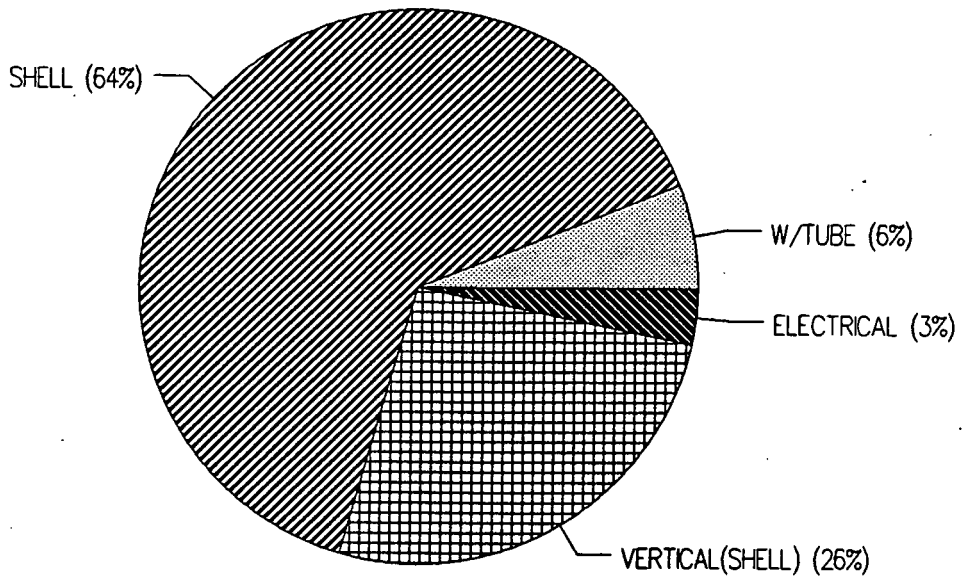
BOILER DISTRIBUTION BY BOILER TYPE SOUTH AFRICAN BOILER STOCK



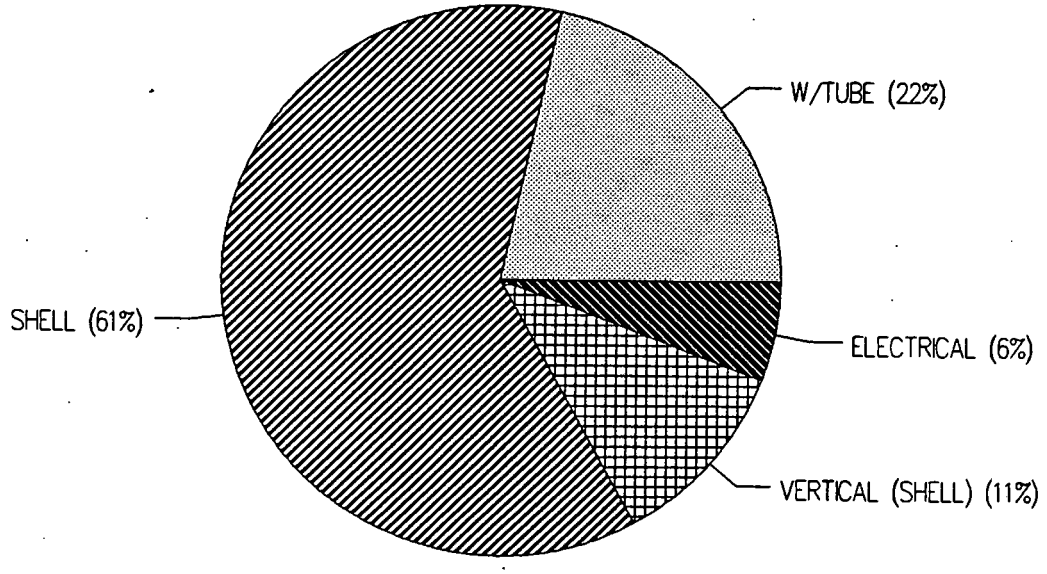
BOILER DISTRIBUTION BY BOILER TYPE FOR THE TRANSVAAL



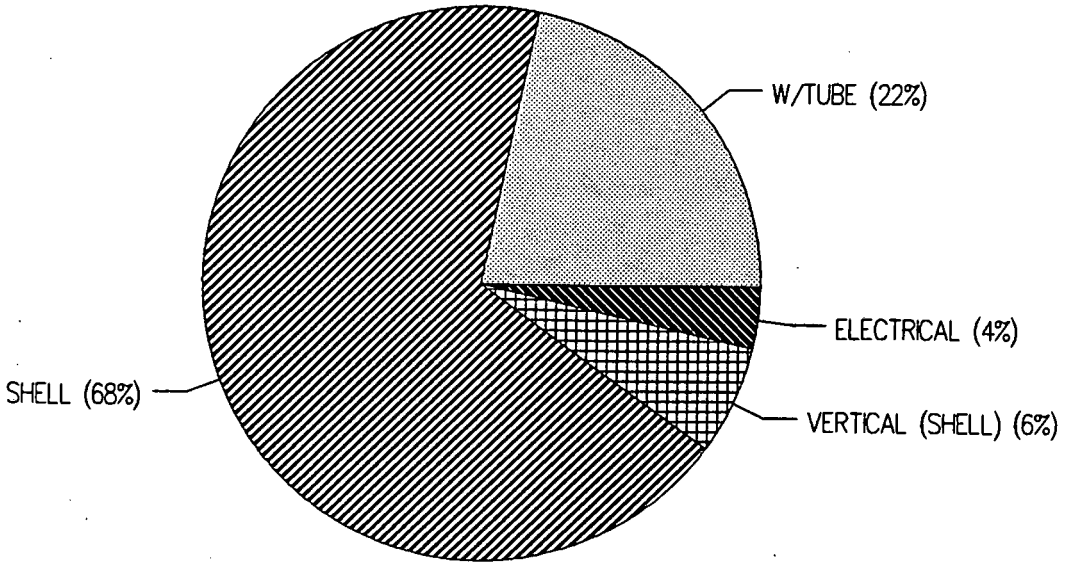
BOILER DISTRIBUTION BY BOILER TYPE FOR THE ORANGE FREE STATE



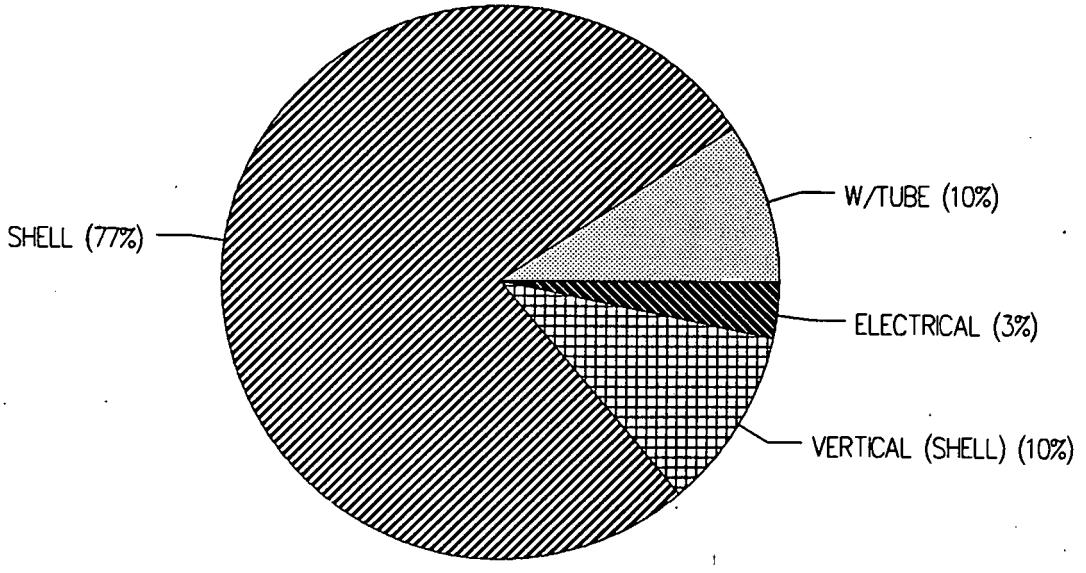
BOILER DISTRIBUTION BY BOILER TYPE FOR NATAL



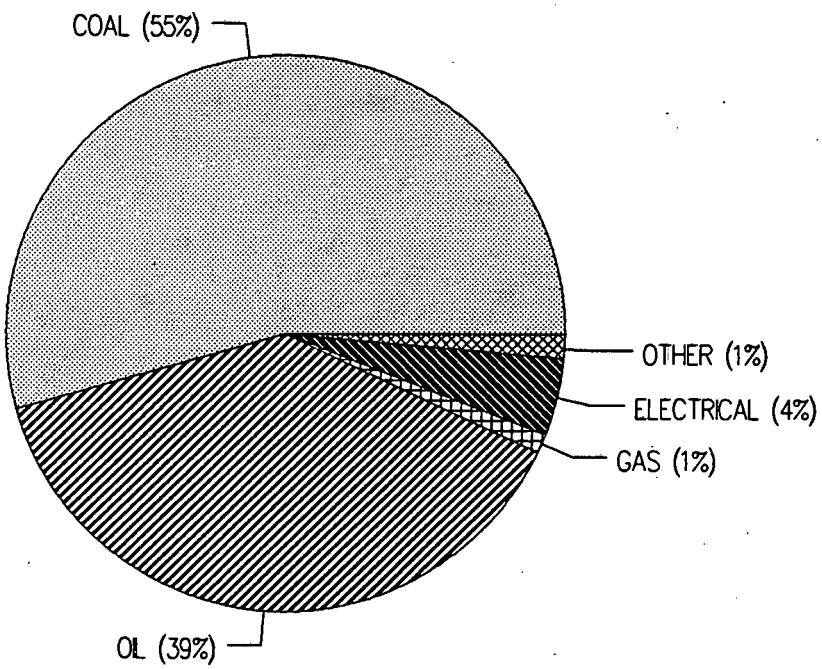
BOILER DISTRIBUTION BY BOILER TYPE FOR THE EASTERN CAPE



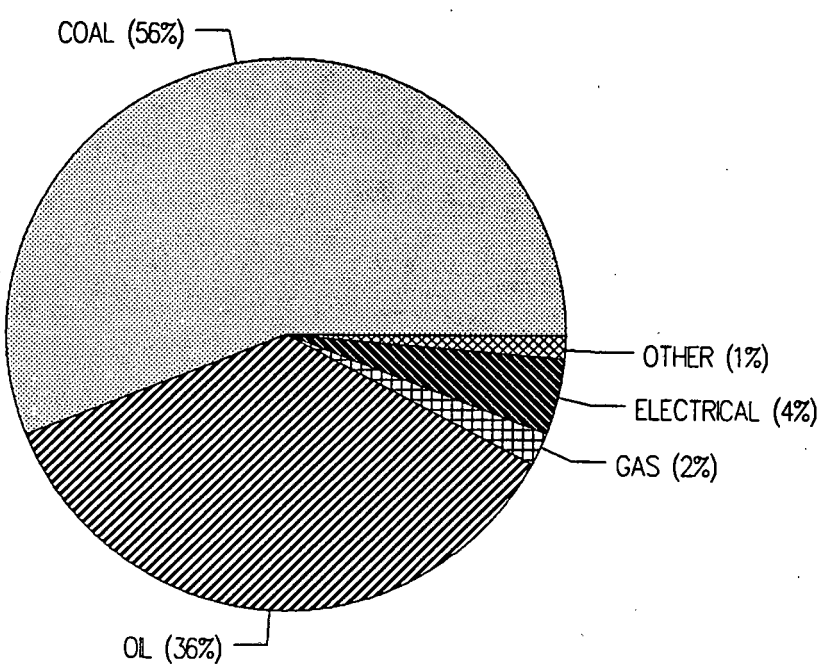
BOILER DISTRIBUTION BY BOILER TYPE FOR THE WESTERN CAPE



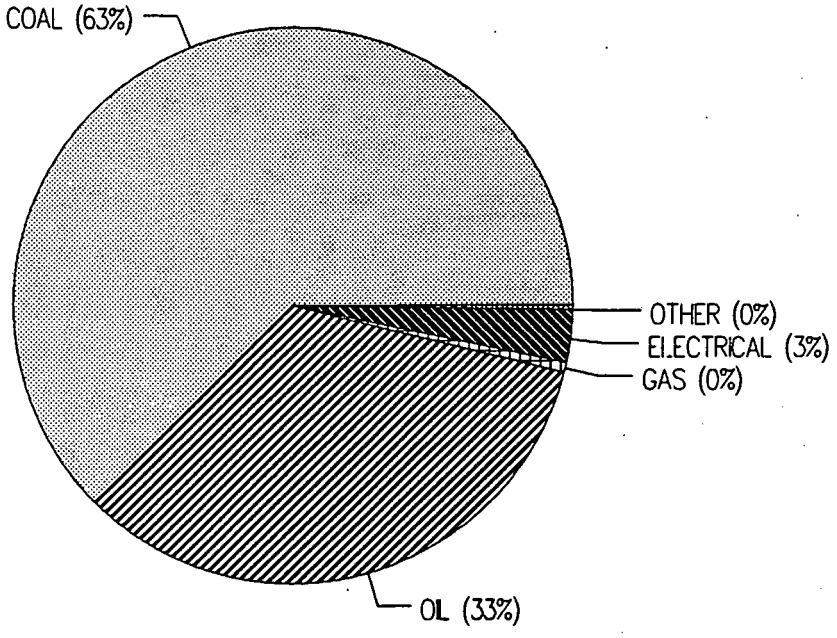
BOILER DISTRIBUTION BY FUEL TYPE SOUTH AFRICAN BOILER STOCK



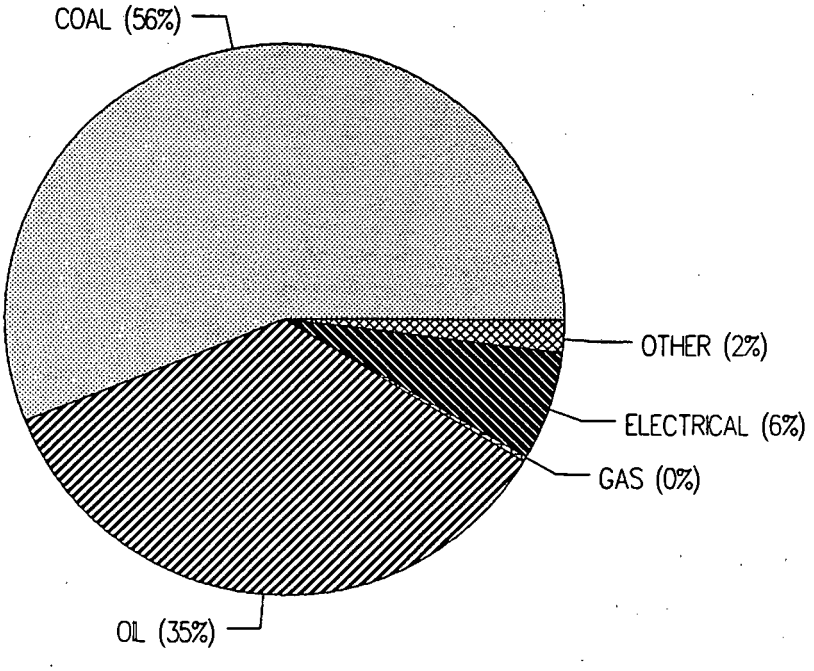
BOILER DISTRIBUTION BY FUEL TYPE FOR THE TRANSVAAL



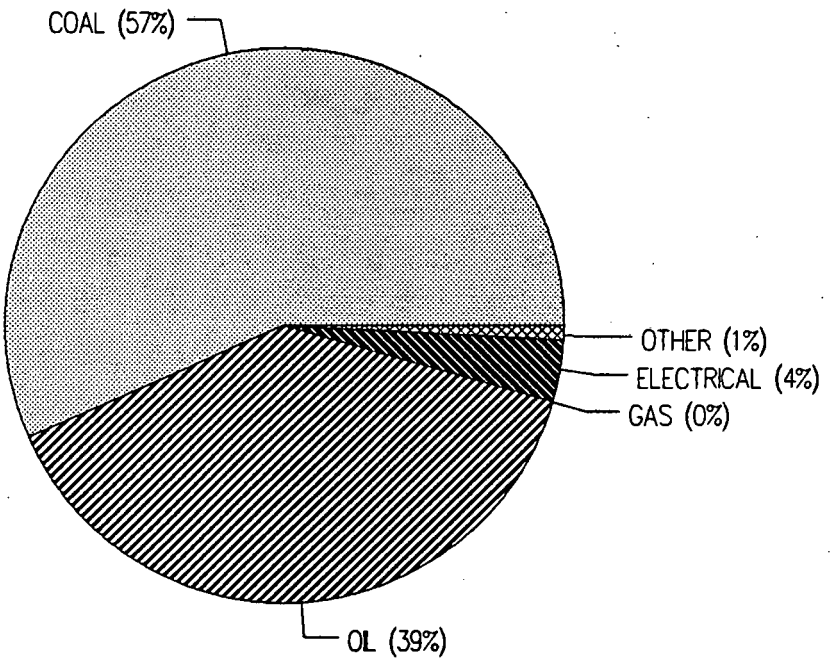
BOILER DISTRIBUTION BY FUEL TYPE FOR THE ORANGE FREE STATE



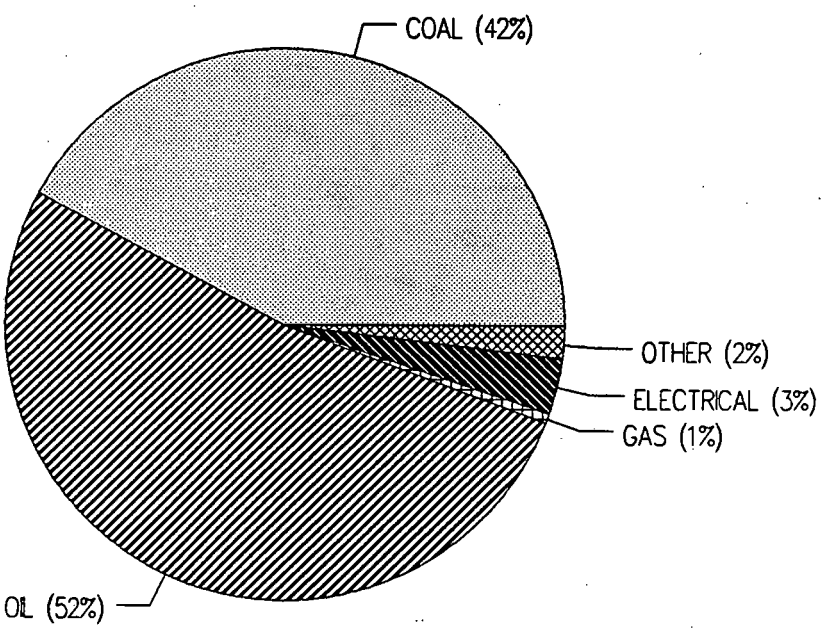
BOILER DISTRIBUTION BY FUEL TYPE FOR NATAL



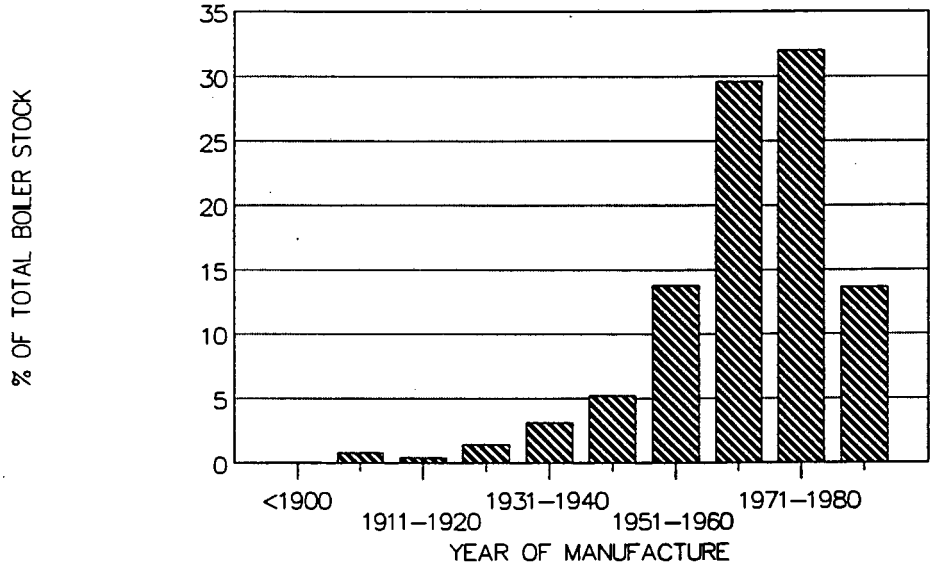
BOILER DISTRIBUTION BY FUEL TYPE FOR THE EASTERN CAPE



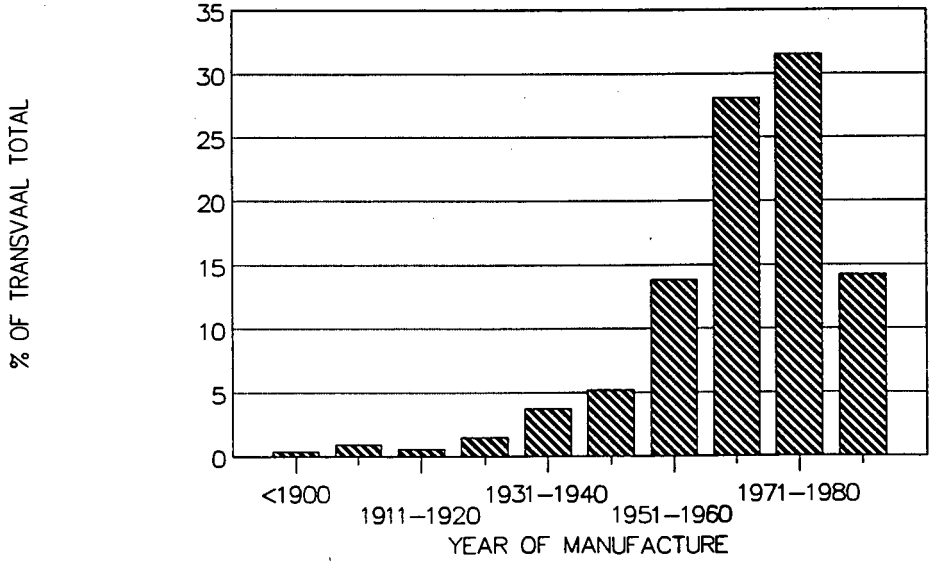
BOILER DISTRIBUTION BY FUEL TYPE FOR THE WESTERN CAPE



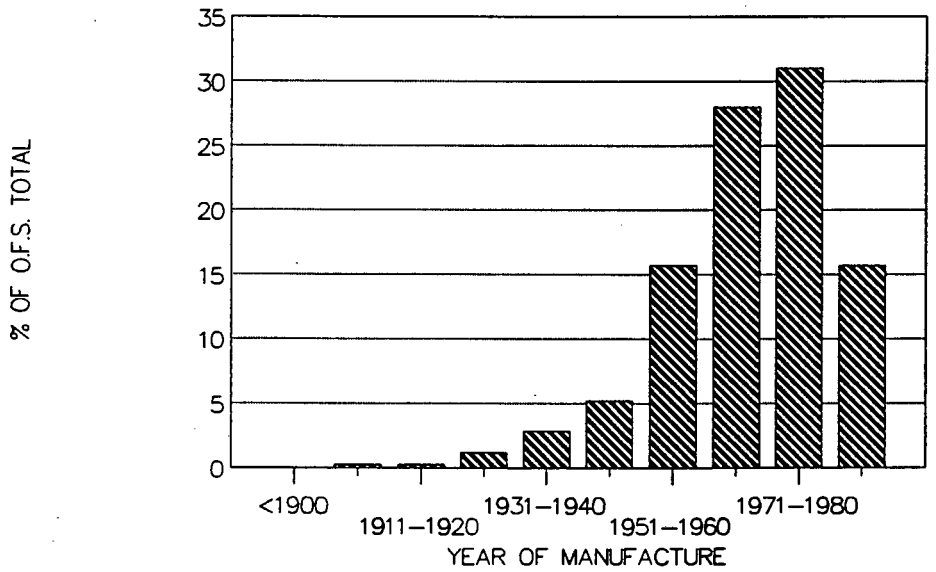
BOILER DISTRIBUTION BY AGE
SOUTH AFRICAN BOILER STOCK



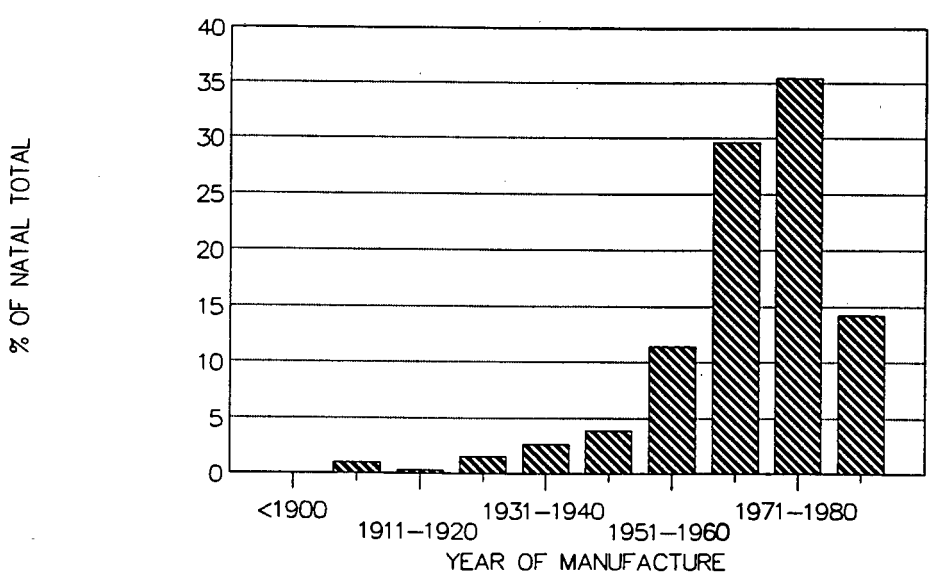
BOILER DISTRIBUTION BY AGE
FOR THE TRANSVAAL



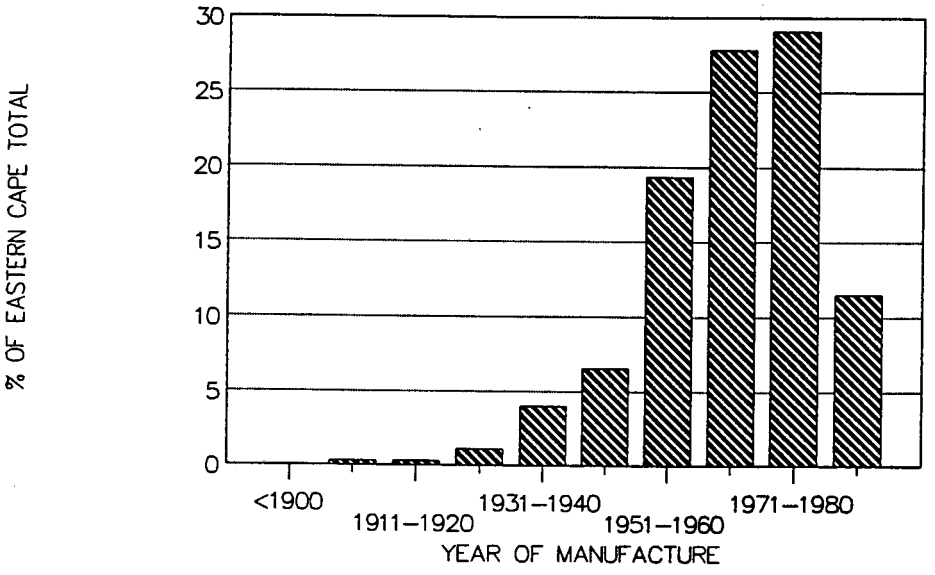
BOILER DISTRIBUTION BY AGE FOR THE ORANGE FREE STATE



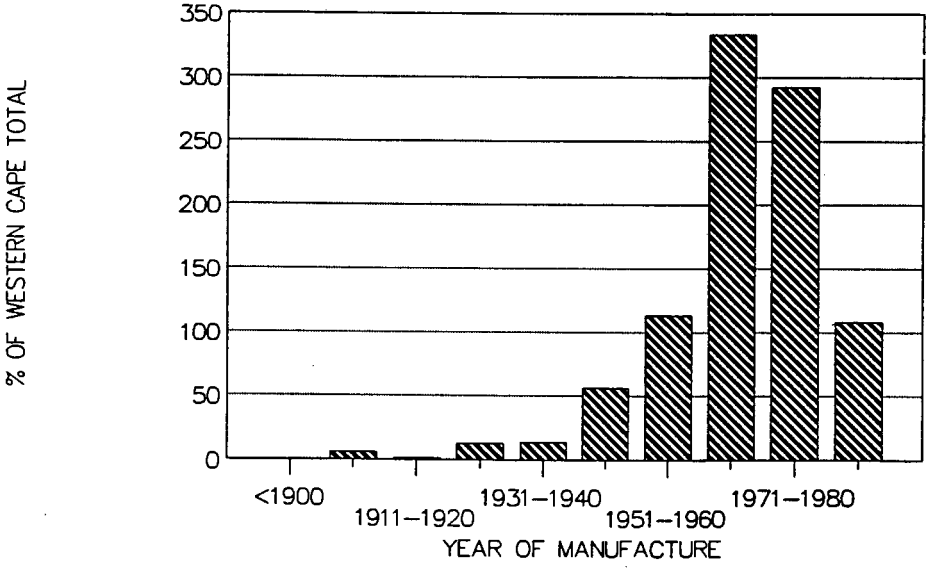
BOILER DISTRIBUTION BY AGE FOR NATAL



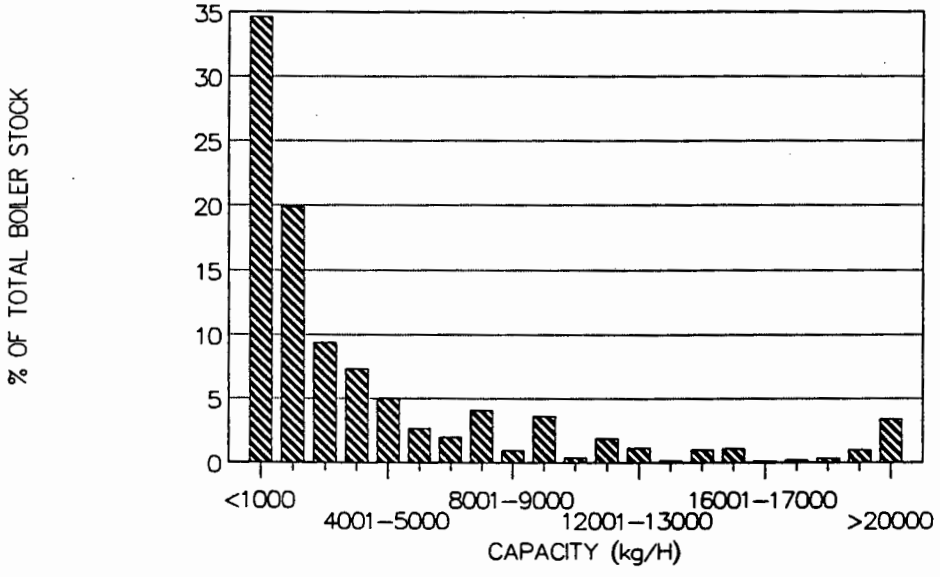
BOILER DISTRIBUTION BY AGE FOR THE EASTERN CAPE



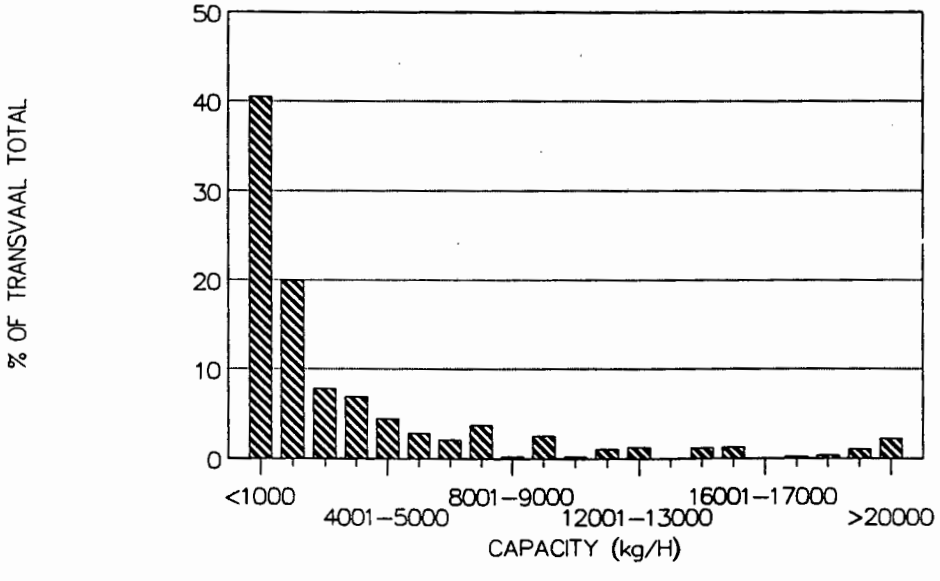
BOILER DISTRIBUTION BY AGE FOR THE WESTERN CAPE



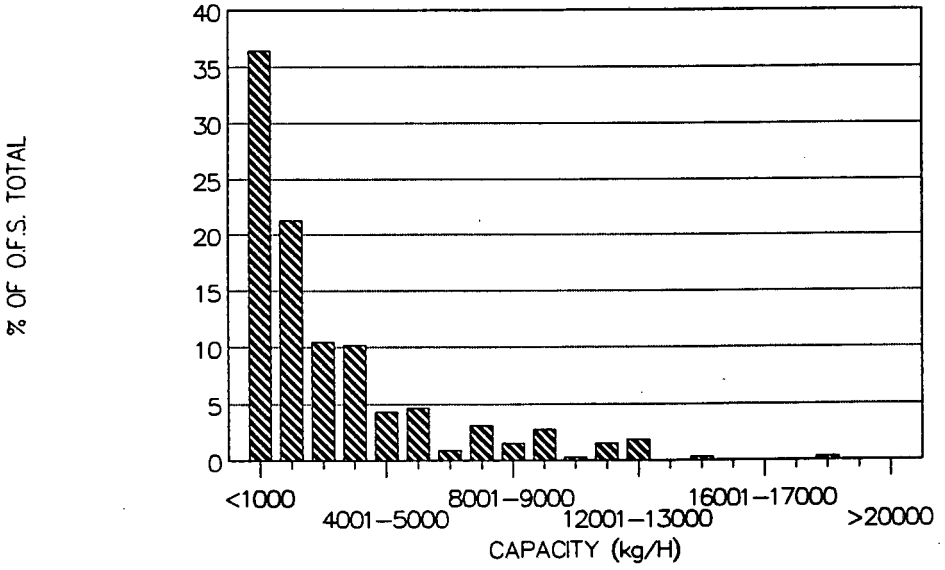
BOILER DISTRIBUTION BY CAPACITY
SOUTH AFRICAN BOILER STOCK



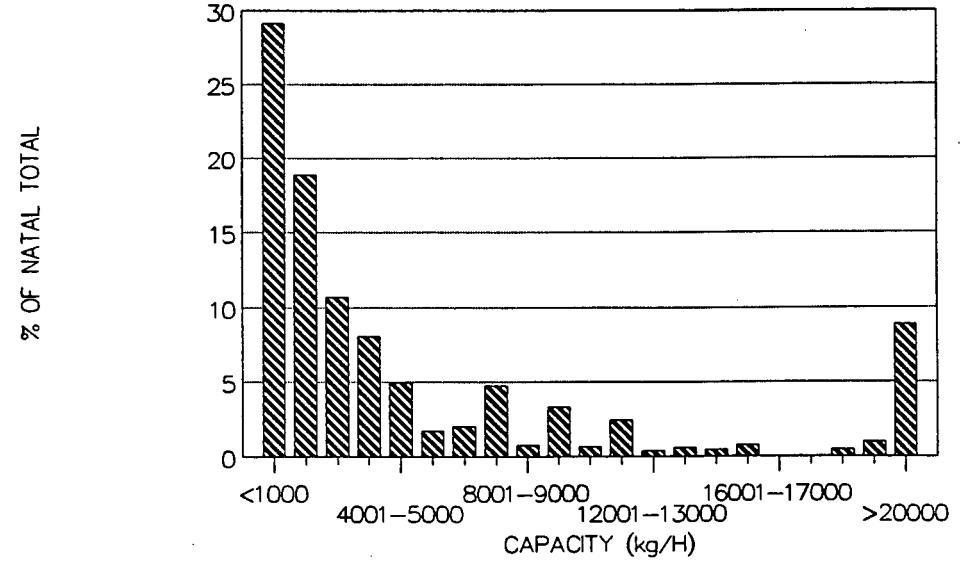
BOILER DISTRIBUTION BY CAPACITY
FOR THE TRANSVAAL



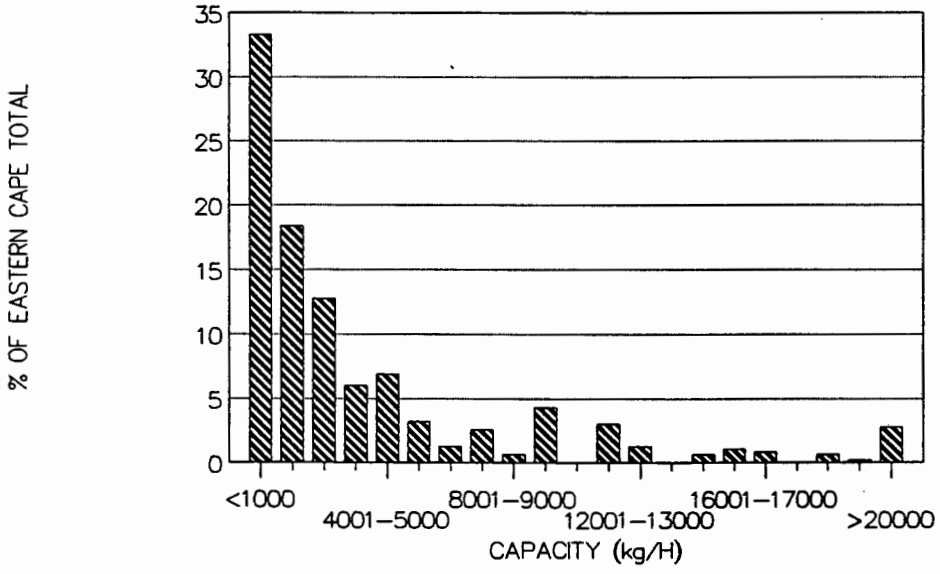
BOILER DISTRIBUTION BY CAPACITY FOR THE ORANGE FREE STATE



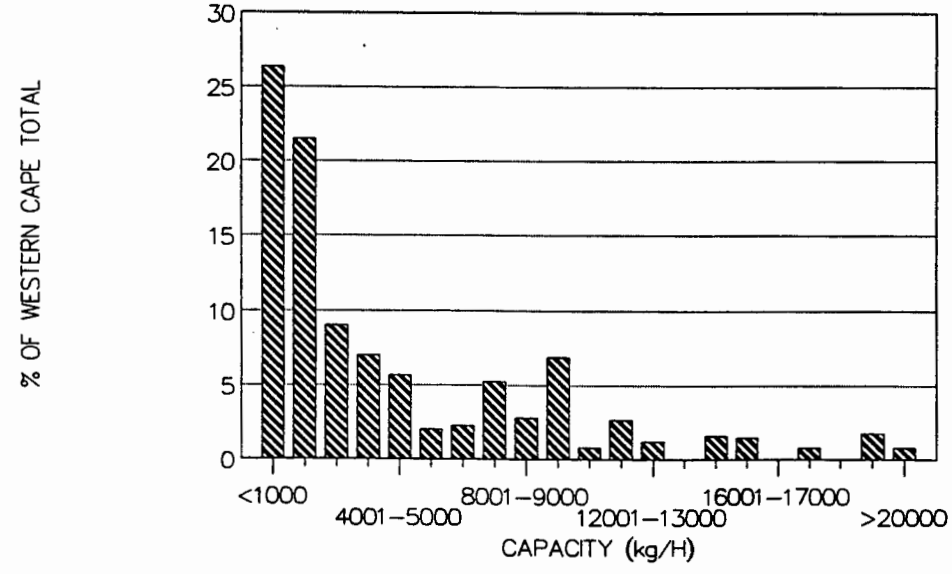
BOILER DISTRIBUTION BY CAPACITY FOR NATAL



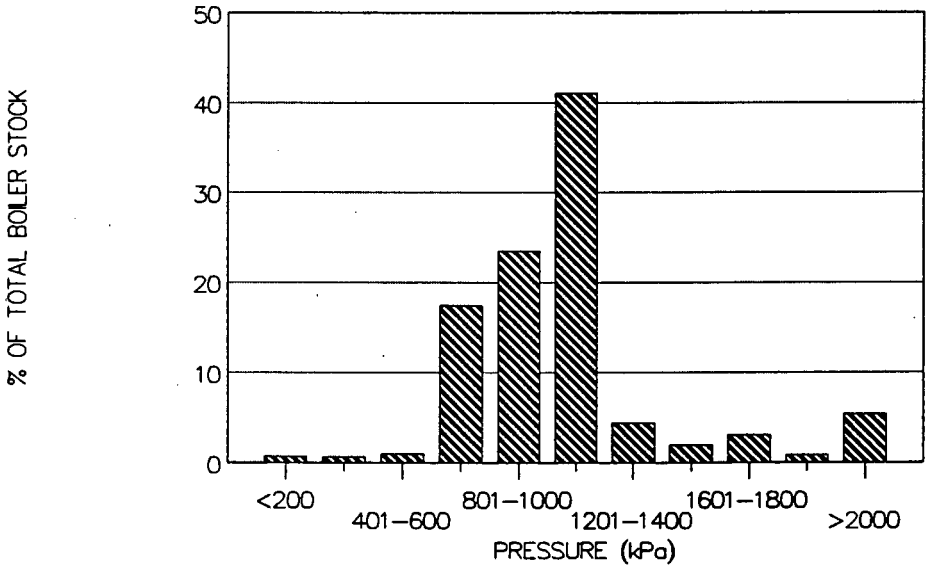
BOILER DISTRIBUTION BY CAPACITY FOR THE EASTERN CAPE



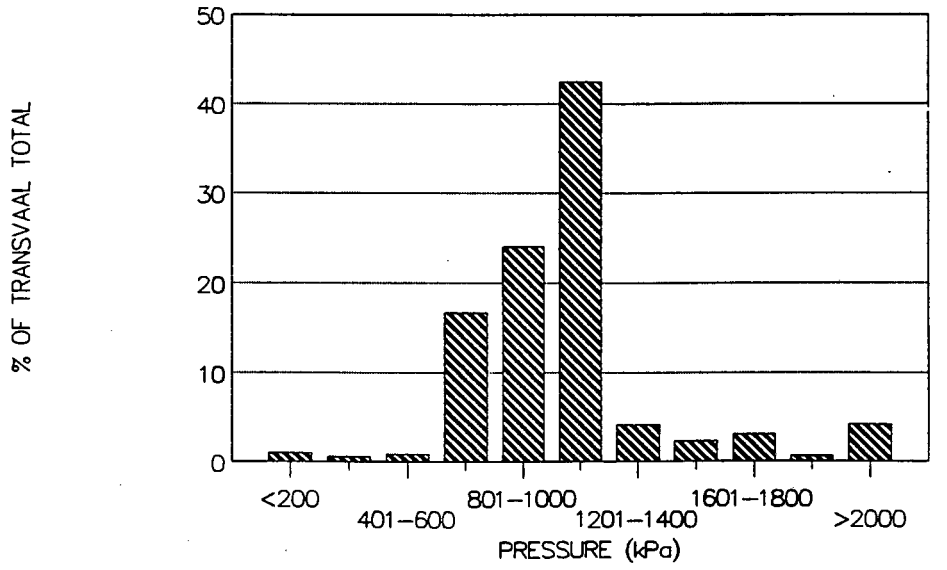
BOILER DISTRIBUTION BY CAPACITY FOR THE WESTERN CAPE



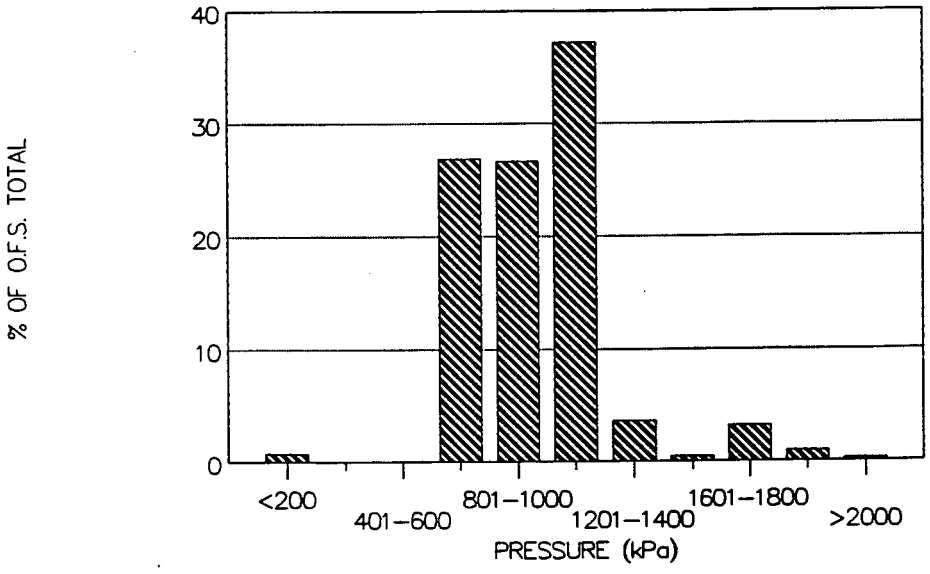
BOILER DISTRIBUTION BY PRESSURE
SOUTH AFRICAN BOILER STOCK



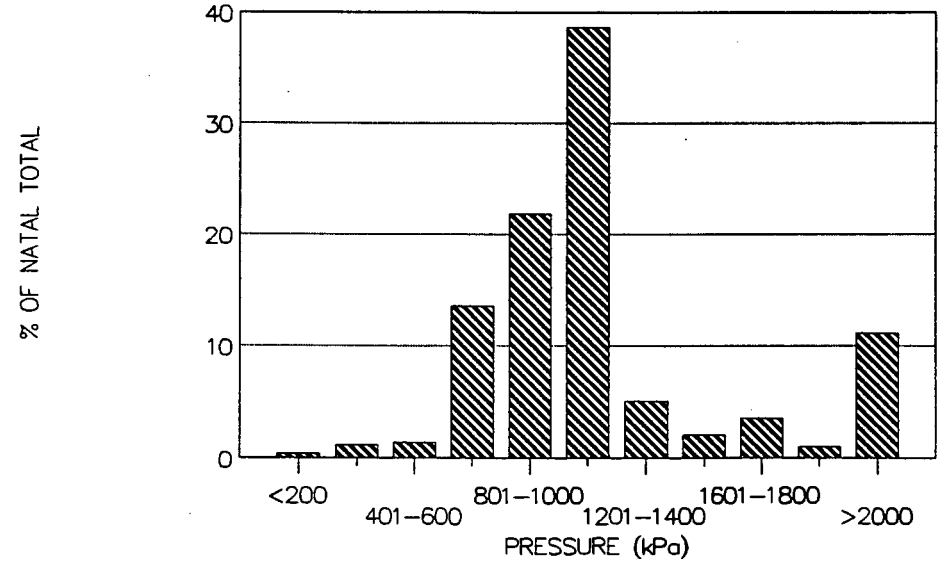
BOILER DISTRIBUTION BY PRESSURE
FOR THE TRANSVAAL



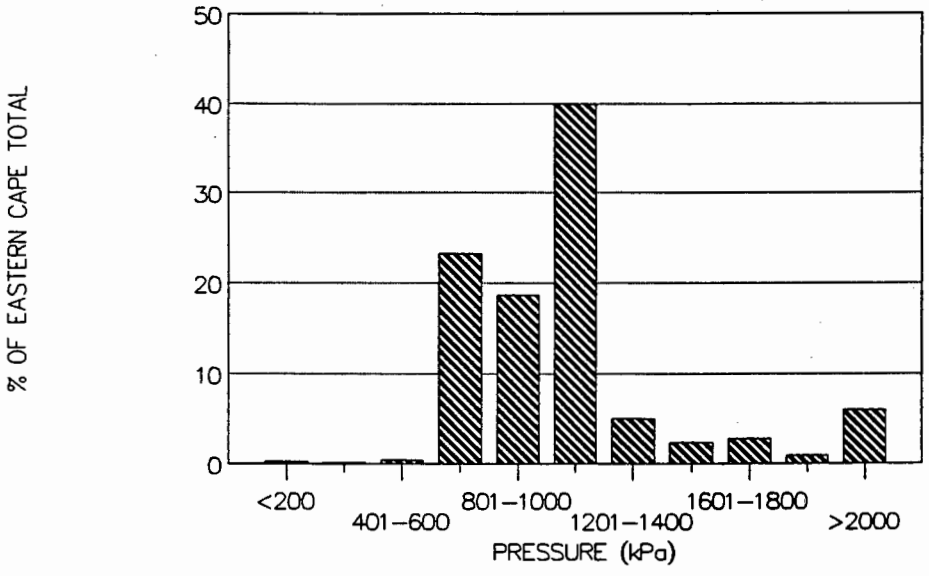
BOILER DISTRIBUTION BY PRESSURE FOR THE ORANGE FREE STATE



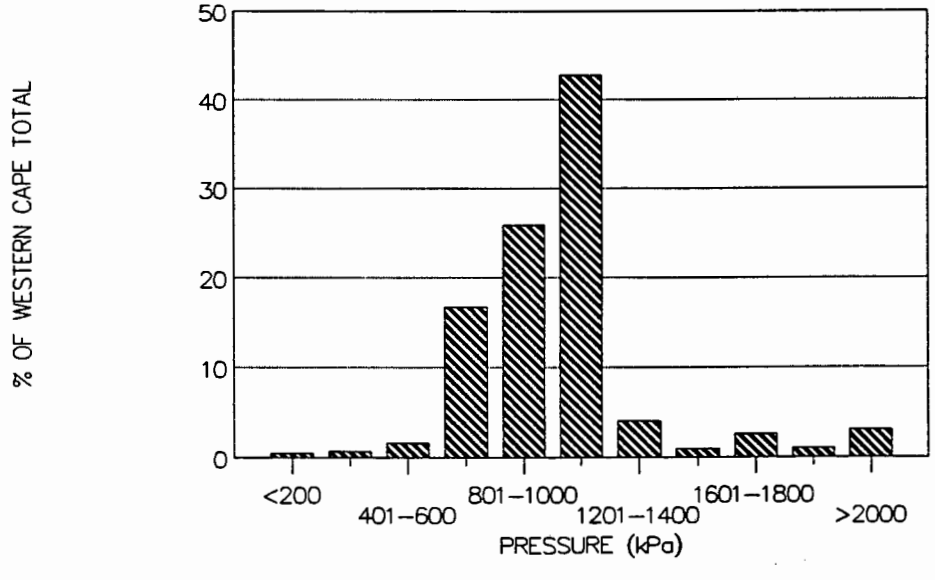
BOILER DISTRIBUTION BY PRESSURE FOR NATAL



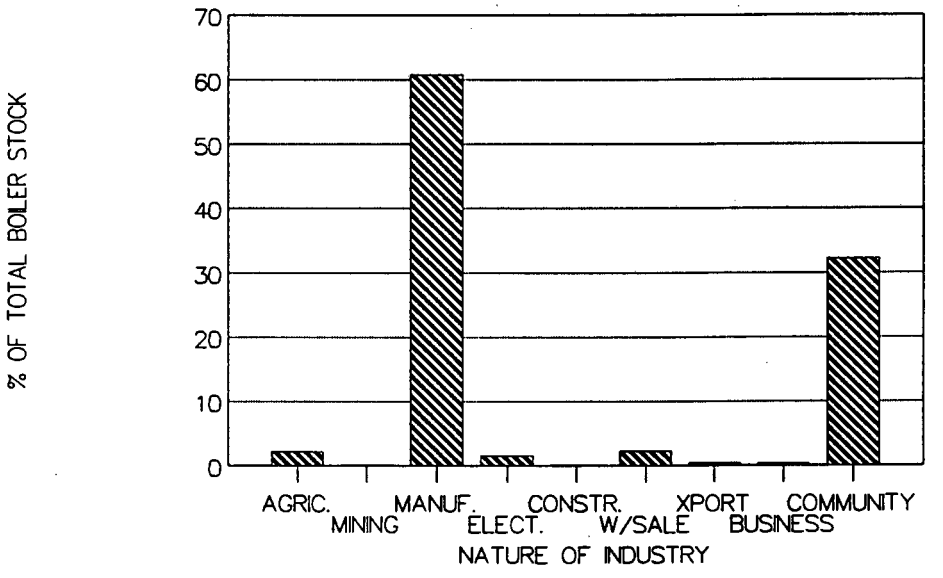
BOILER DISTRIBUTION BY PRESSURE FOR THE EASTERN CAPE



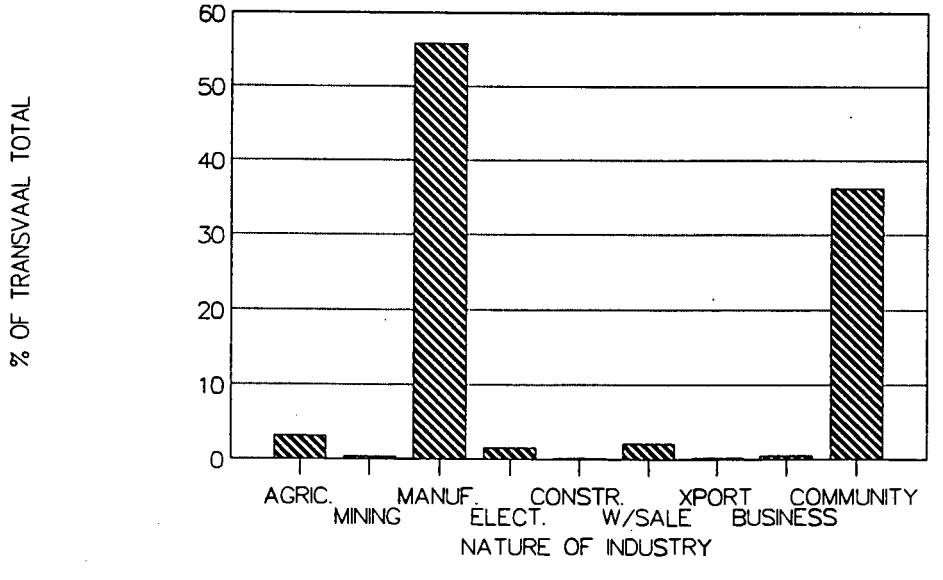
BOILER DISTRIBUTION BY PRESSURE FOR THE WESTERN CAPE



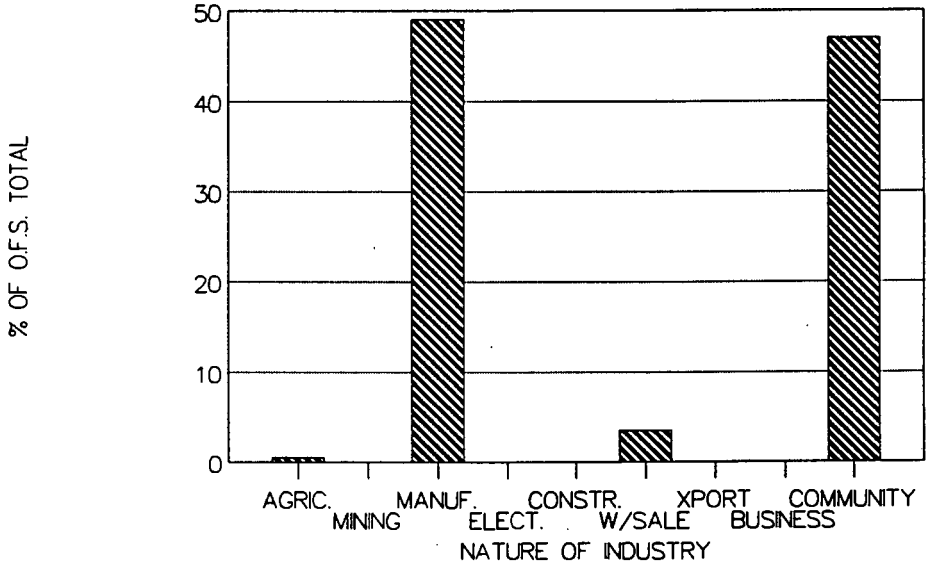
BOILER DISTRIBUTION BY USAGE
SOUTH AFRICAN BOILER STOCK



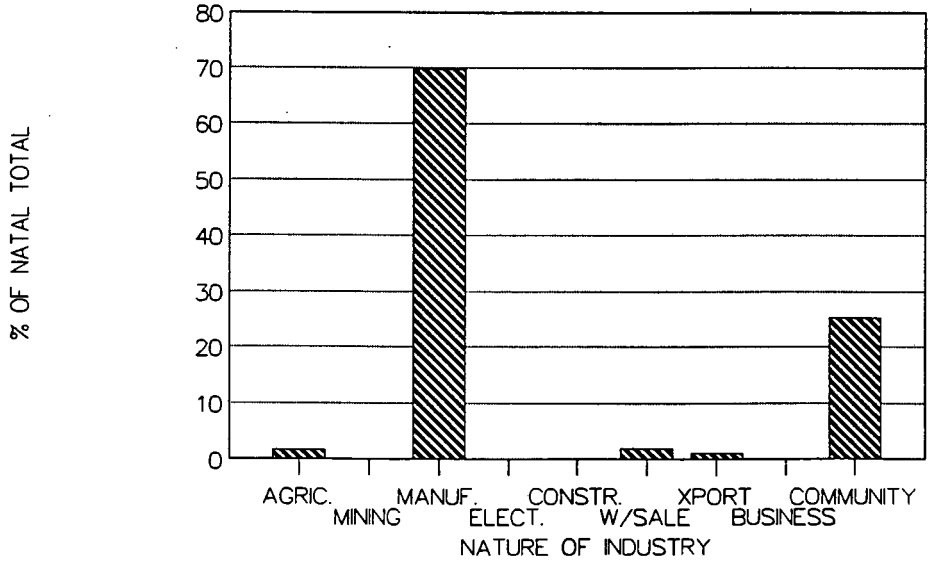
BOILER DISTRIBUTION BY USAGE
FOR THE TRANSVAAL



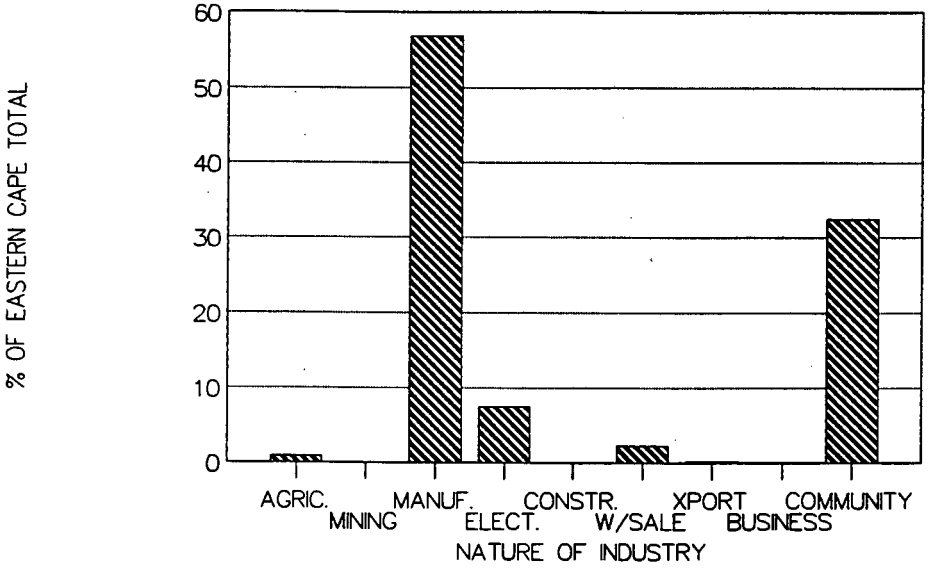
BOILER DISTRIBUTION BY USAGE FOR THE ORANGE FREE STATE



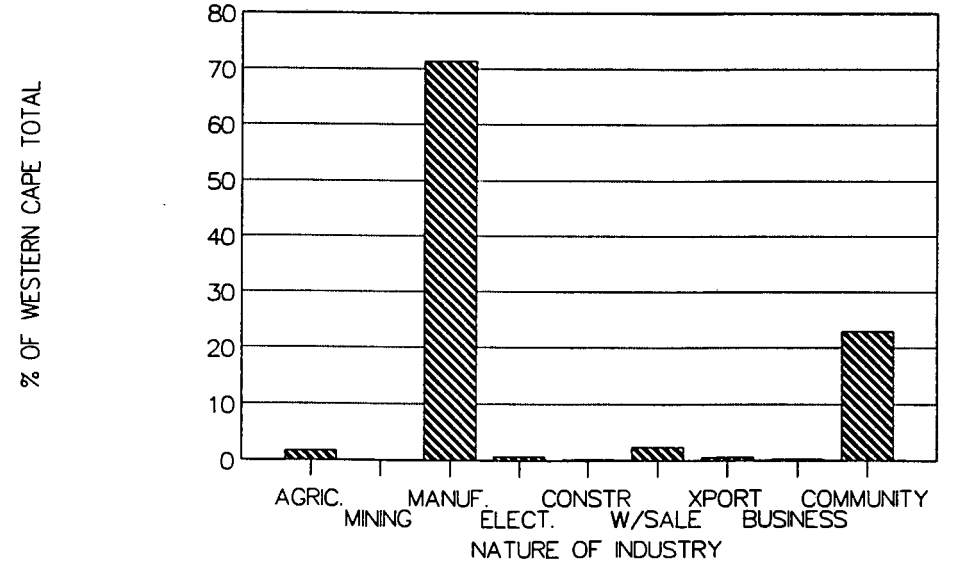
BOILER DISTRIBUTION BY USAGE FOR NATAL



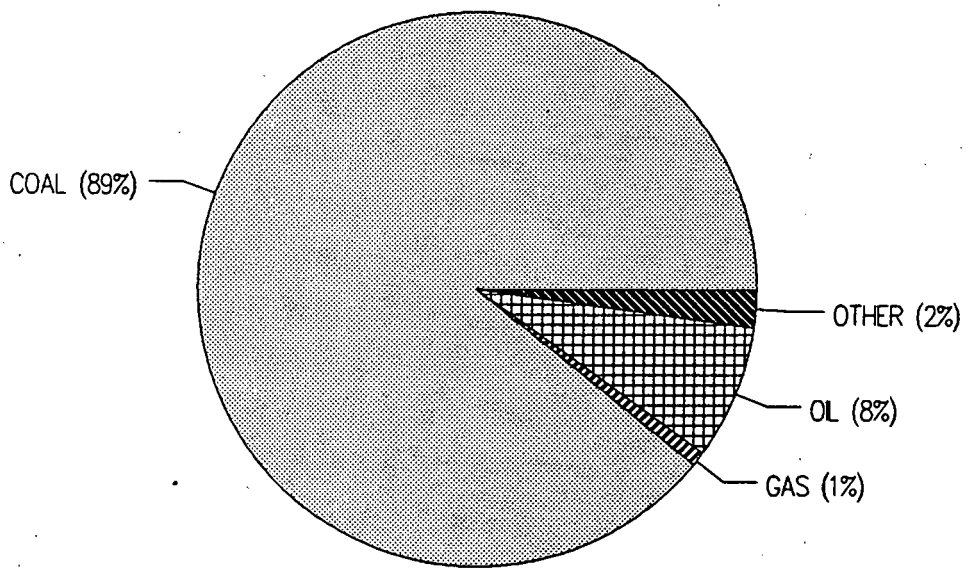
BOILER DISTRIBUTION BY USAGE FOR THE EASTERN CAPE



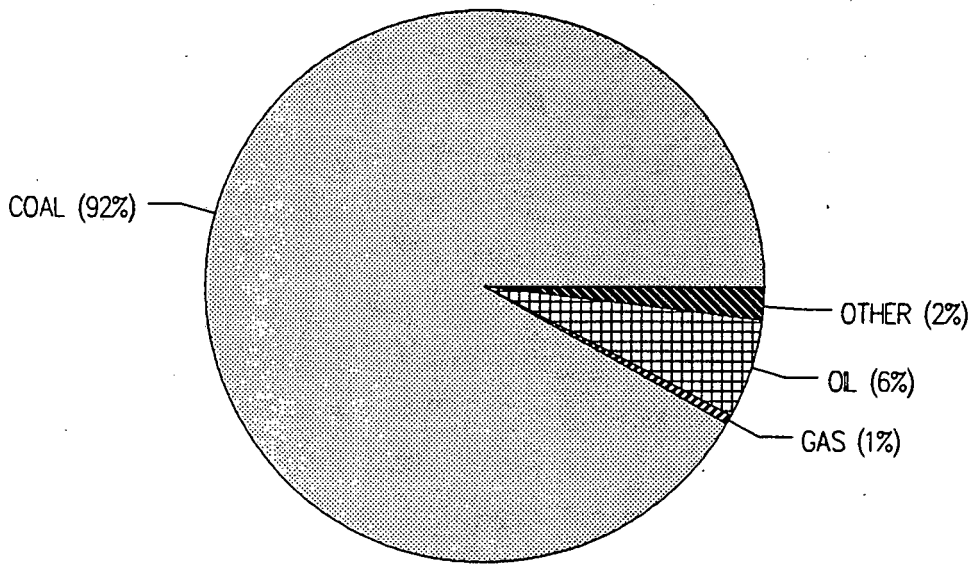
BOILER DISTRIBUTION BY USAGE FOR THE WESTERN CAPE



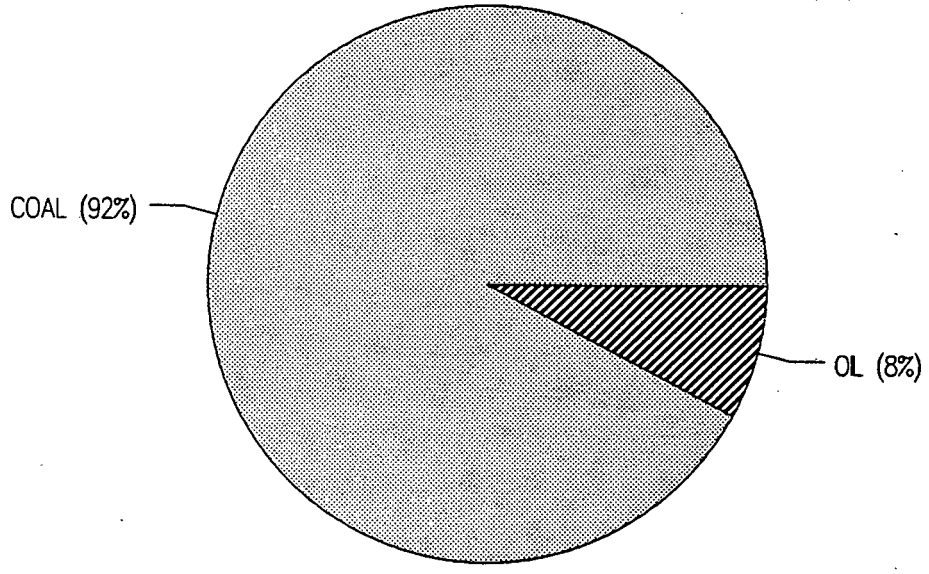
W/TUBE BOILER DISTRIBUTION BY FUEL TYPE SOUTH AFRICAN BOILER STOCK



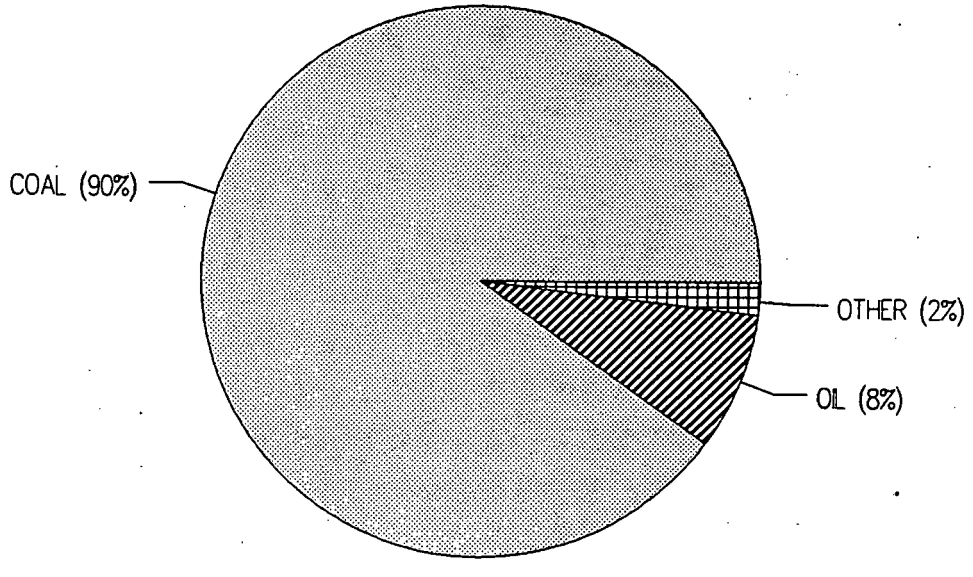
W/TUBE BOILER DISTRIBUTION BY FUEL TYPE FOR THE TRANSVAAL



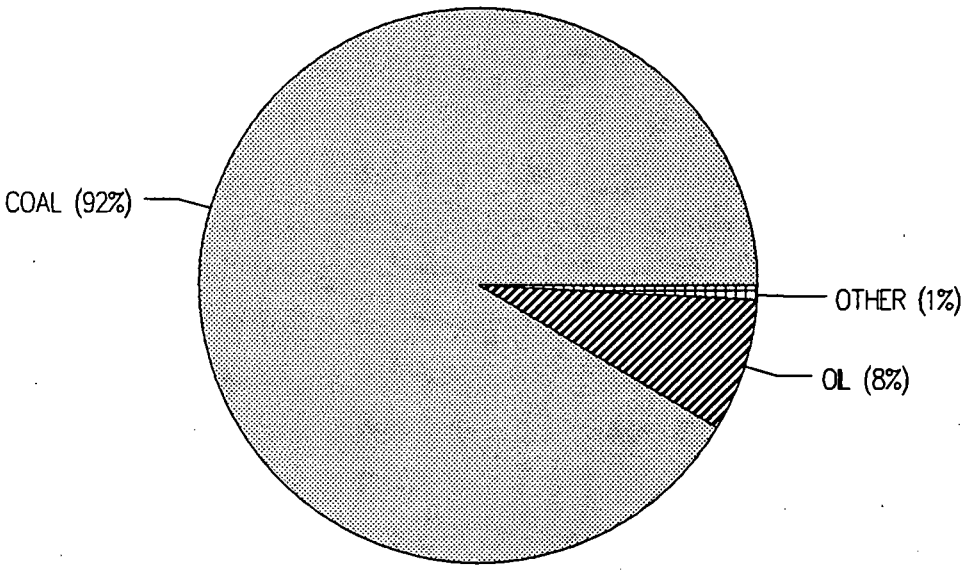
W/T BOILER DISTRIBUTION BY FUEL TYPE FOR THE ORANGE FREE STATE



W/TUBE BOILER DISTRIBUTION BY FUEL TYPE FOR NATAL



W/TUBE BOILER DISTRIBUTION BY FUEL FOR THE EASTERN CAPE



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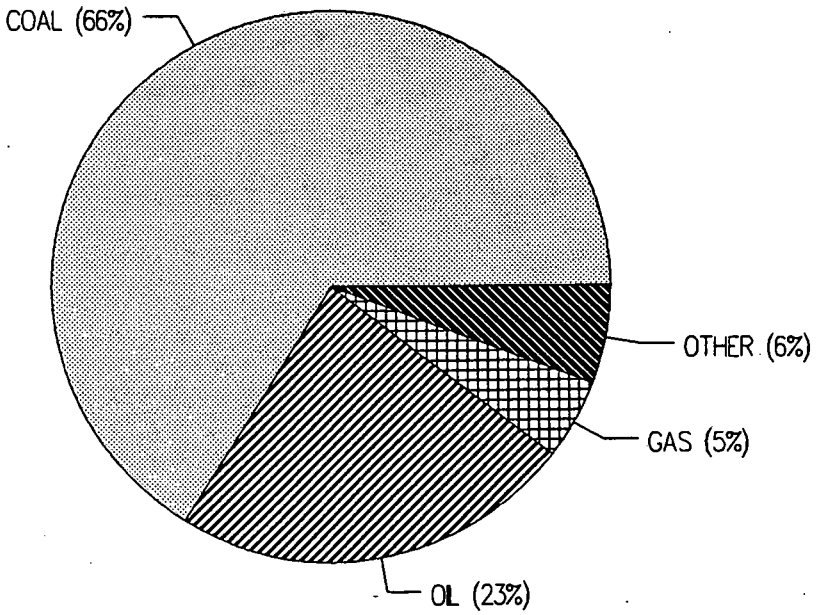
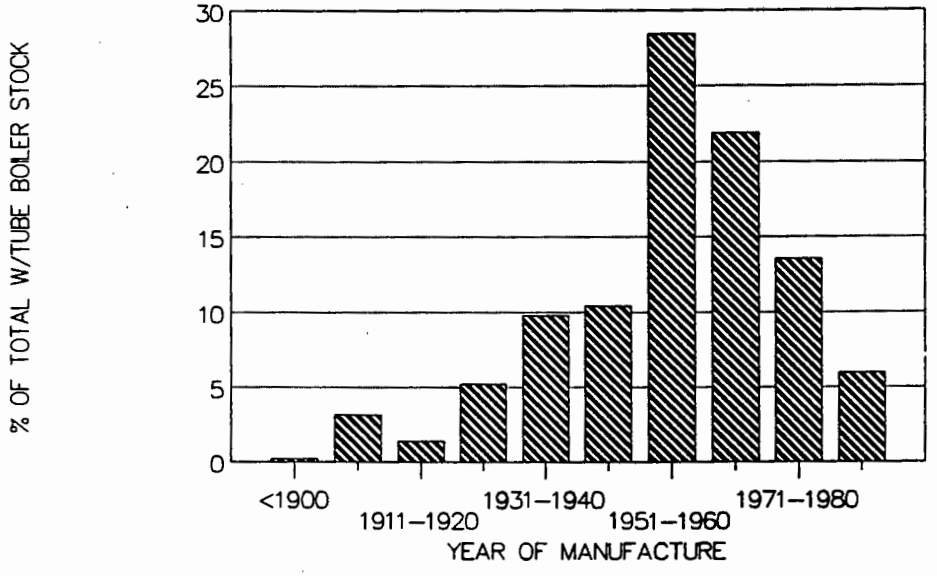
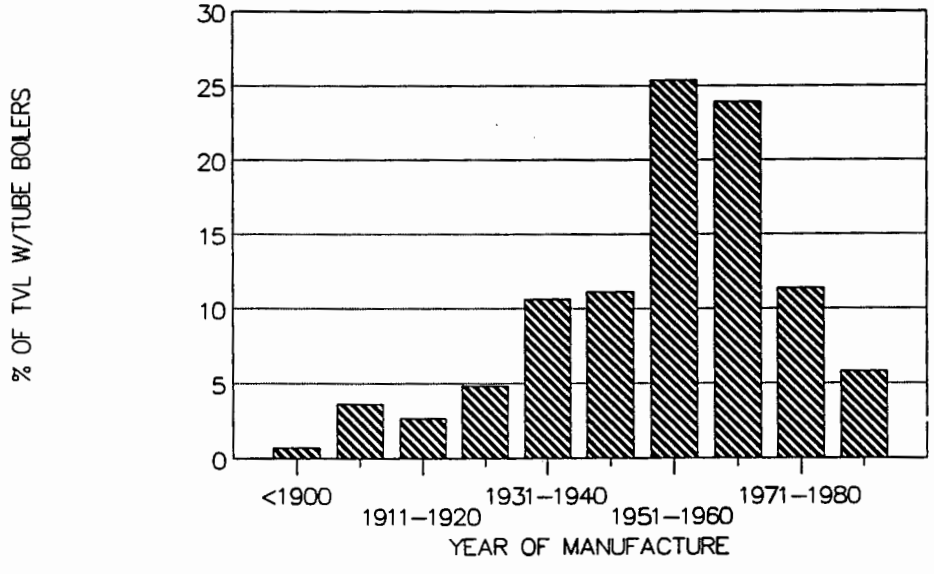


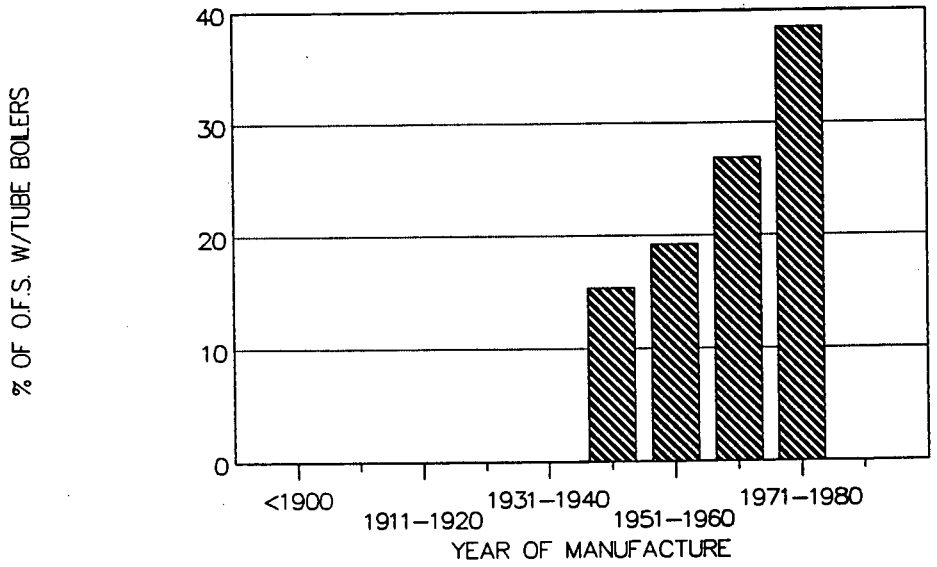
W/TUBE BOILER DISTRIBUTION BY AGE SOUTH AFRICAN BOILER STOCK



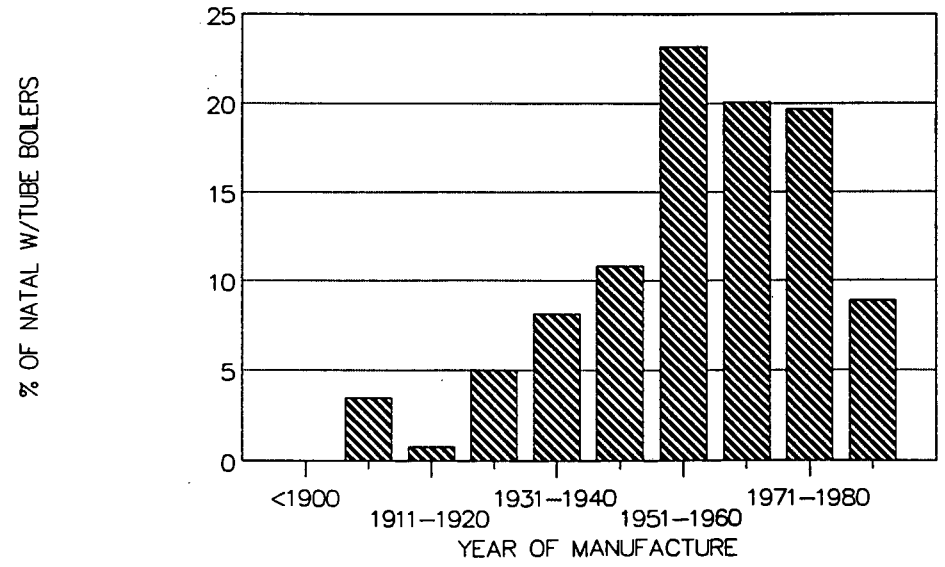
W/TUBE BOILER DISTRIBUTION BY AGE FOR THE TRANSVAAL



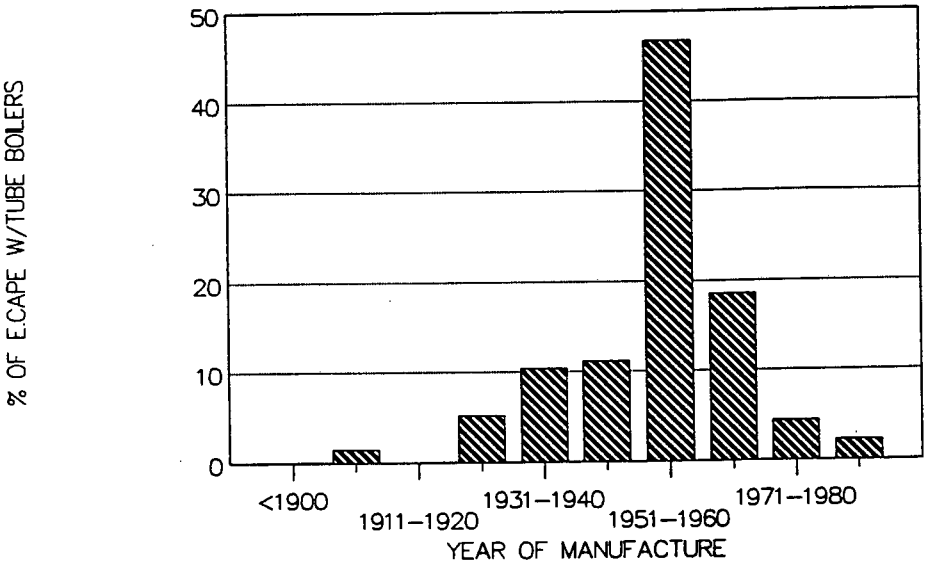
W/TUBE BOILER DISTRIBUTION BY AGE FOR THE ORANGE FREE STATE



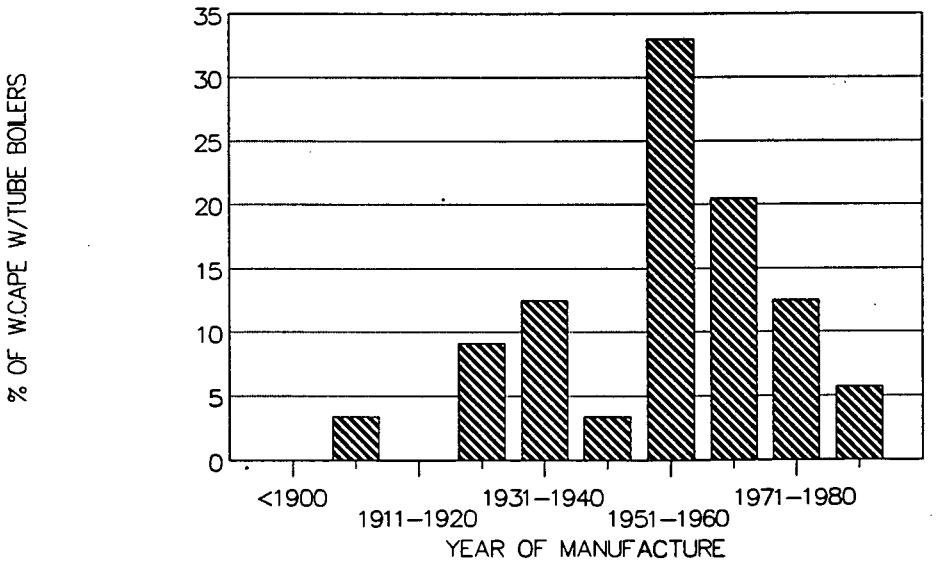
W/TUBE BOILER DISTRIBUTION BY AGE FOR NATAL



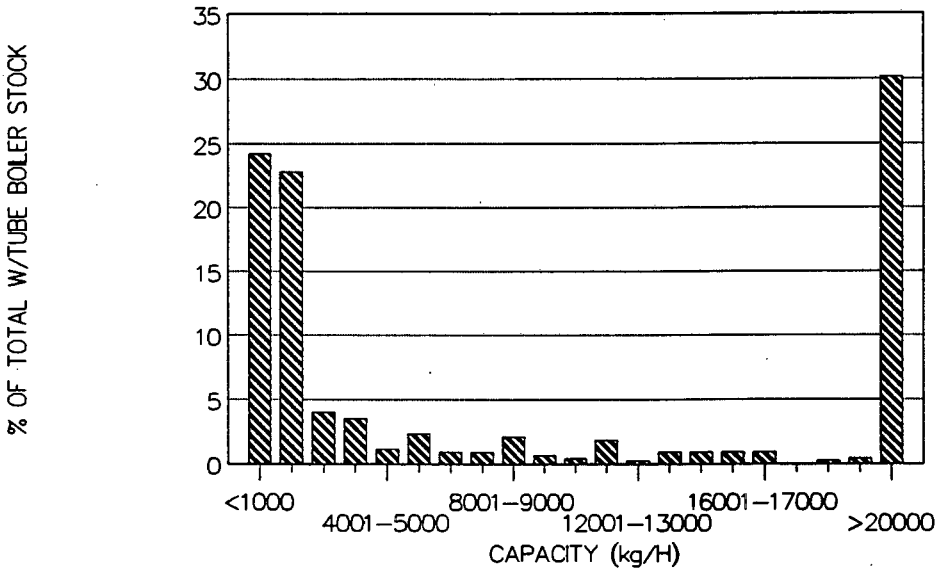
W/TUBE BOILER DISTRIBUTION BY AGE FOR THE EASTERN CAPE



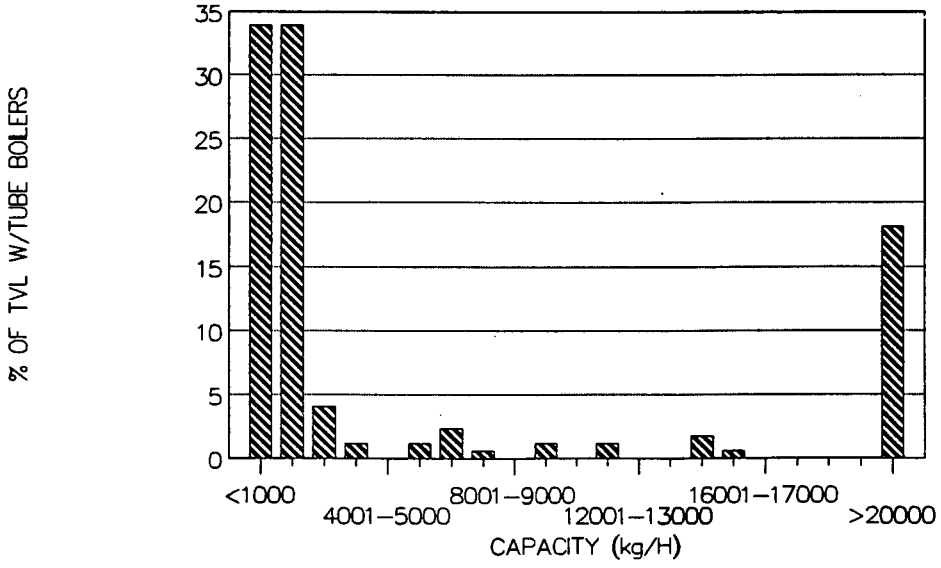
W/TUBE BOILER DISTRIBUTION BY AGE FOR THE WESTERN CAPE



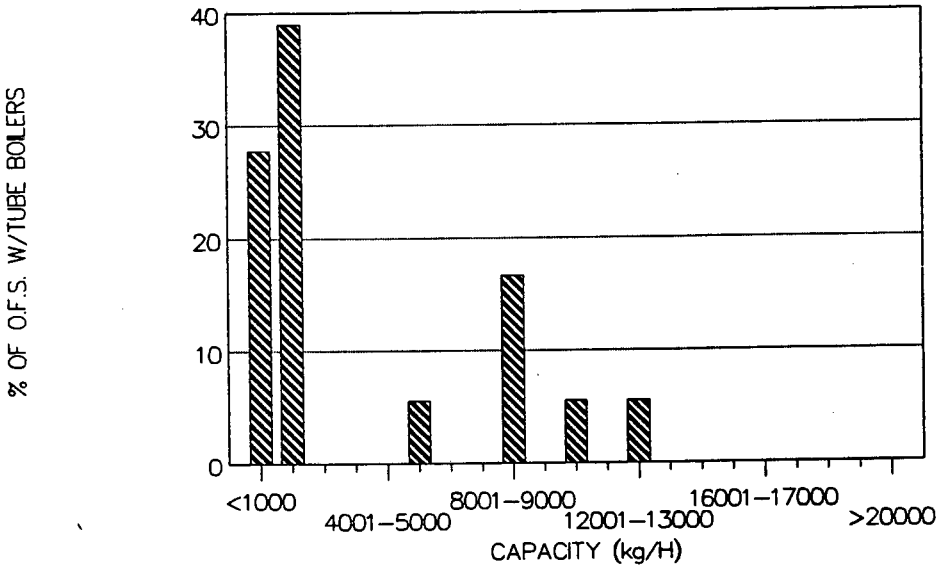
W/TUBE BOILER DISTRIBUTION BY CAPACITY SOUTH AFRICAN BOILER STOCK



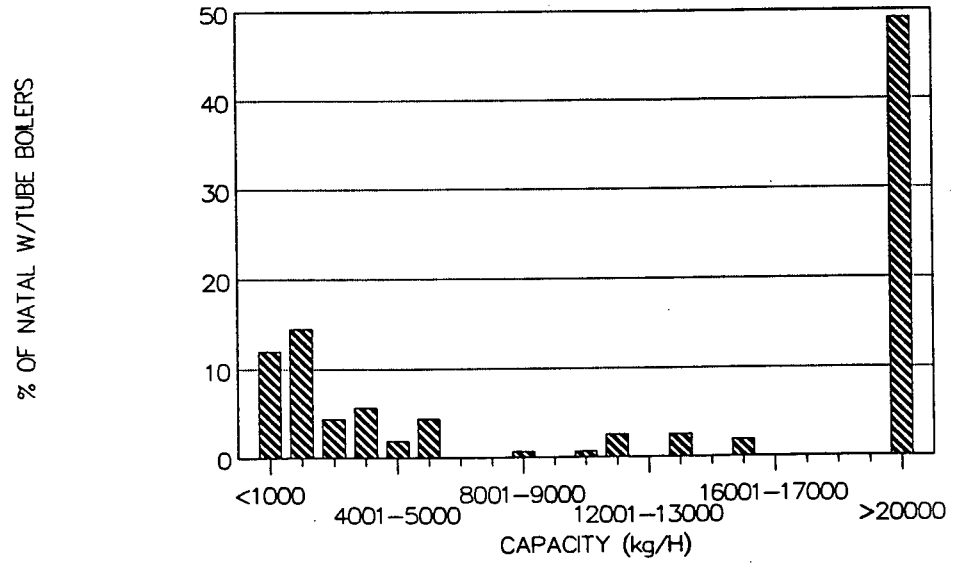
W/TUBE BOILER DISTRIBUTION BY CAPACITY FOR THE TRANSVAAL



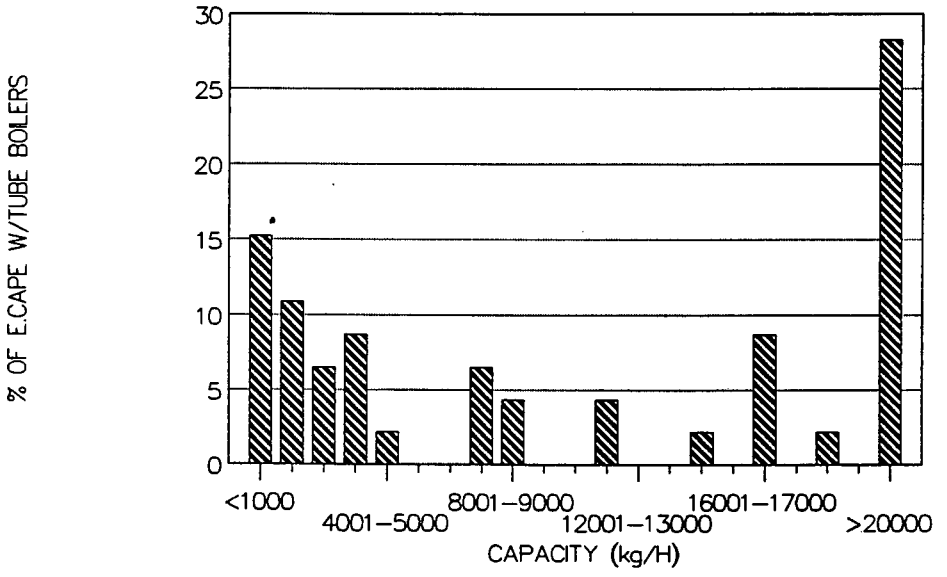
W/TUBE BOILER DISTRIBUTION BY CAPACITY FOR THE ORANGE FREE STATE



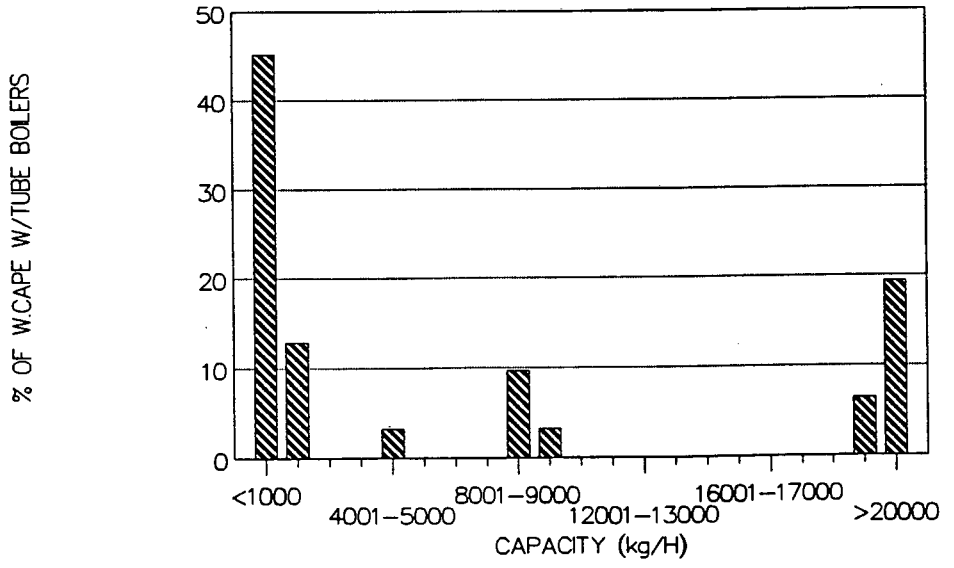
W/TUBE BOILER DISTRIBUTION BY CAPACITY FOR NATAL



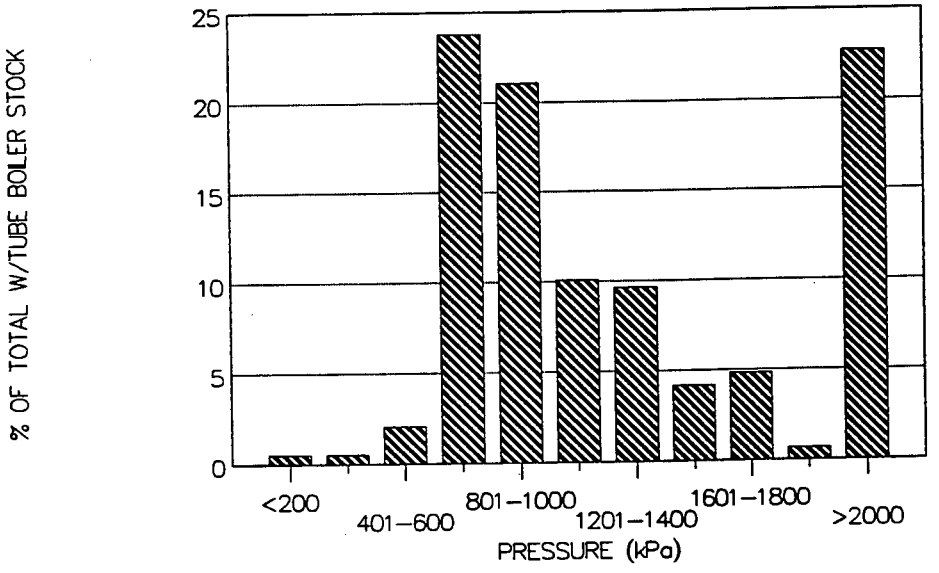
W/TUBE BOILER DISTRIBUTION BY CAPACITY FOR THE EASTERN CAPE



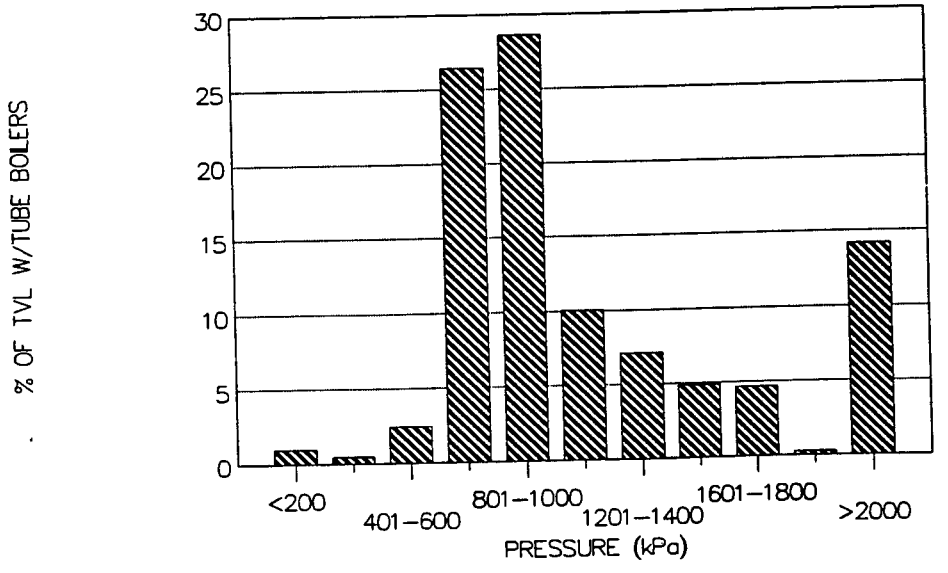
W/TUBE BOILER DISTRIBUTION BY CAPACITY FOR THE WESTERN CAPE



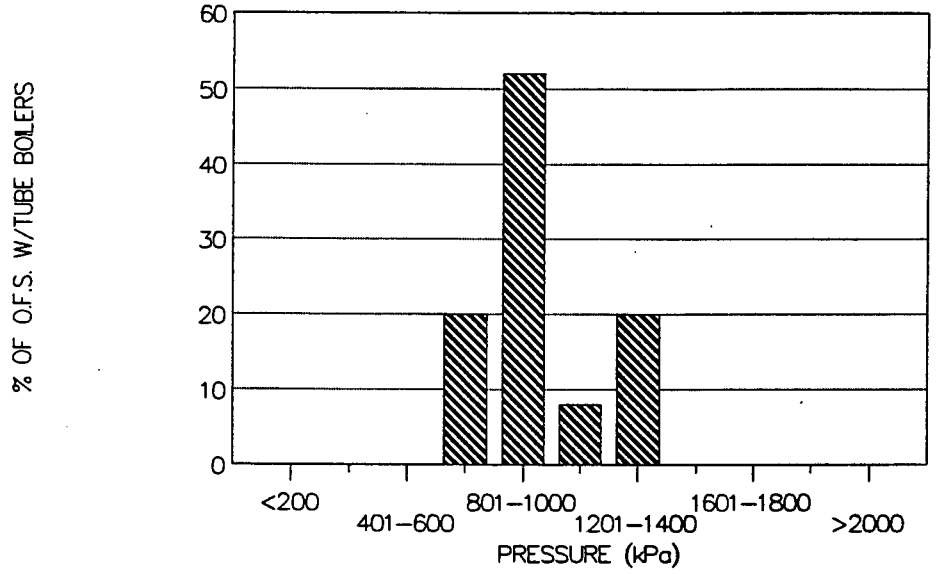
W/TUBE BOILER DISTRIBUTION BY PRESSURE SOUTH AFRICAN BOILER STOCK



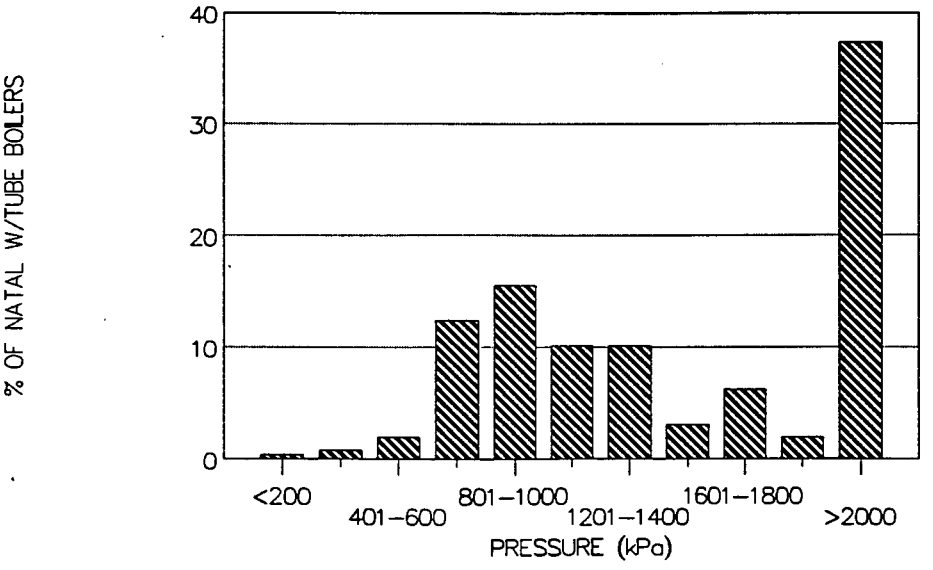
W/TUBE BOILER DISTRIBUTION BY PRESSURE FOR THE TRANSVAAL



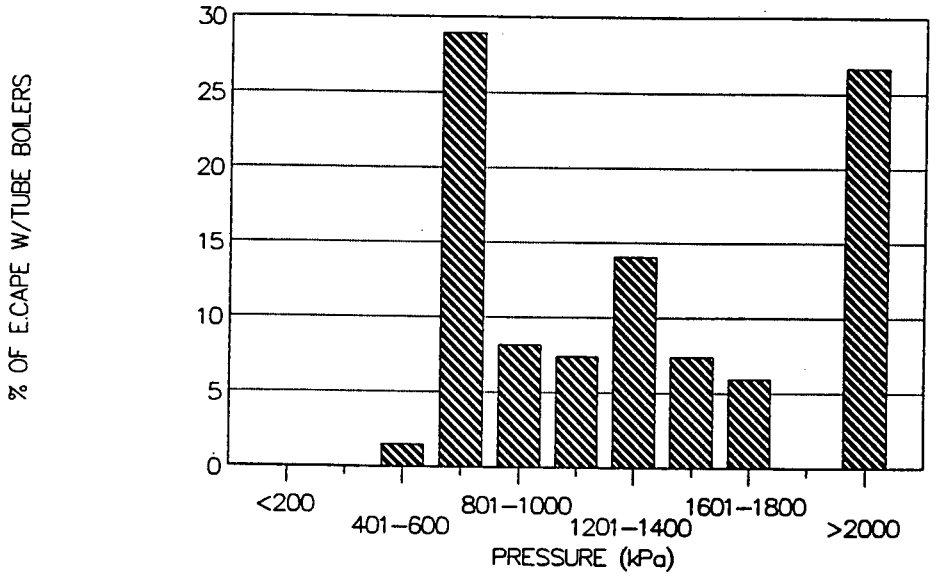
W/TUBE BOILER DISTRIBUTION BY PRESSURE FOR THE ORANGE FREE STATE



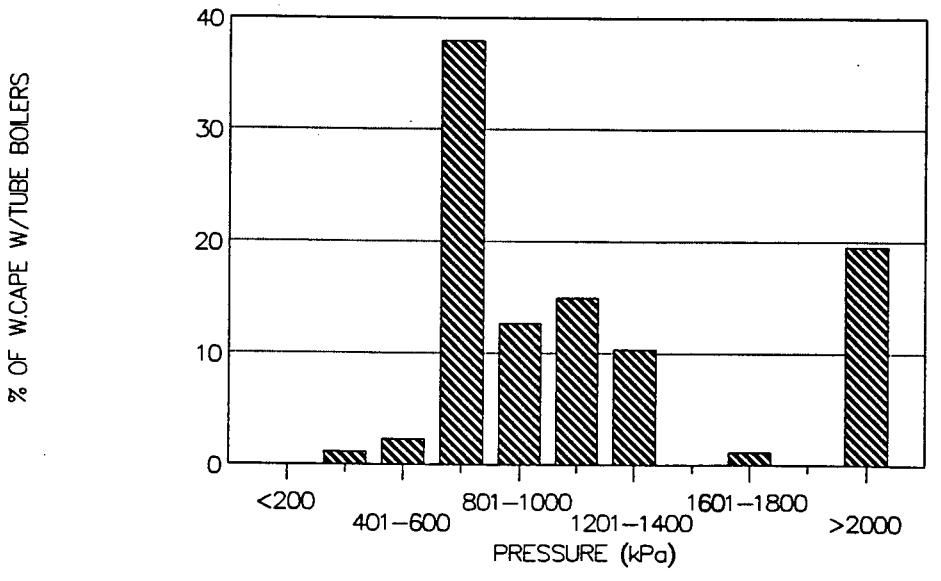
W/TUBE BOILER DISTRIBUTION BY PRESSURE FOR NATAL



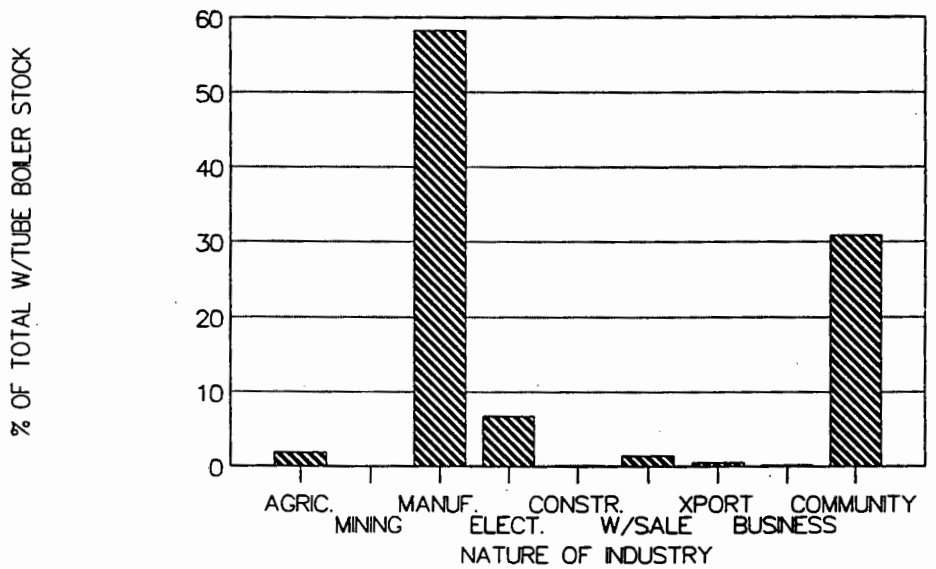
W/TUBE BOILER DISTRIBUTION BY PRESSURE FOR THE EASTERN CAPE



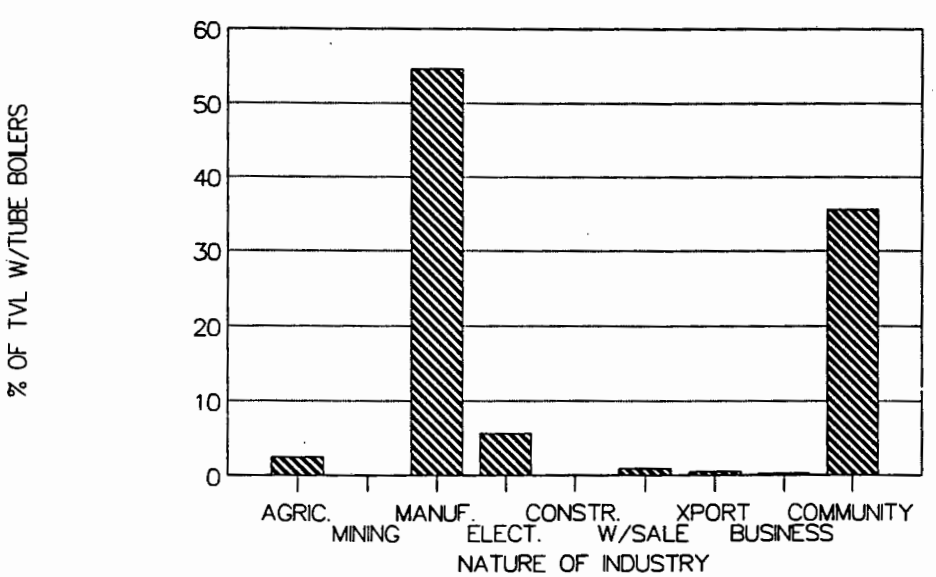
W/TUBE BOILER DISTRIBUTION BY PRESSURE FOR THE WESTERN CAPE



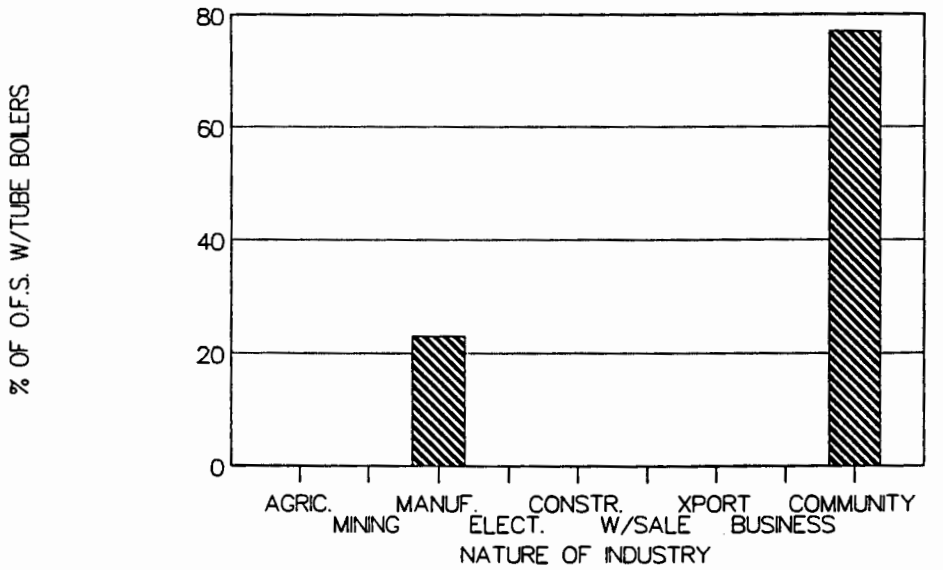
W/TUBE BOILER DISTRIBUTION BY USAGE SOUTH AFRICAN BOILER STOCK



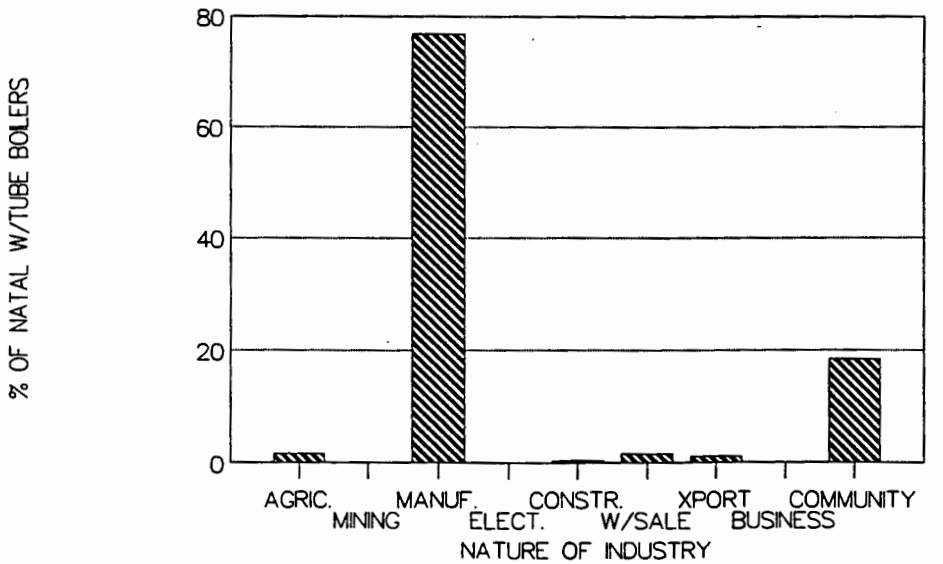
W/TUBE BOILER DISTRIBUTION BY USAGE FOR THE TRANSVAAL



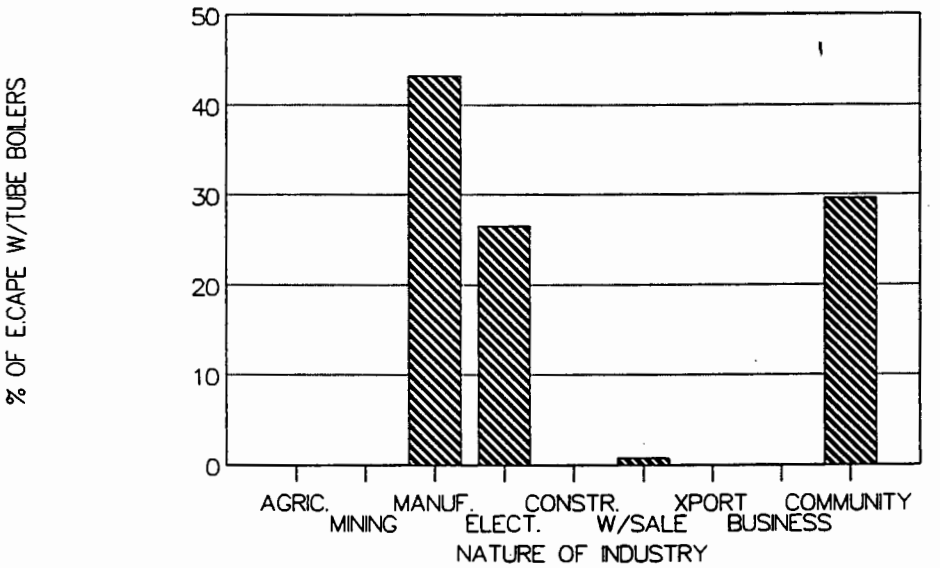
W/TUBE BOILER DISTRIBUTION BY USAGE FOR THE ORANGE FREE STATE



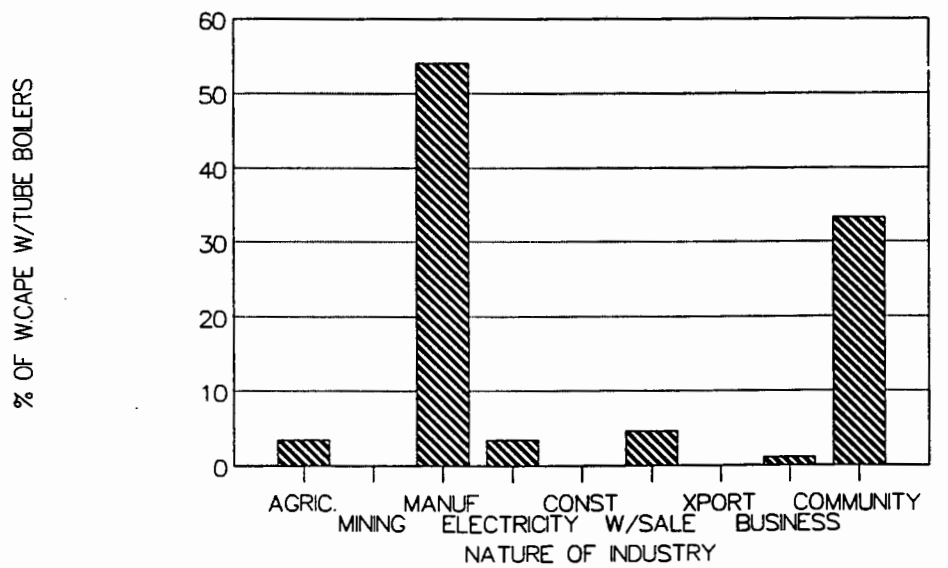
W/TUBE BOILER DISTRIBUTION BY USAGE FOR NATAL



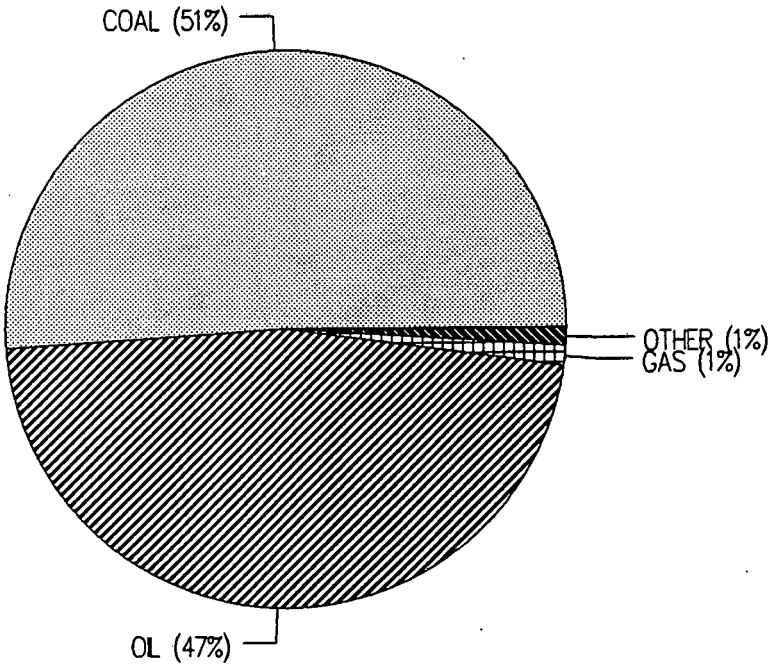
W/TUBE BOILER DISTRIBUTION BY USAGE FOR THE EASTERN CAPE



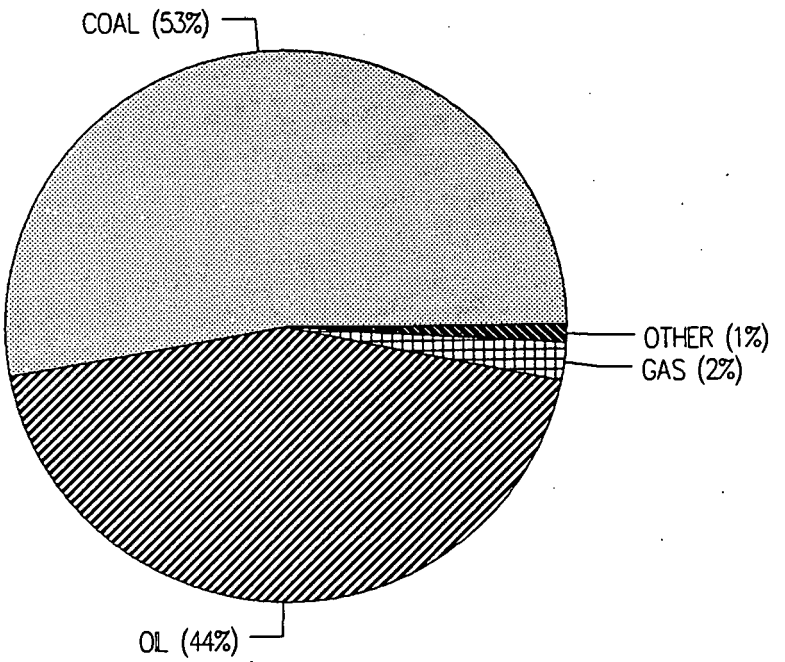
W/TUBE BOILER DISTRIBUTION BY USAGE FOR THE WESTERN CAPE



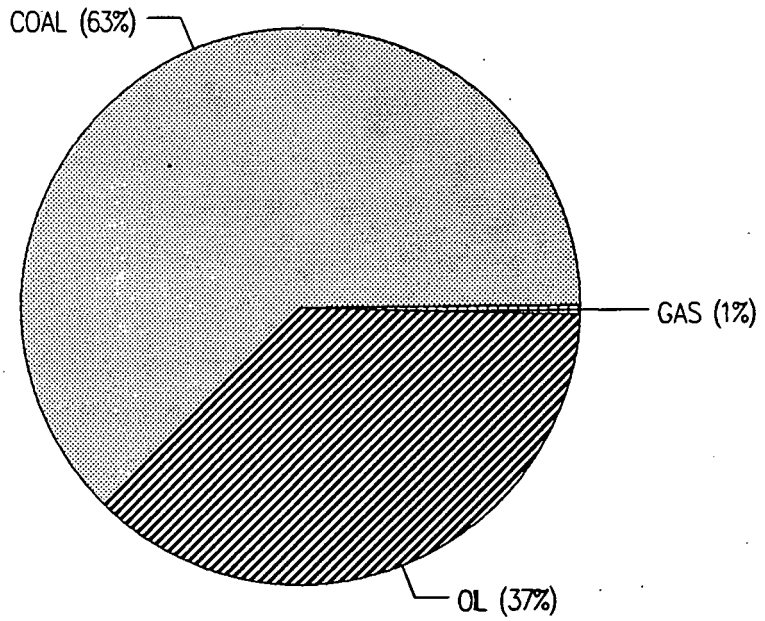
SHELL/VERT BOILER DISTRIBUTION BY FUEL SOUTH AFRICAN BOILER STOCK



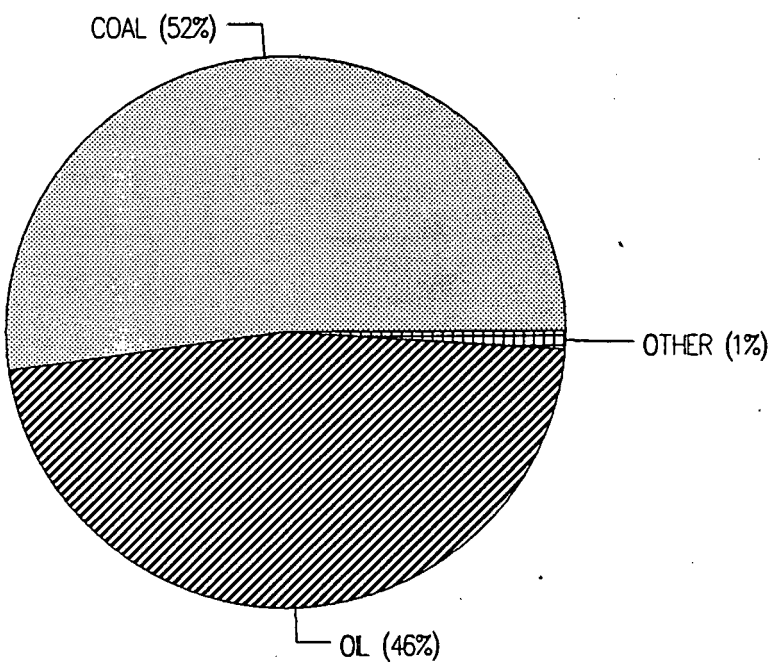
SHELL/VERT BOILER DISTRIBUTION BY FUEL FOR THE TRANSVAAL



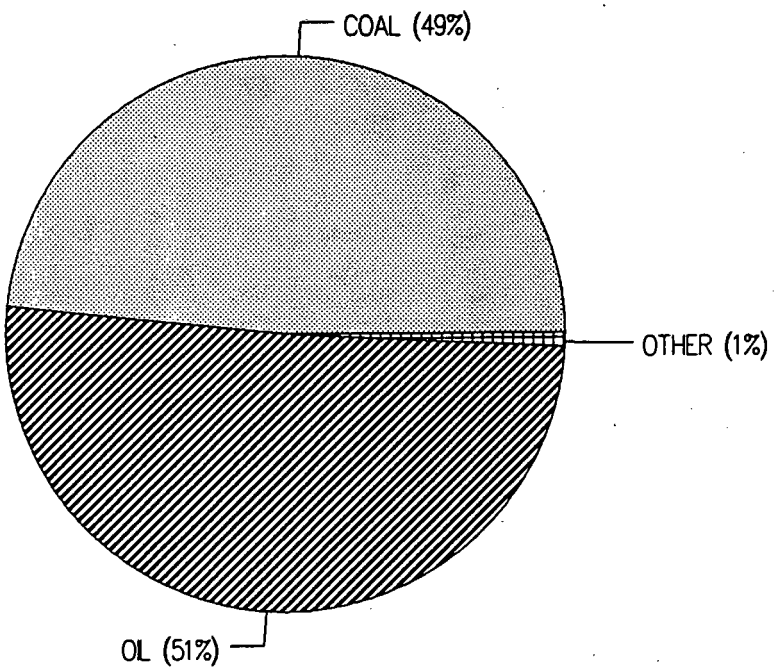
SHELL BOILER DISTRIBUTION BY FUEL TYPE FOR THE ORANGE FREE STATE



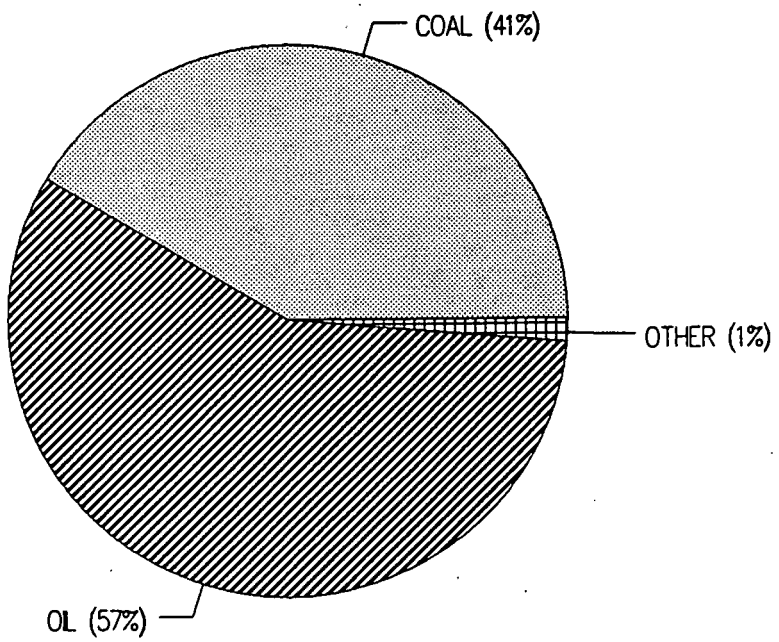
SHELL/VERT BOILER DISTRIBUTION BY FUEL FOR NATAL



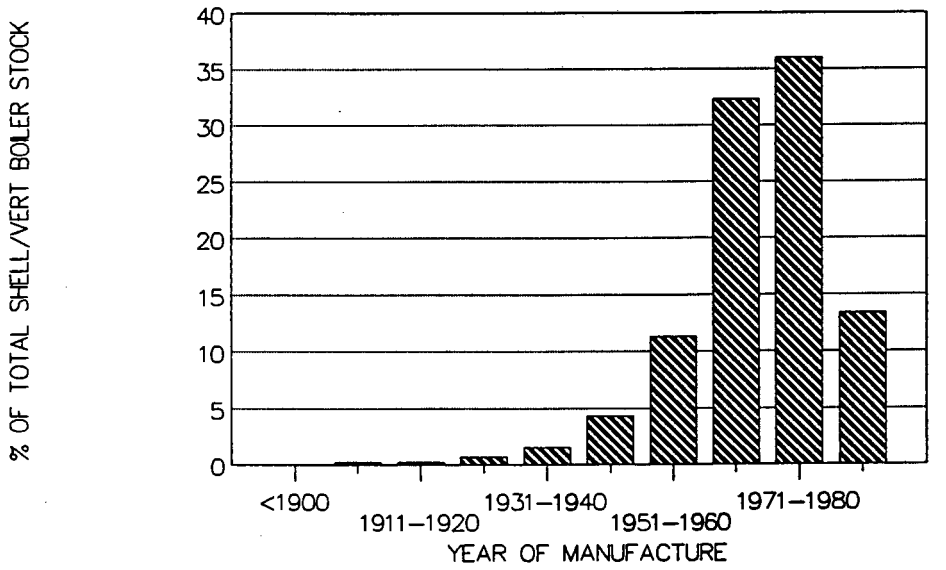
SHELL/VERT BOILER DISTRIBUTION BY FUEL FOR THE EASTERN CAPE



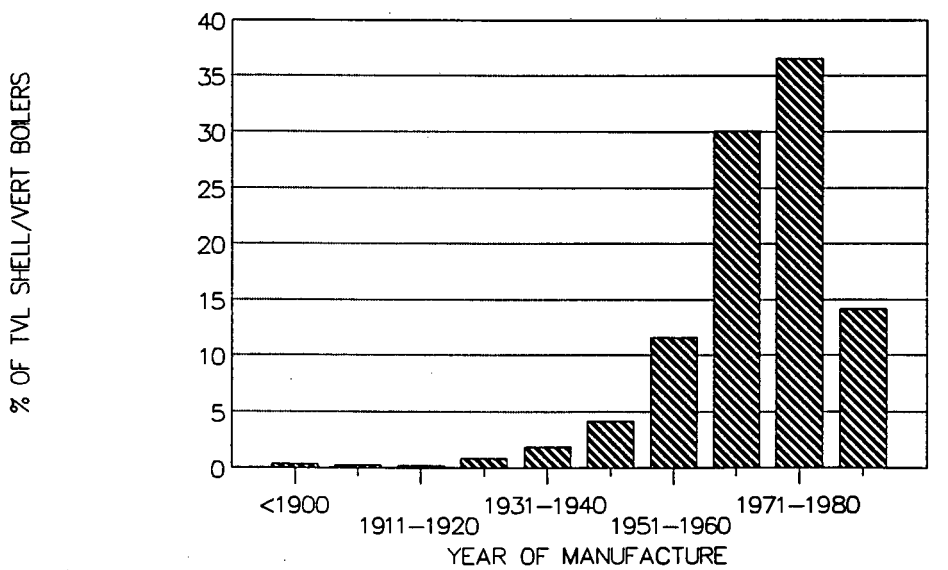
SHELL/VERT BOILER DISTRIBUTION BY FUEL FOR THE WESTERN CAPE



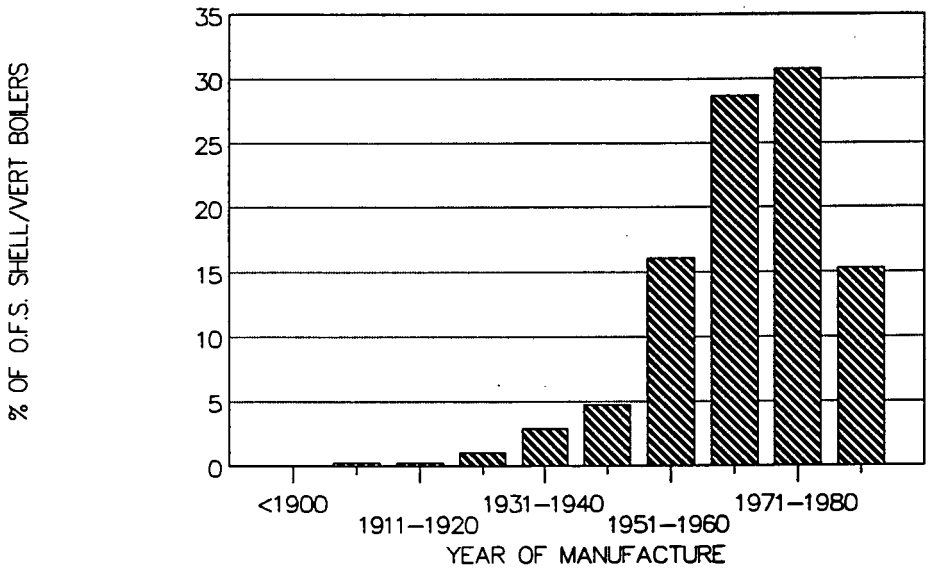
SHELL/VERT BOILER DISTRIBUTION BY AGE SOUTH AFRICAN BOILER STOCK



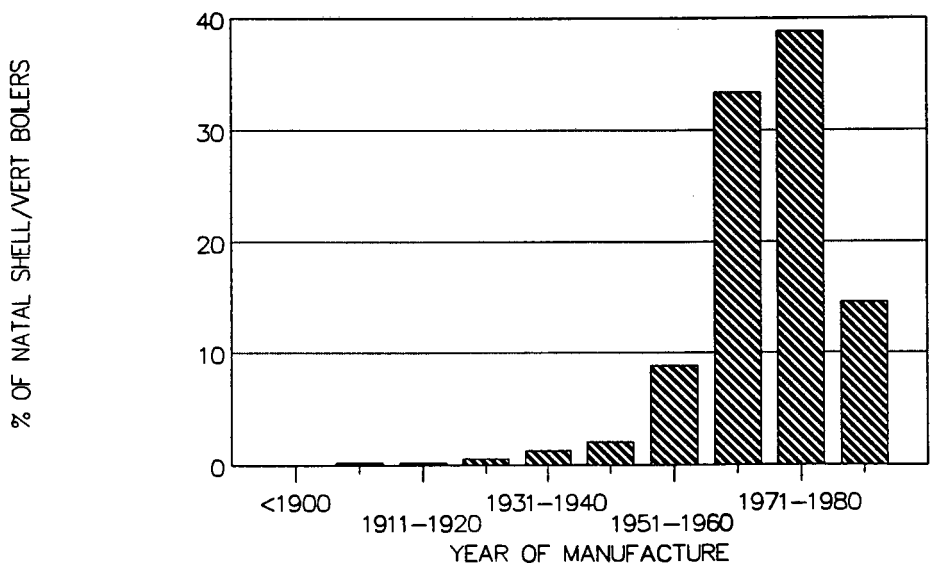
SHELL/VERT BOILER DISTRIBUTION BY AGE FOR THE TRANSVAAL



SHELL/VERT BOILER DISTRIBUTION BY AGE FOR THE ORANGE FREE STATE



SHELL/VERT BOILER DISTRIBUTION BY AGE FOR NATAL



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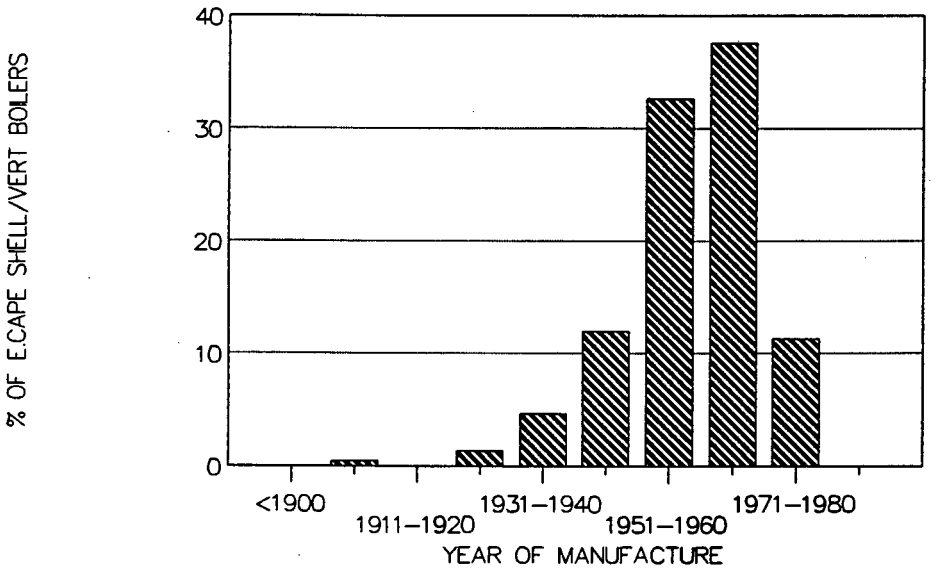
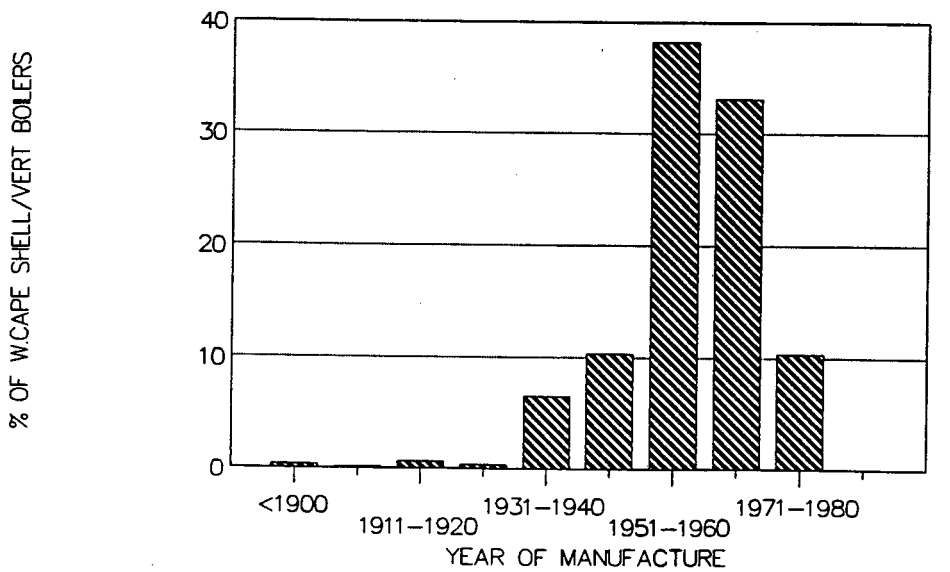
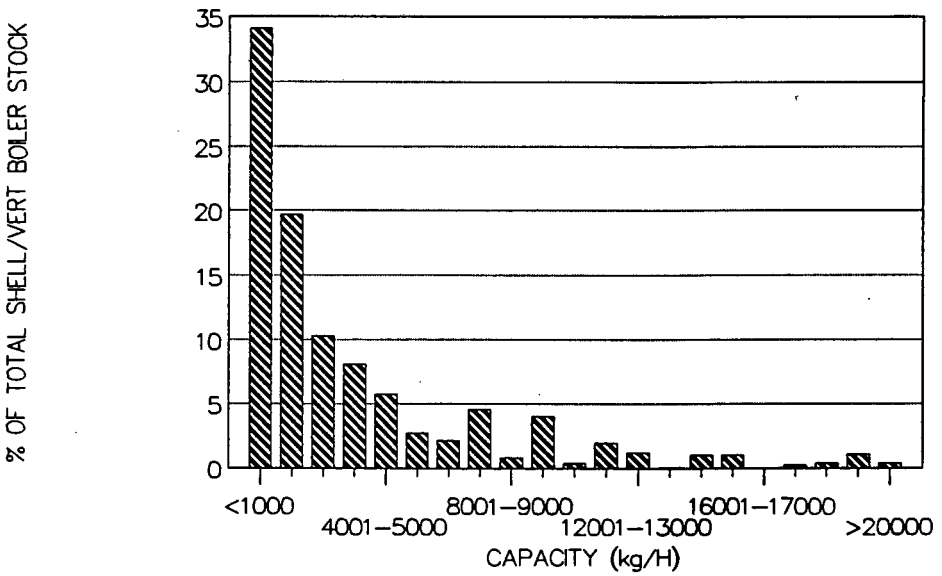


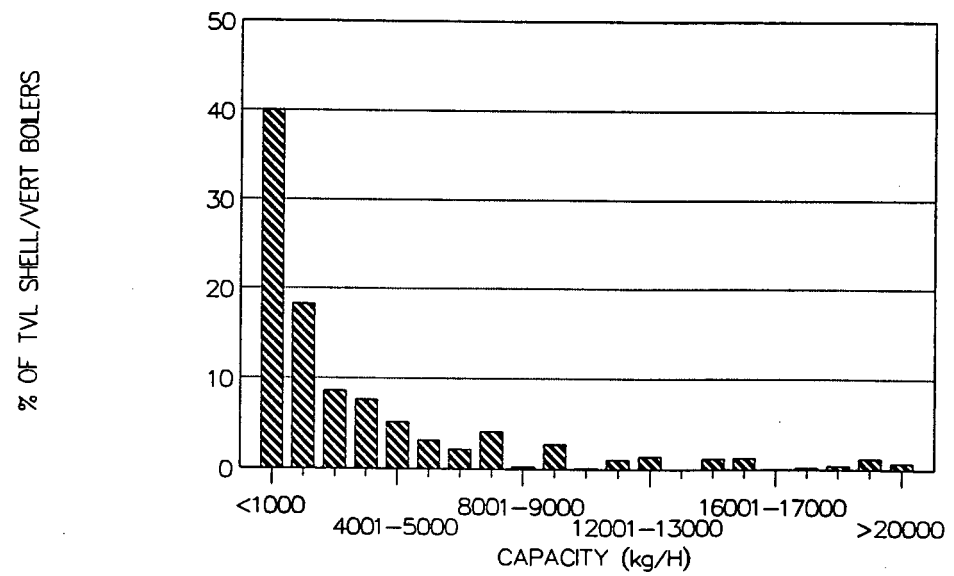
SHELL/VERT BOILER DISTRIBUTION BY AGE FOR THE WESTERN CAPE



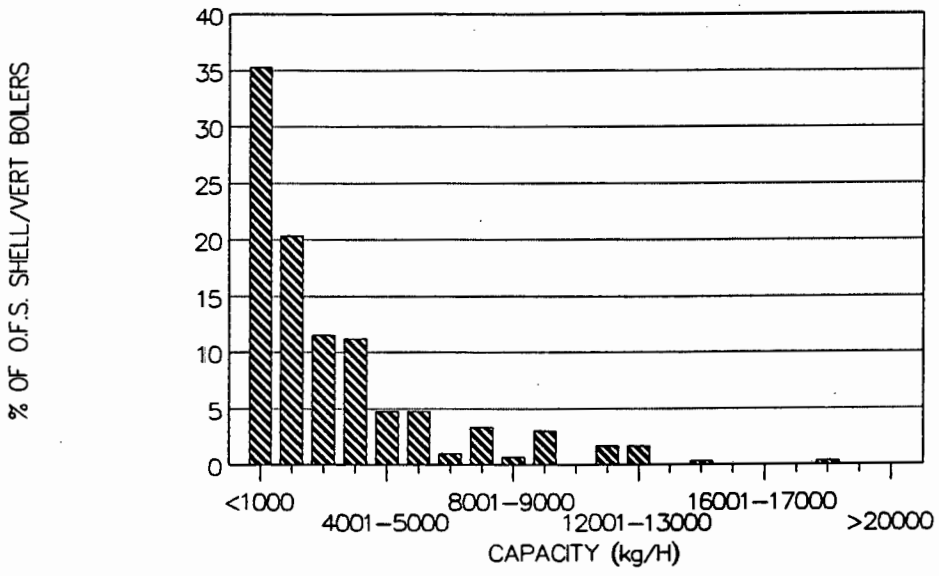
SHELL/VERT BOILER DISTRIBUTION BY CAP.
SOUTH AFRICAN BOILER STOCK



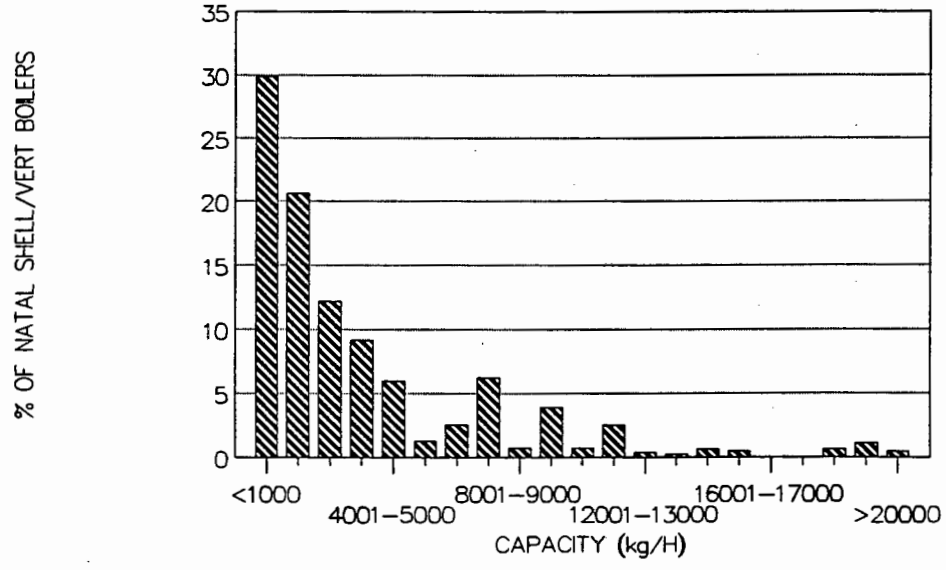
SHELL/VERT BOILER DISTRIBUTION BY CAP.
FOR THE TRANSVAAL



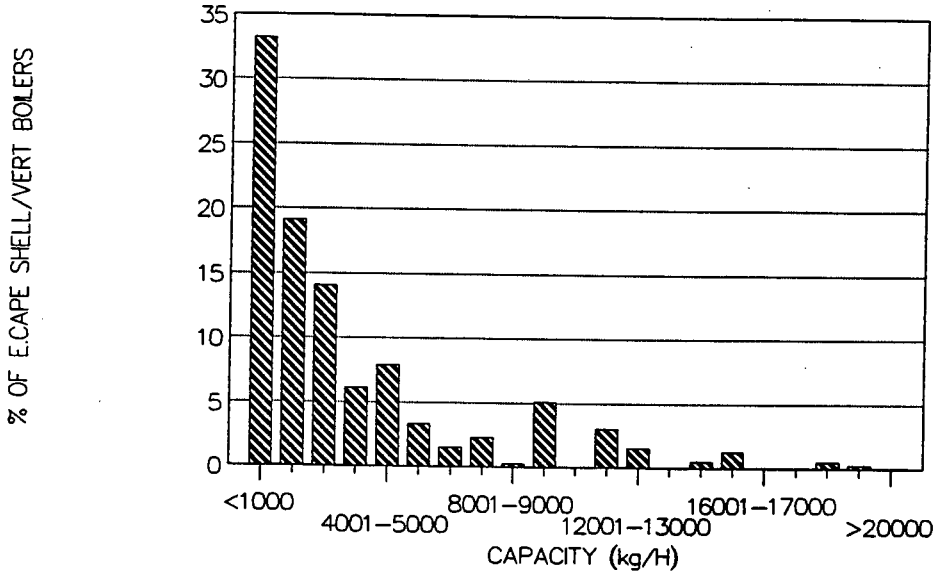
SHELL/VERT BOILER DISTRIBUTION BY CAP. FOR THE ORANGE FREE STATE



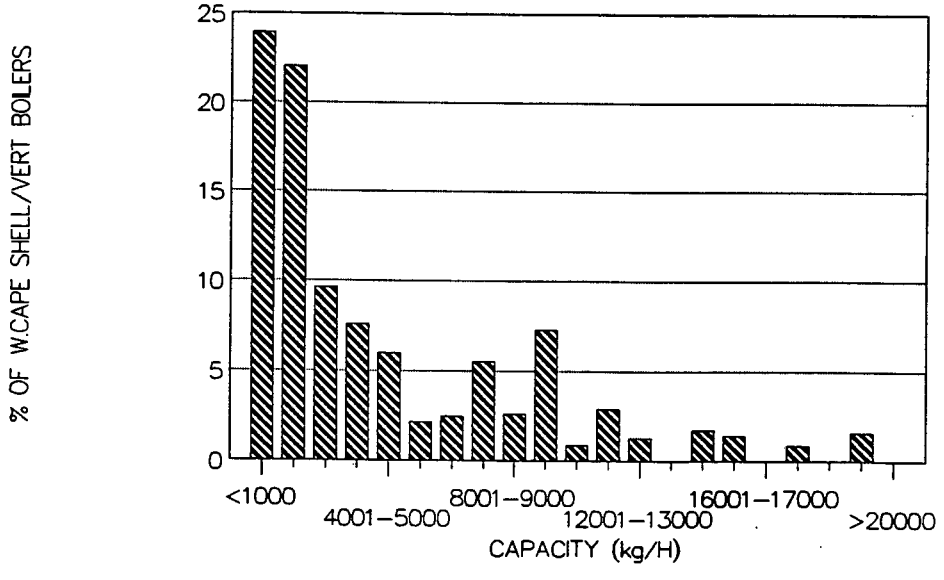
SHELL/VERT BOILER DISTRIBUTION BY CAP. FOR NATAL



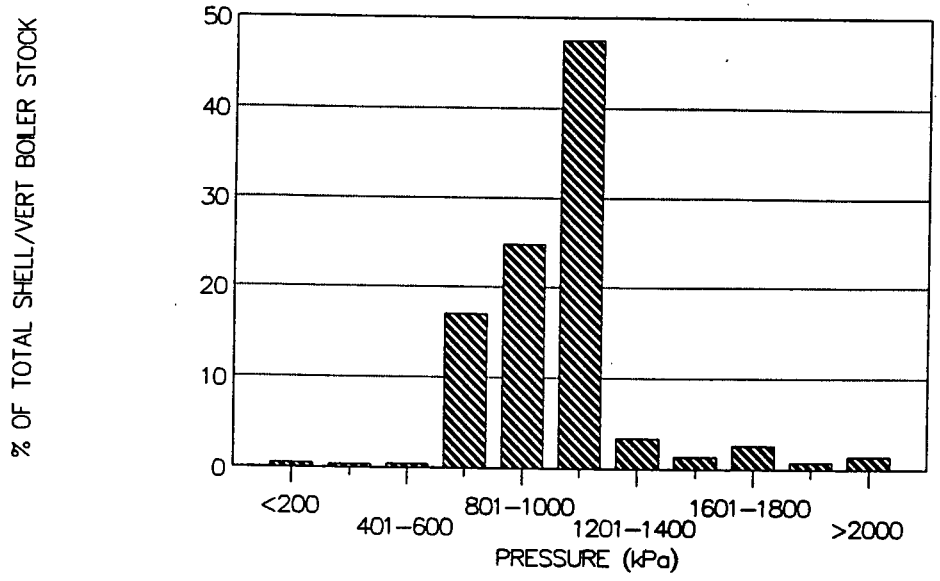
SHELL/VERT BOILER DISTRIBUTION BY CAP. FOR THE EASTERN CAPE



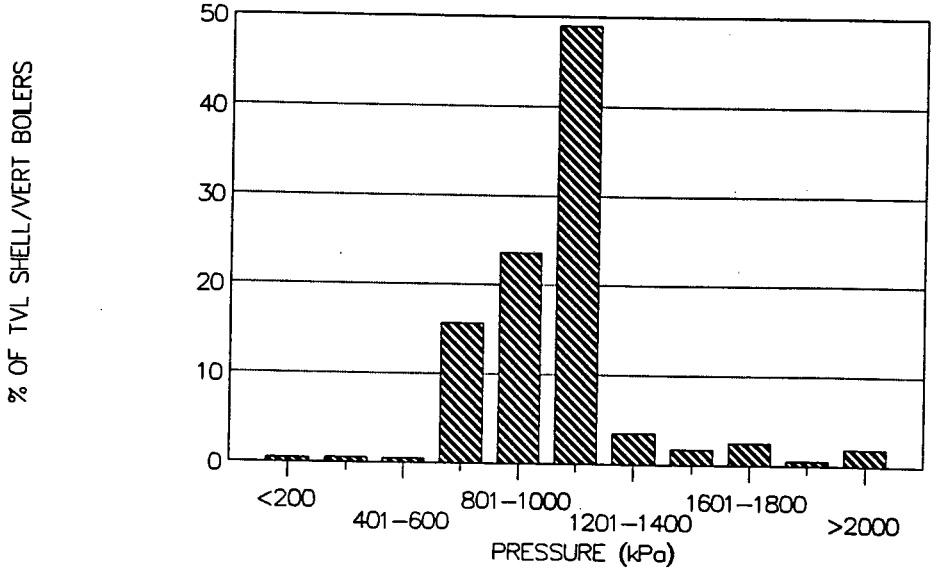
SHELL/VERT BOILER DISTRIBUTION BY CAP. FOR THE WESTERN CAPE



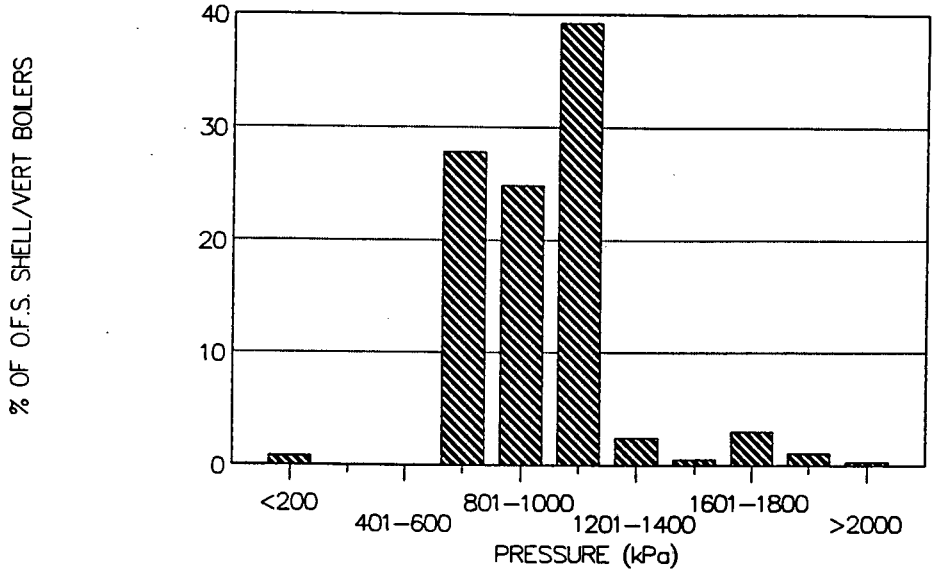
SHELL/VERT BOILER DISTRIBUTION BY PRES. SOUTH AFRICAN BOILER STOCK



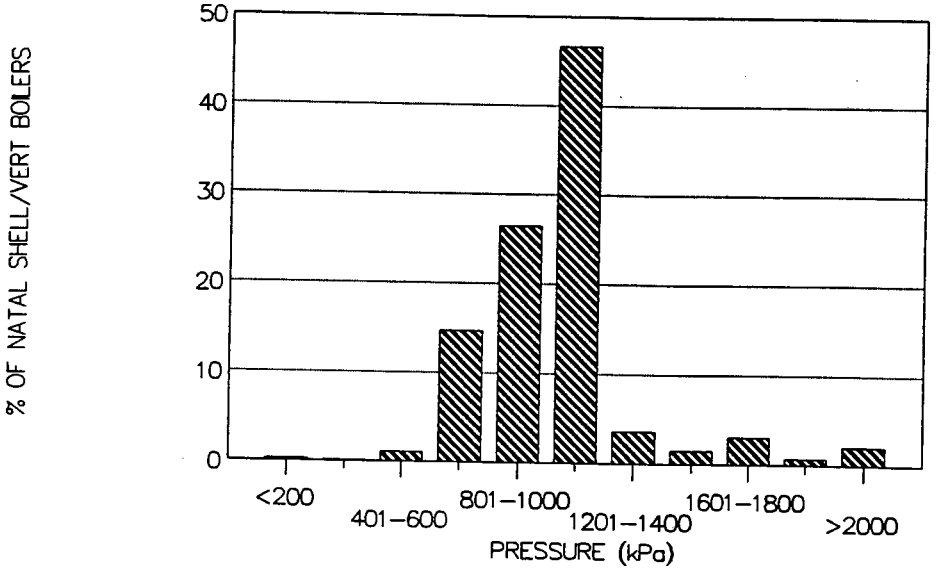
SHELL/VERT BOILER DISTRIBUTION BY PRES. FOR THE TRANSVAAL



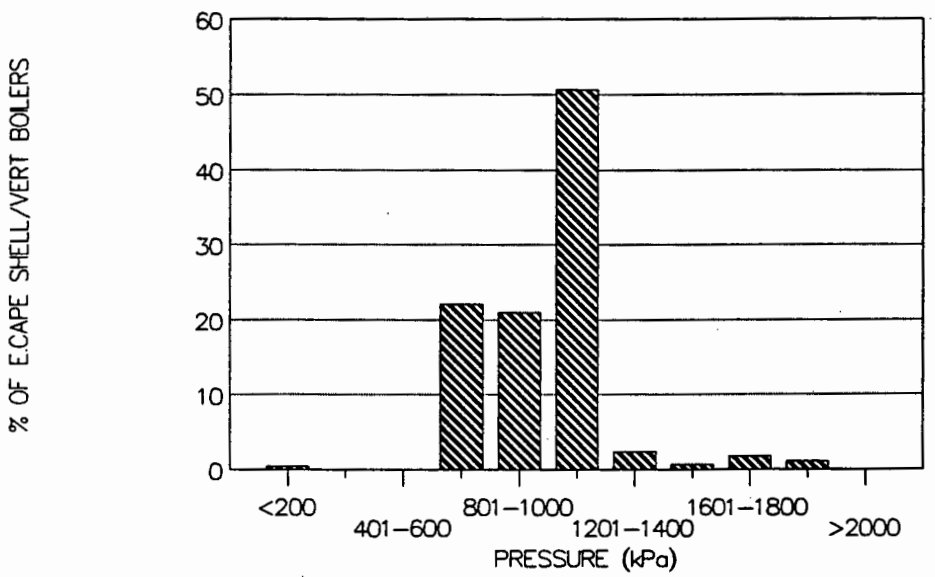
SHELL/VERT BOILER DISTRIBUTION BY PRESS FOR THE ORANGE FREE STATE



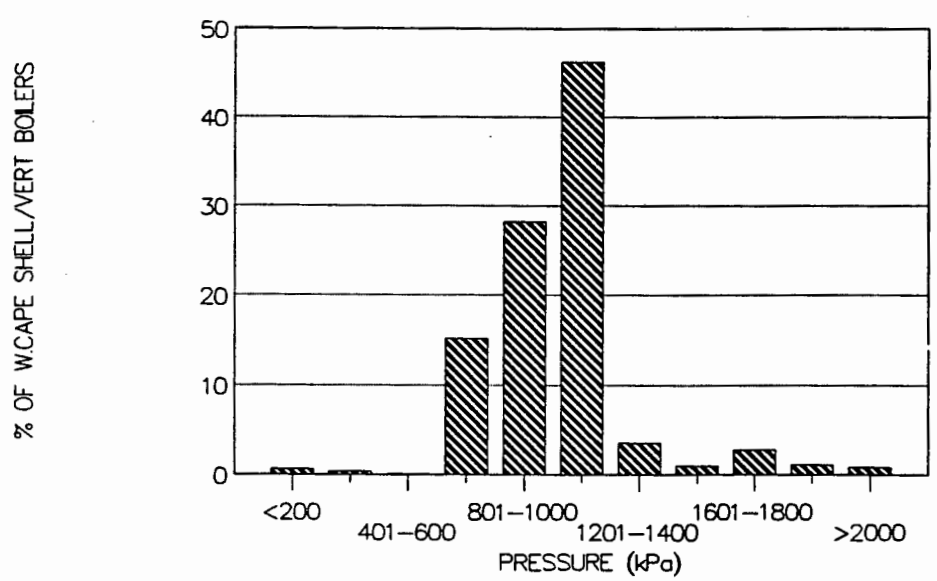
SHELL/VERT BOILER DISTRIBUTION BY PRES. FOR NATAL



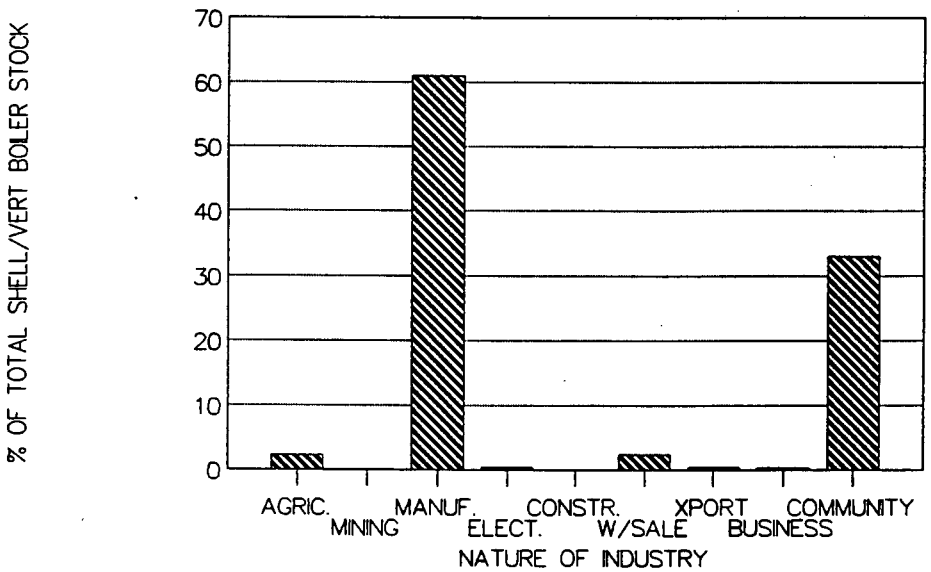
SHELL/VERT BOILER DISTRIBUTION BY PRESS FOR THE EASTERN CAPE



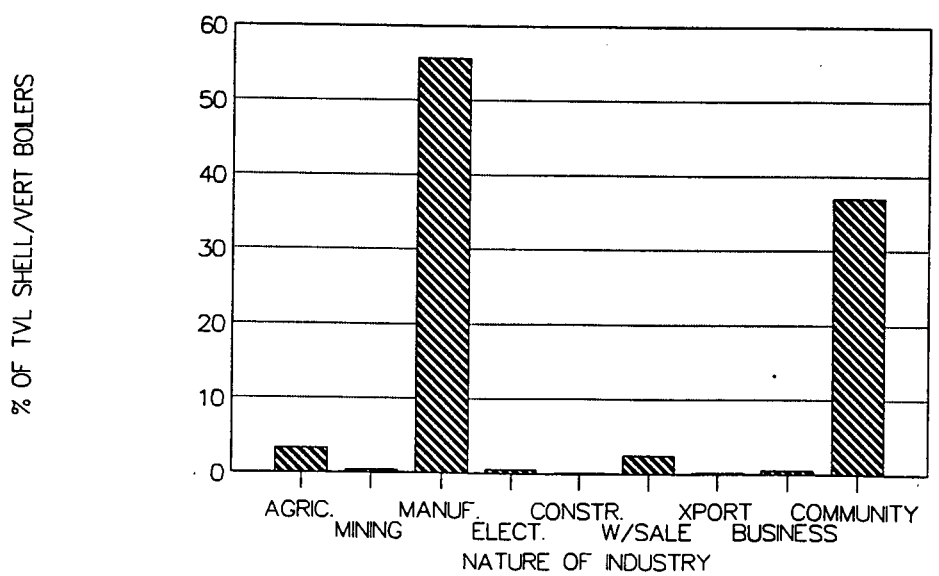
SHELL/VERT BOILER DISTRIBUTION BY PRES. FOR THE WESTERN CAPE



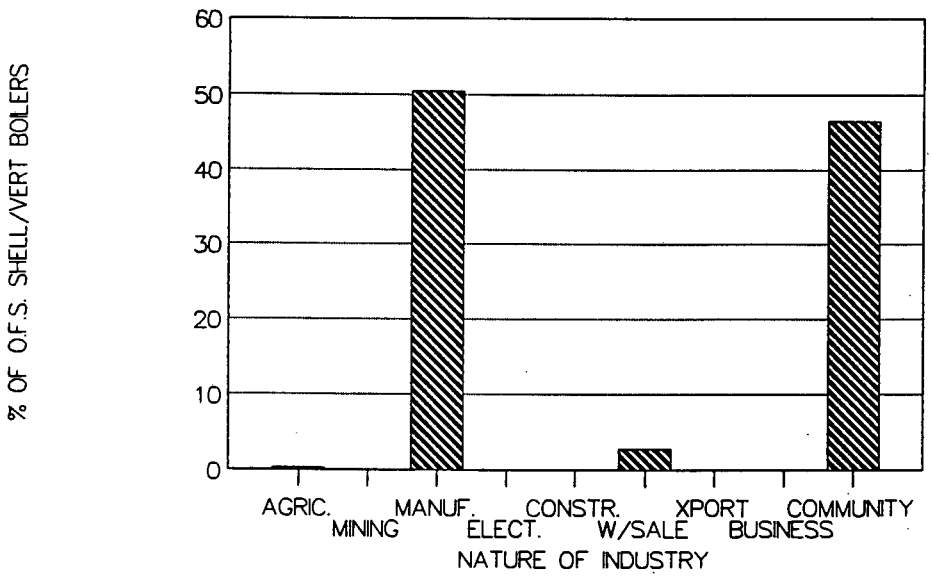
SHELL/VERT BOILER DISTRIBUTION BY USAGE SOUTH AFRICAN BOILER STOCK



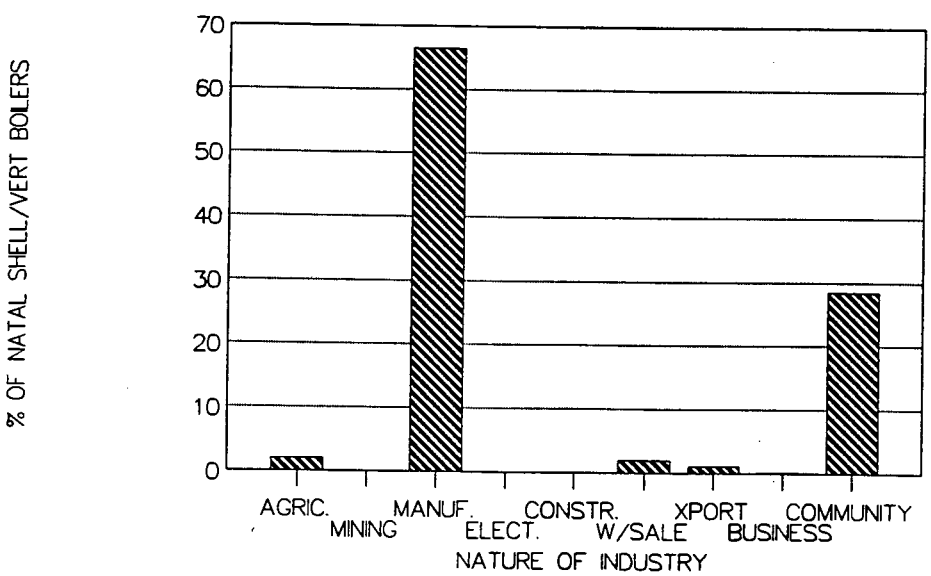
SHELL/VERT BOILER DISTRIBUTION BY USAGE FOR THE TRANSVAAL



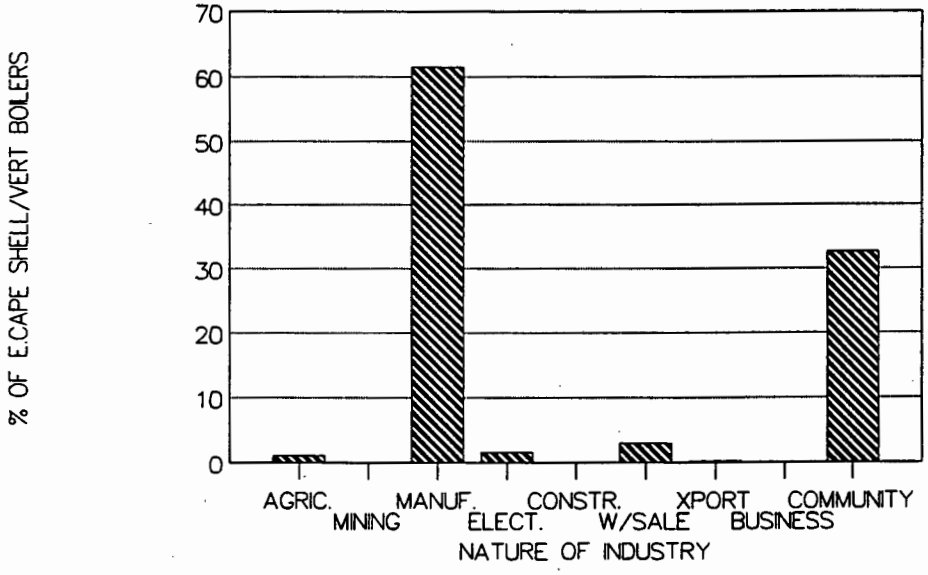
SHELL/VERT BOILER DISTRIBUTION BY USAGE FOR THE ORANGE FREE STATE



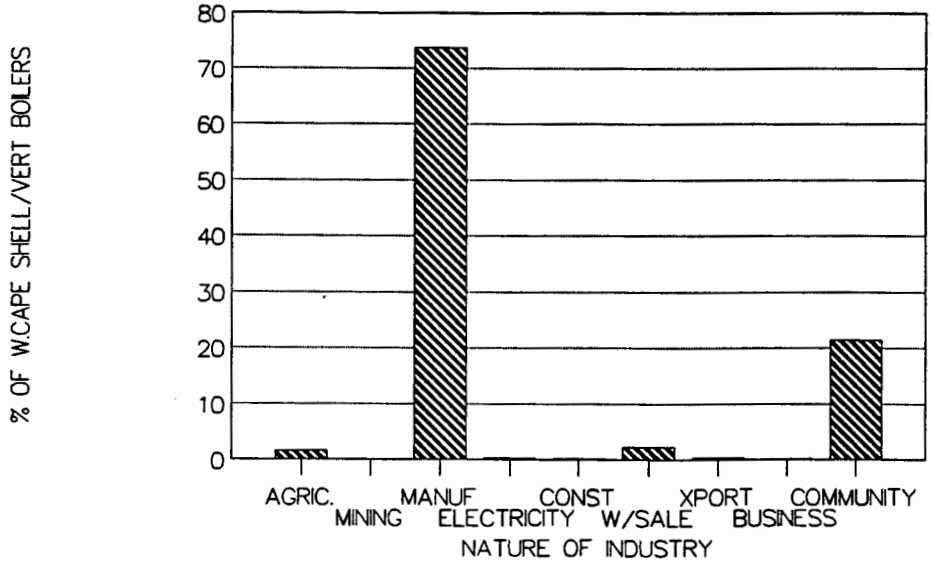
SHELL/VERT BOILER DISTRIBUTION BY USAGE FOR NATAL



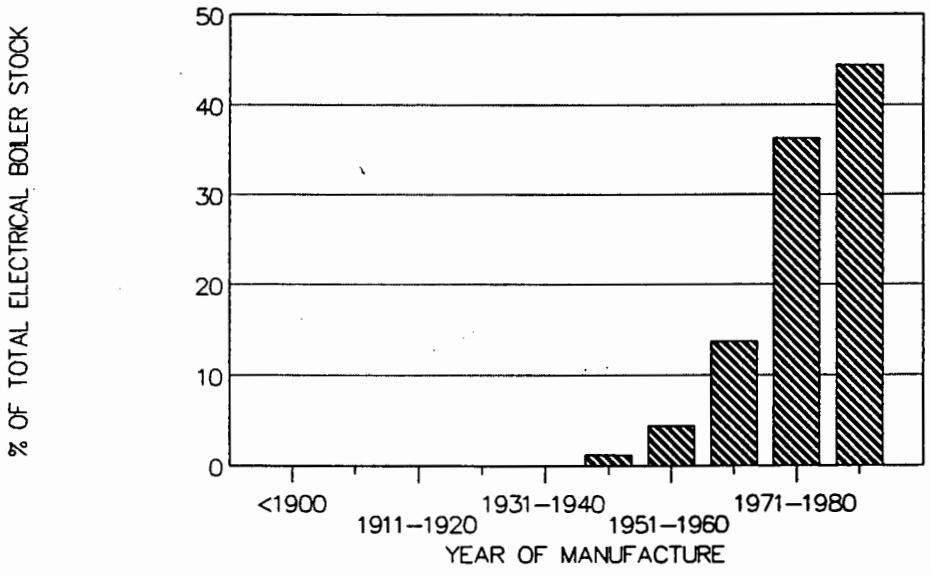
SHELL/VERT BOILER DISTRIBUTION BY USAGE FOR THE EASTERN CAPE



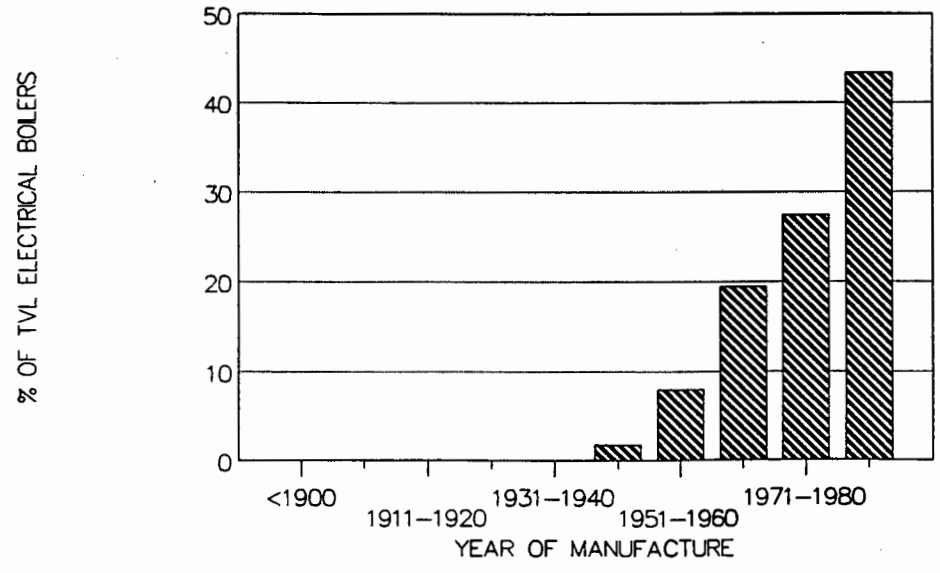
SHELL/VERT BOILER DISTRIBUTION BY USAGE FOR THE WESTERN CAPE



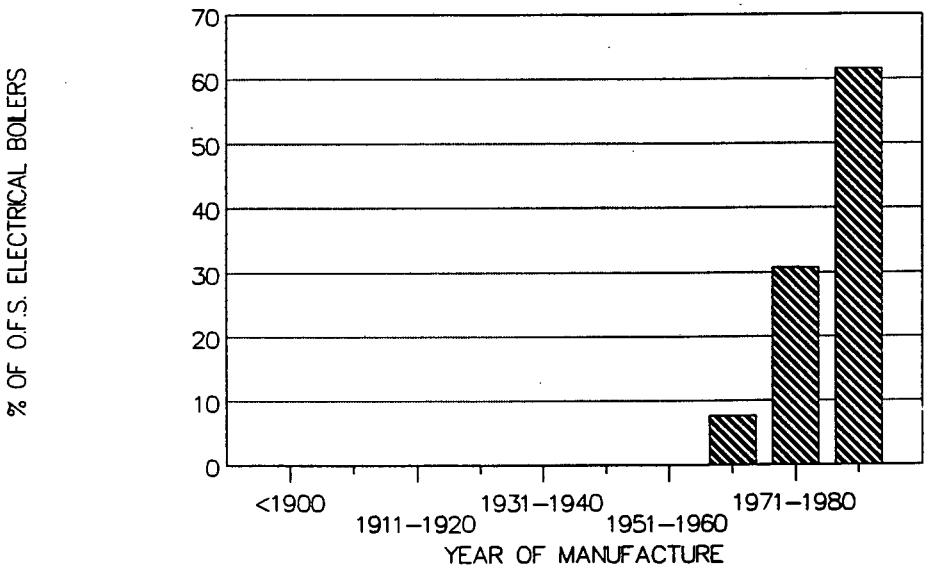
ELECTRICAL BOILER DISTRIBUTION BY AGE SOUTH AFRICAN BOILER STOCK



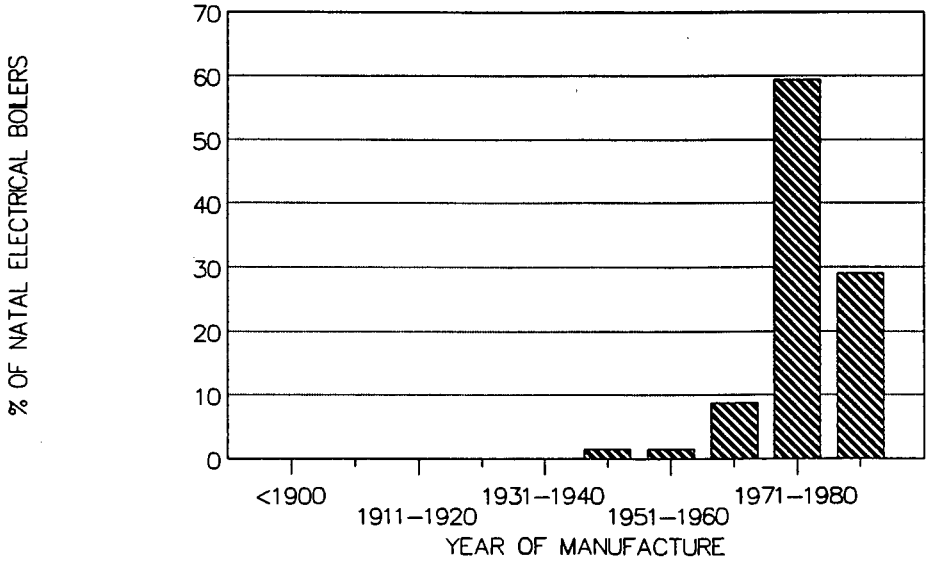
ELECTRICAL BOILER DISTRIBUTION BY AGE FOR THE TRANSVAAL



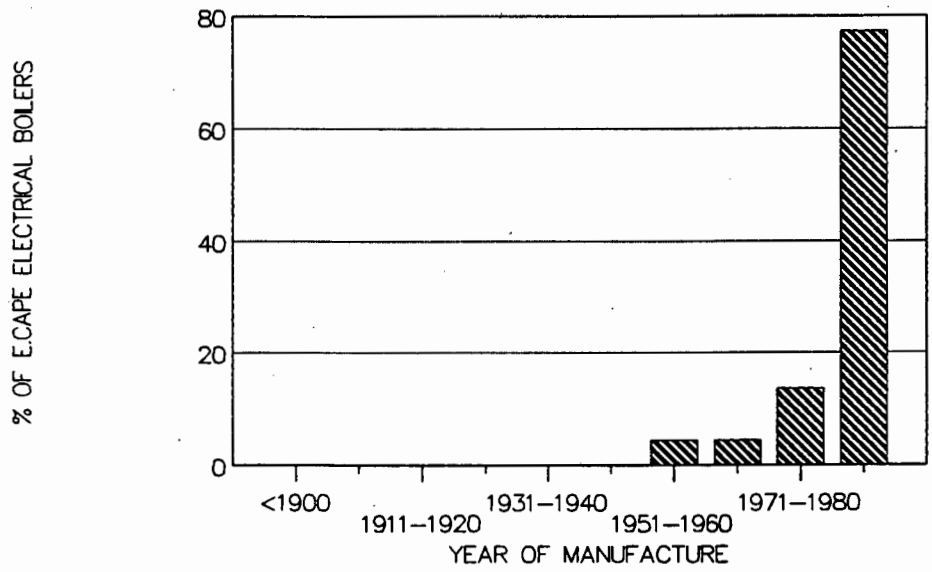
ELECTRICAL BOILER DISTRIBUTION BY AGE FOR THE ORANGE FREE STATE



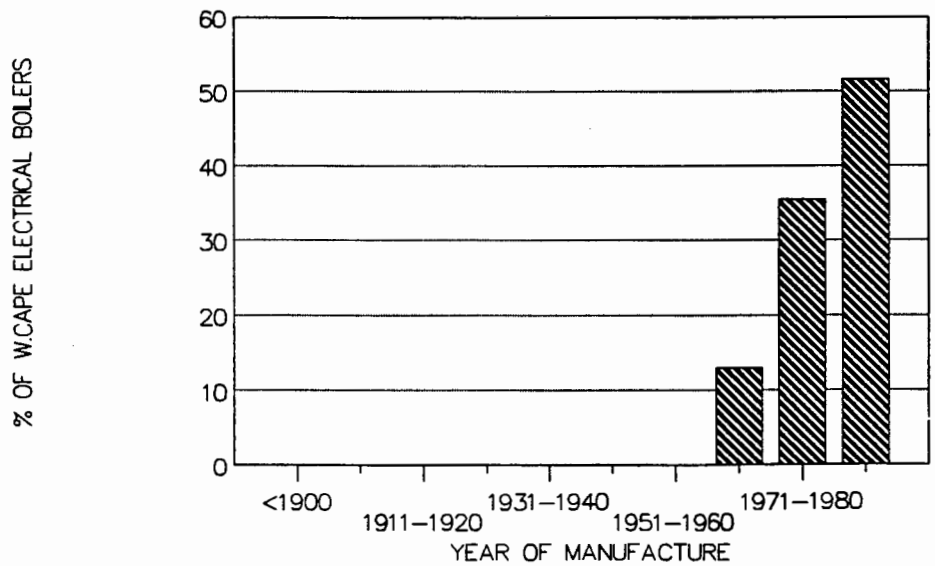
ELECTRICAL BOILER DISTRIBUTION BY AGE FOR NATAL



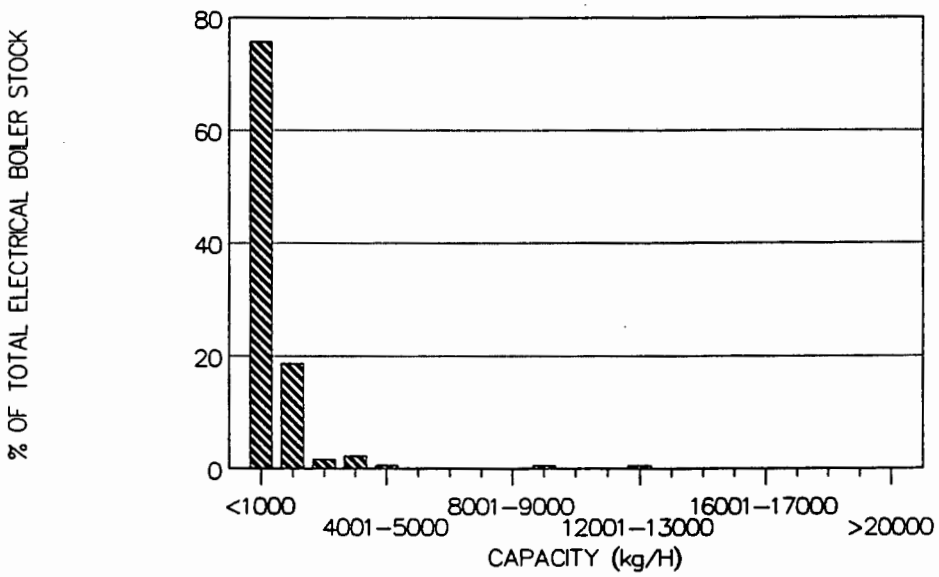
ELECTRICAL BOILER DISTRIBUTION BY AGE FOR THE EASTERN CAPE



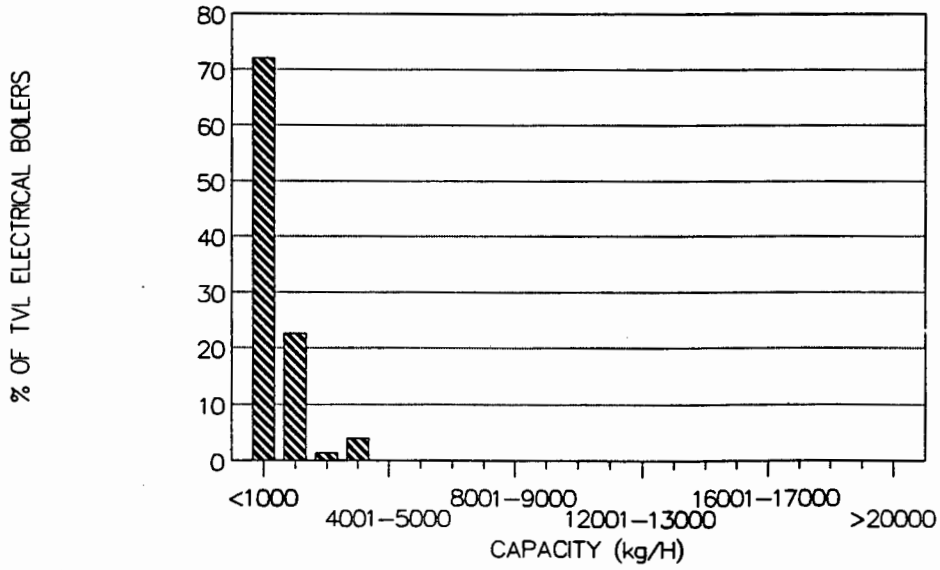
ELECTRICAL BOILER DISTRIBUTION BY AGE FOR THE WESTERN CAPE



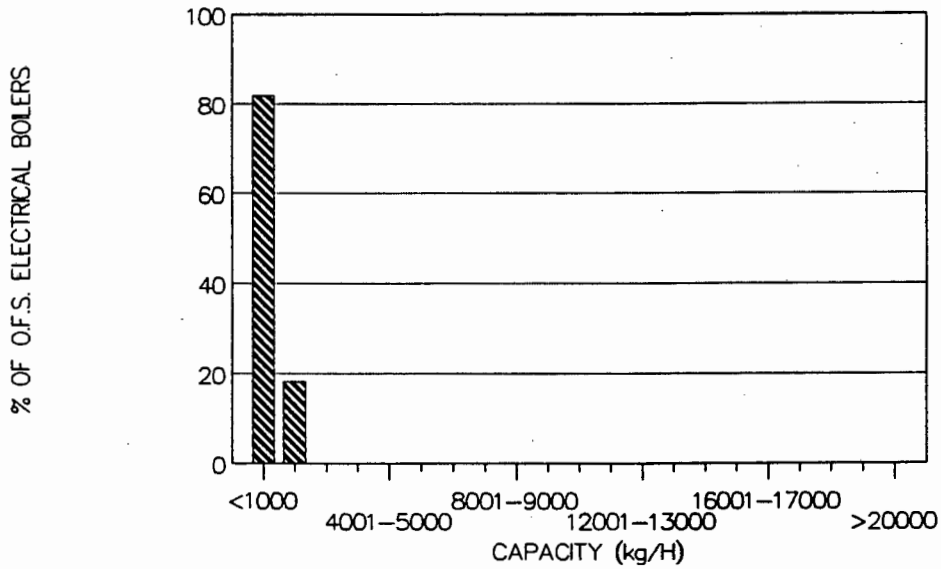
ELECTRICAL BOILER DISTRIBUTION BY CAP.
SOUTH AFRICAN BOILER STOCK



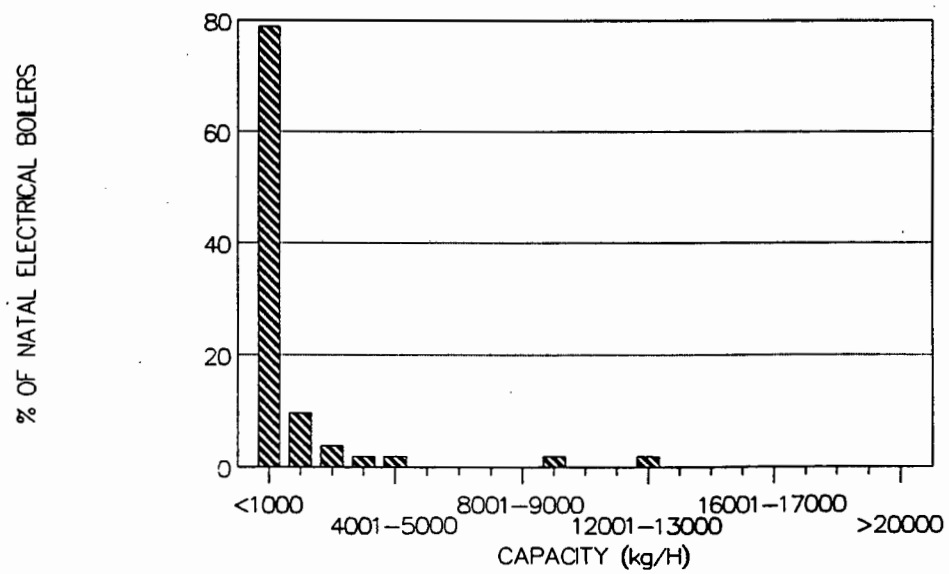
ELECTRICAL BOILER DISTRIBUTION BY CAP.
FOR THE TRANSVAAL



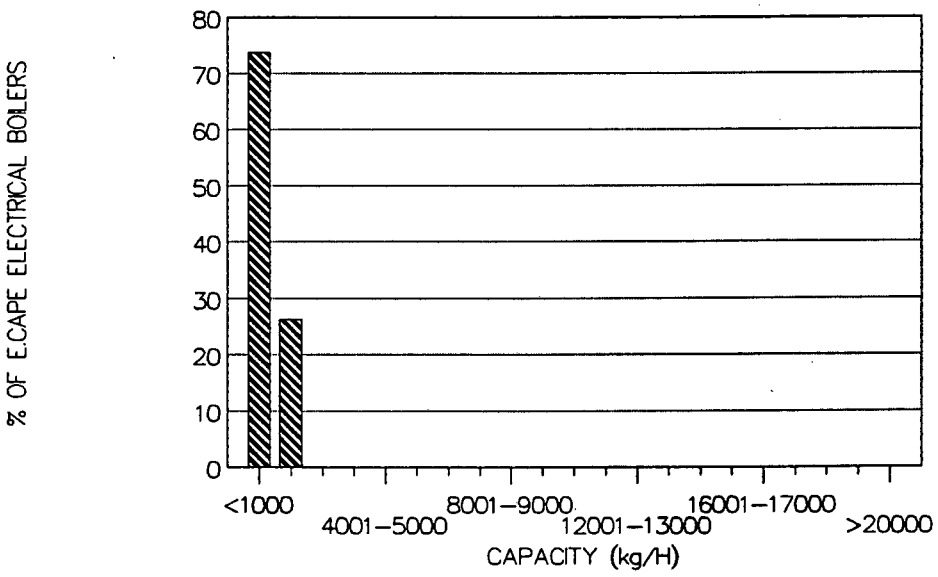
ELECTRICAL BOILER DISTRIBUTION BY CAP. FOR THE ORANGE FREE STATE



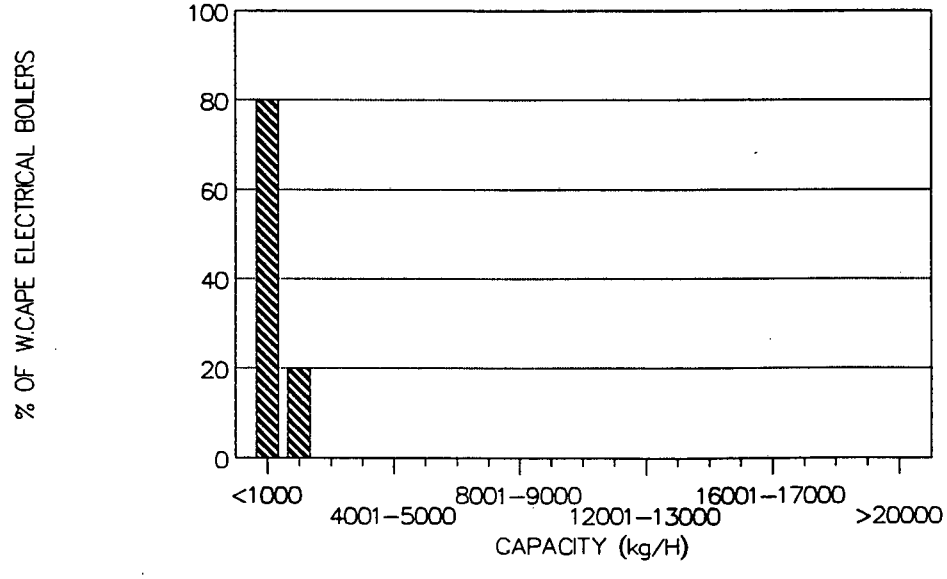
ELECTRICAL BOILER DISTRIBUTION BY CAP. FOR NATAL



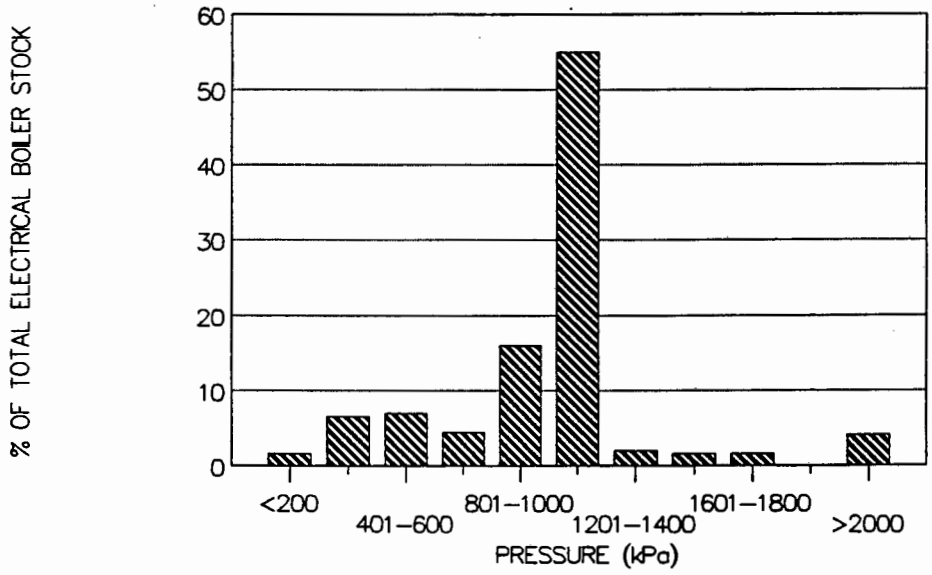
ELECTRICAL BOILER DISTRIBUTION BY CAP. FOR THE EASTERN CAPE



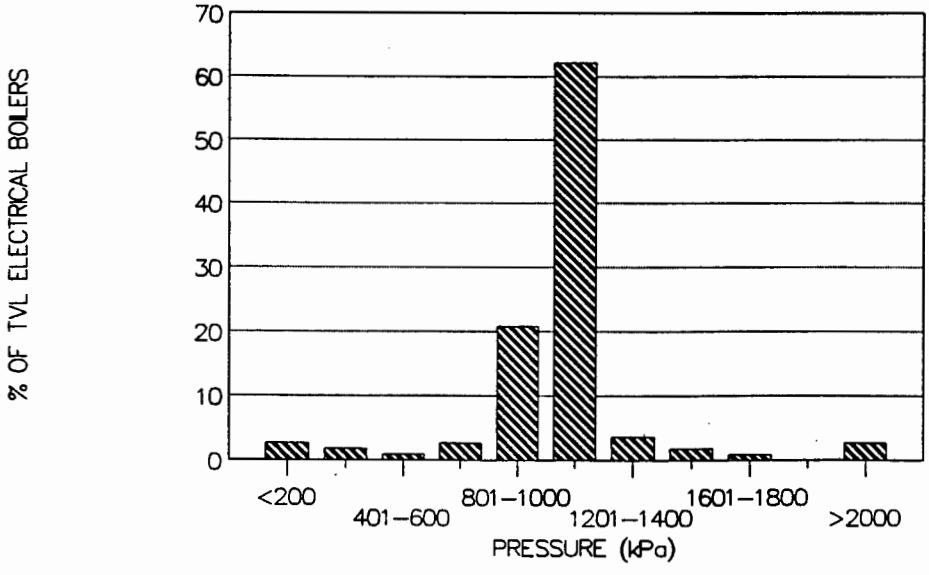
ELECTRICAL BOILER DISTRIBUTION BY CAP. FOR THE WESTERN CAPE



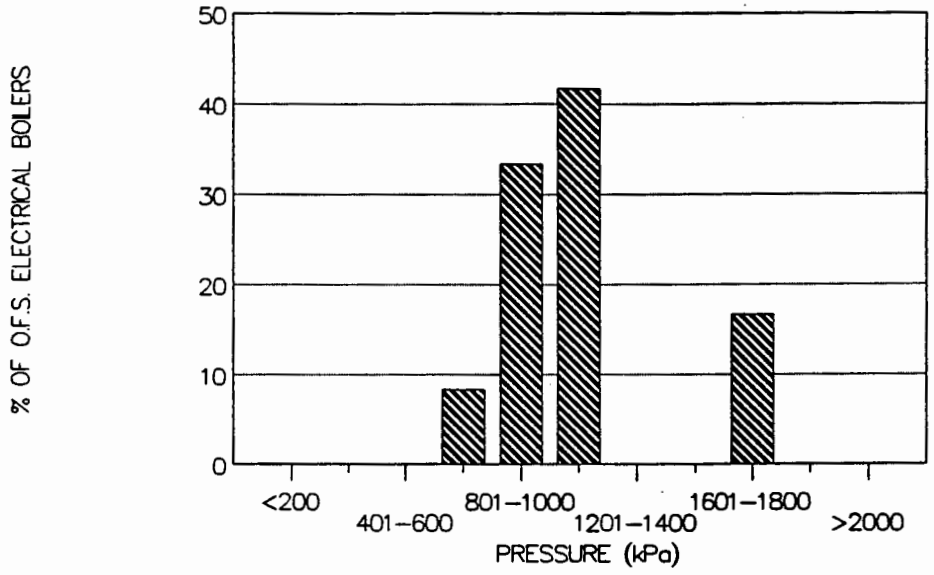
ELECTRICAL BOILER DISTRIBUTION BY PRES. SOUTH AFRICAN BOILER STOCK



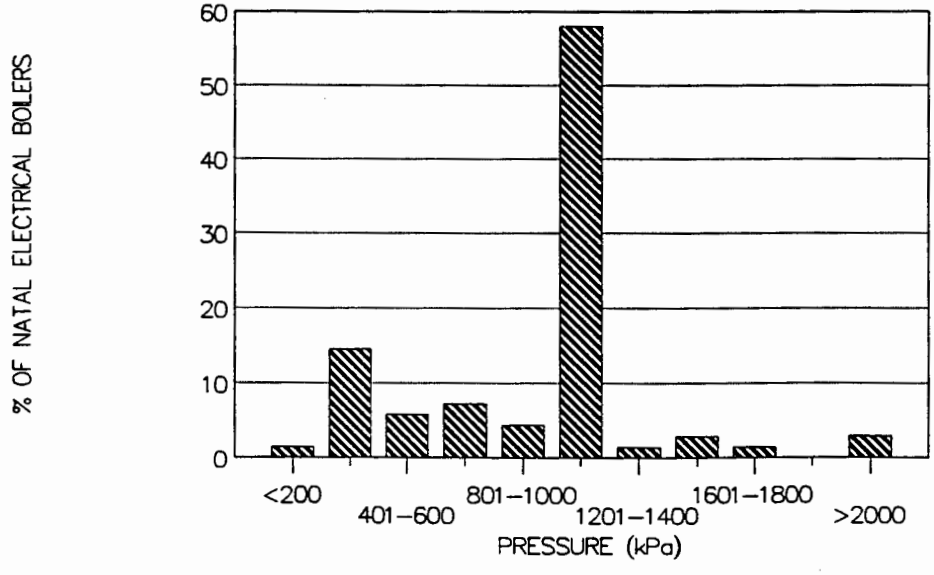
ELECTRICAL BOILER DISTRIBUTION BY PRES. FOR THE TRANSVAAL



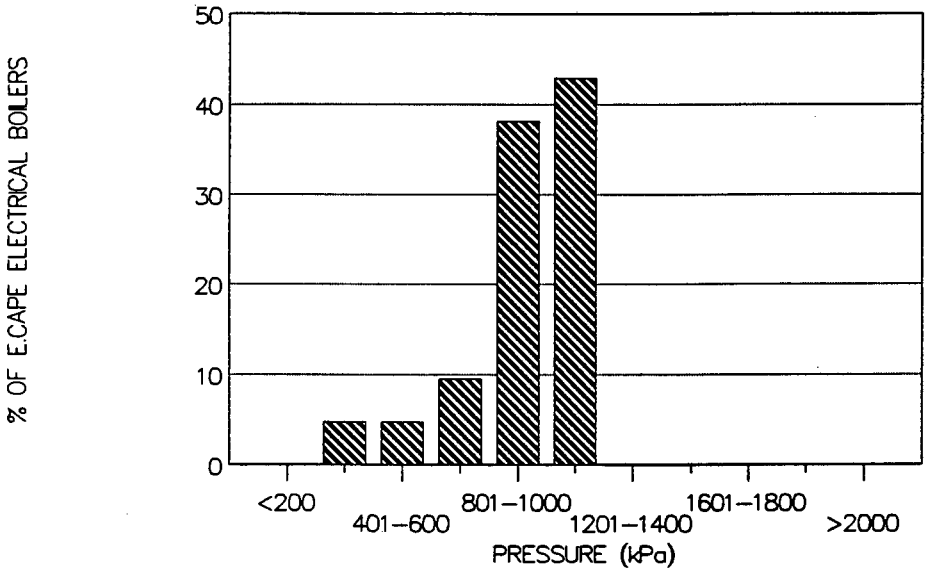
ELECTRICAL BOILER DISTRIBUTION BY PRESS FOR THE ORANGE FREE STATE



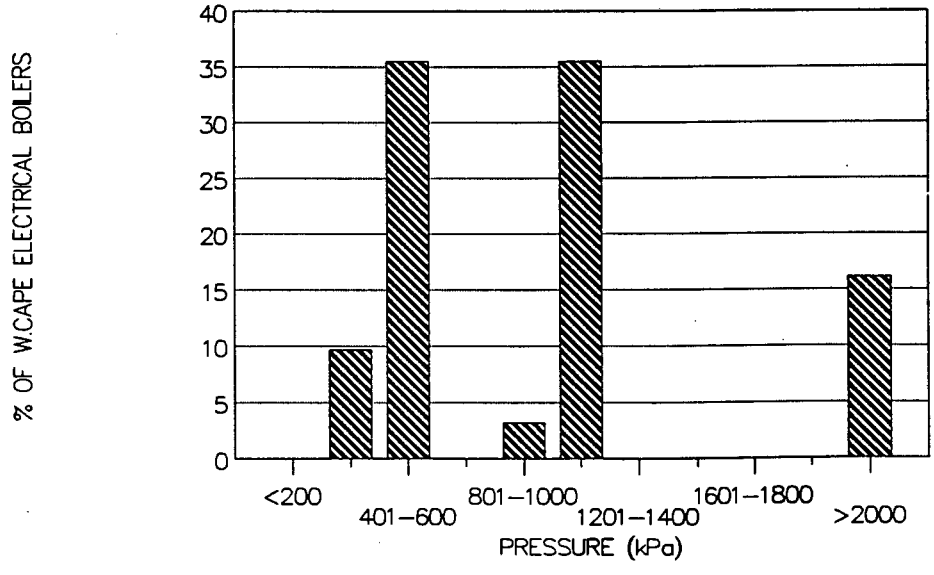
ELECTRICAL BOILER DISTRIBUTION BY PRES. FOR NATAL



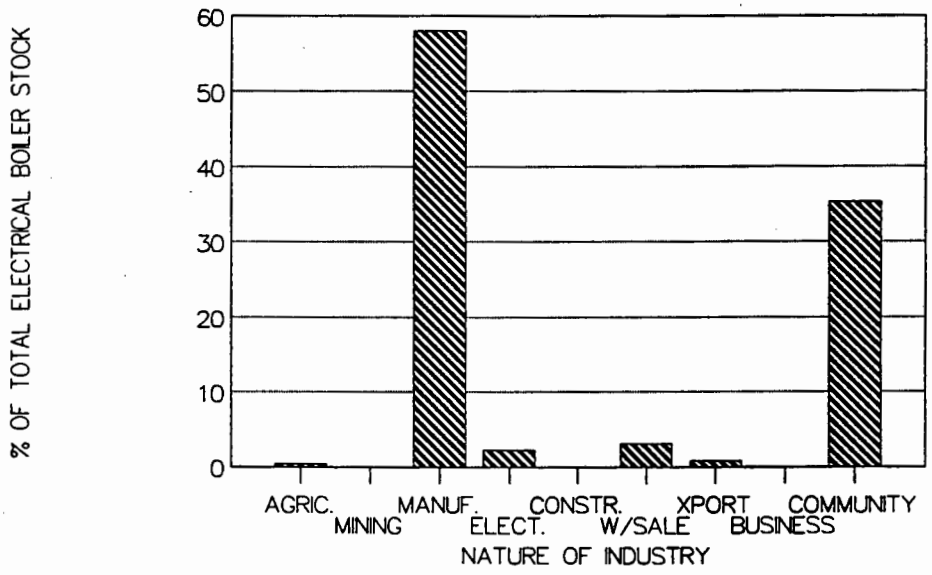
ELECTRICAL BOILER DISTRIBUTION BY PRESS FOR THE EASTERN CAPE



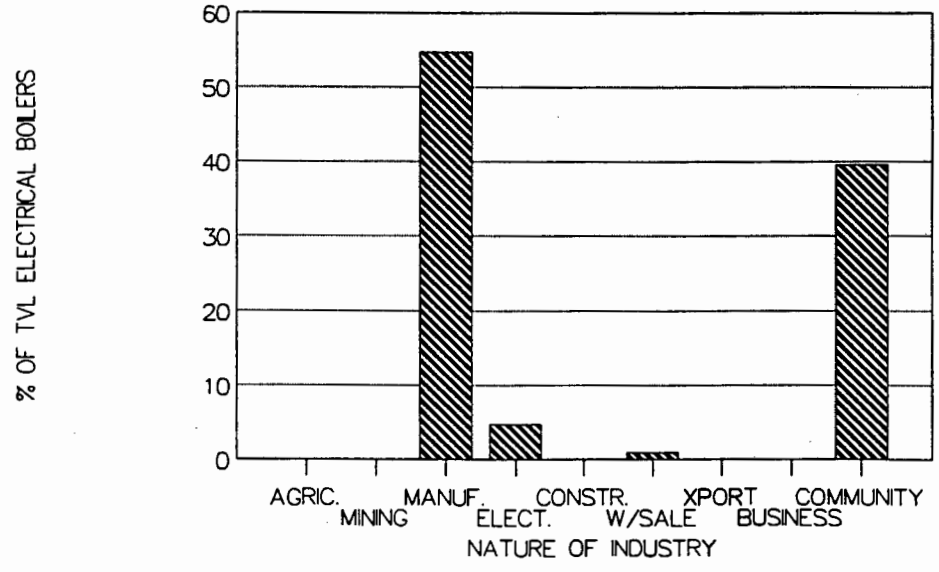
ELECTRICAL BOILER DISTRIBUTION BY PRES. FOR THE WESTERN CAPE



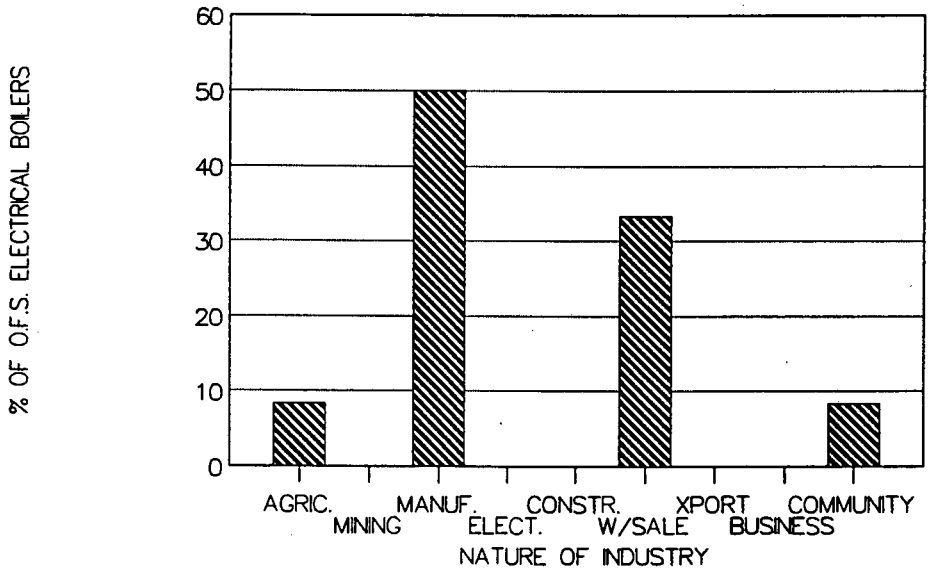
ELECTRICAL BOILER DISTRIBUTION BY USAGE SOUTH AFRICAN BOILER STOCK



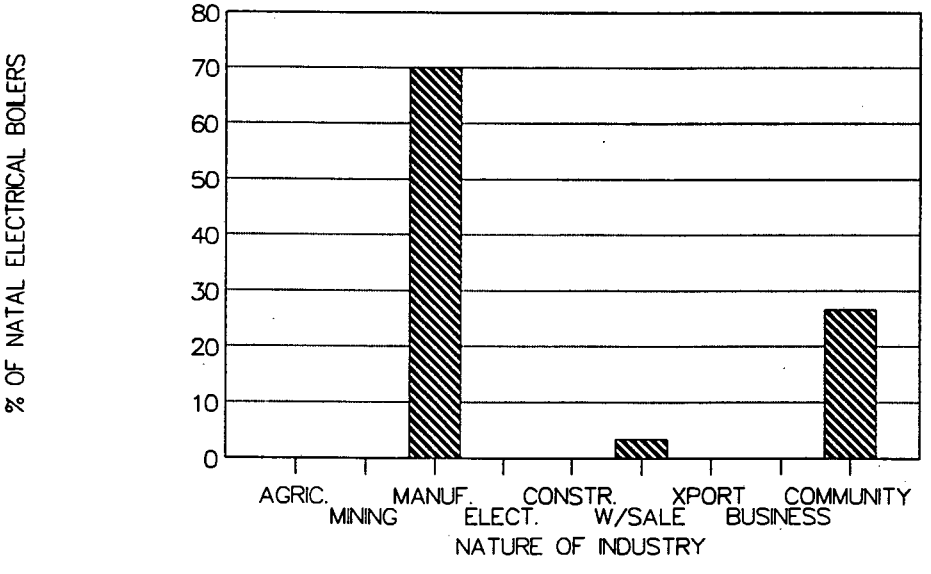
ELECTRICAL BOILER DISTRIBUTION BY USAGE FOR THE TRANSVAAL



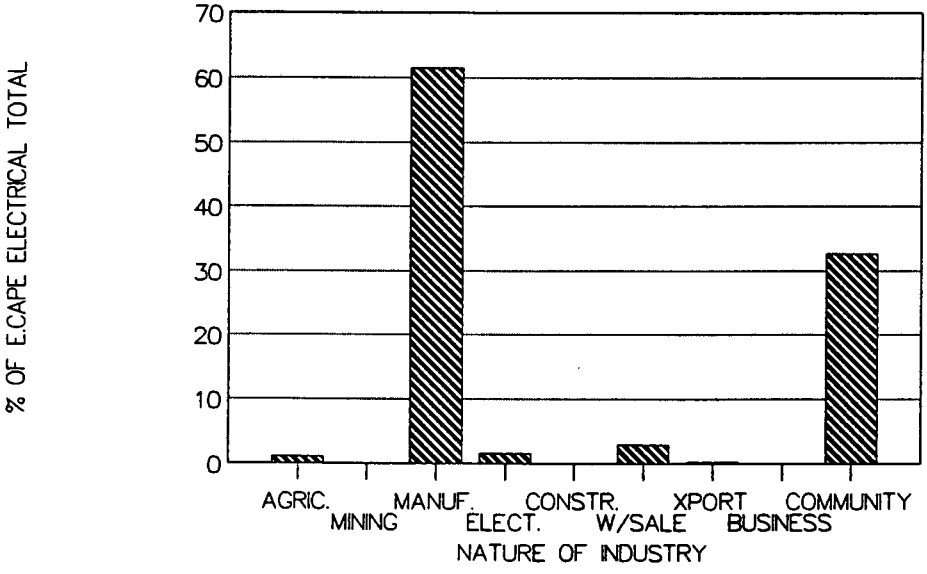
ELECTRICAL BOILER DISTRIBUTION BY USAGE FOR THE ORANGE FREE STATE



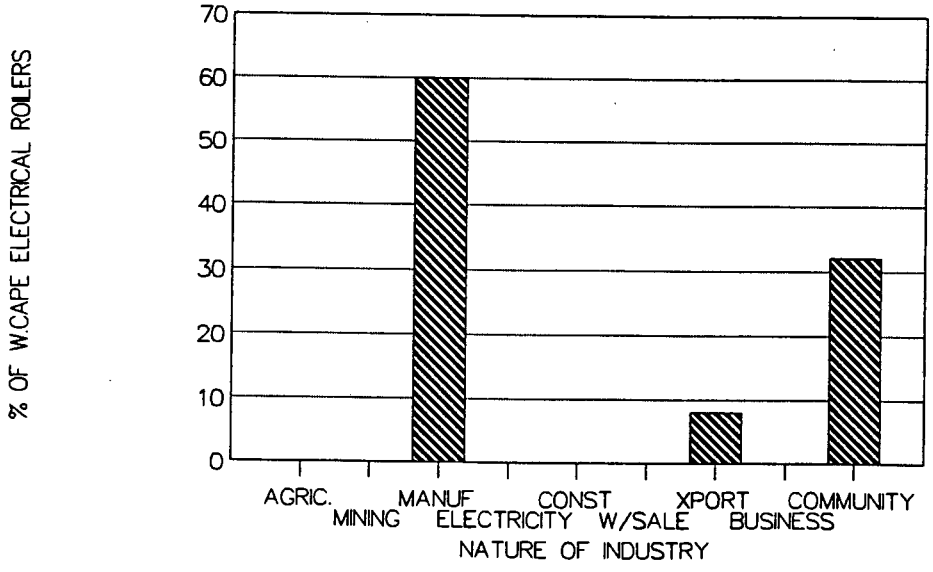
ELECTRICAL BOILER DISTRIBUTION BY USAGE FOR NATAL



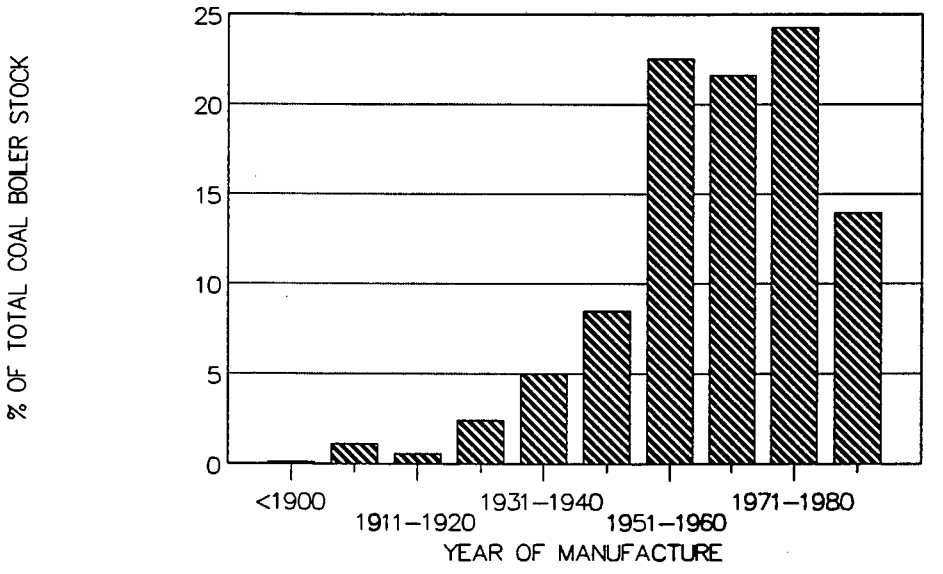
ELECTRICAL BOILER DISTRIBUTION BY USAGE FOR THE EASTERN CAPE



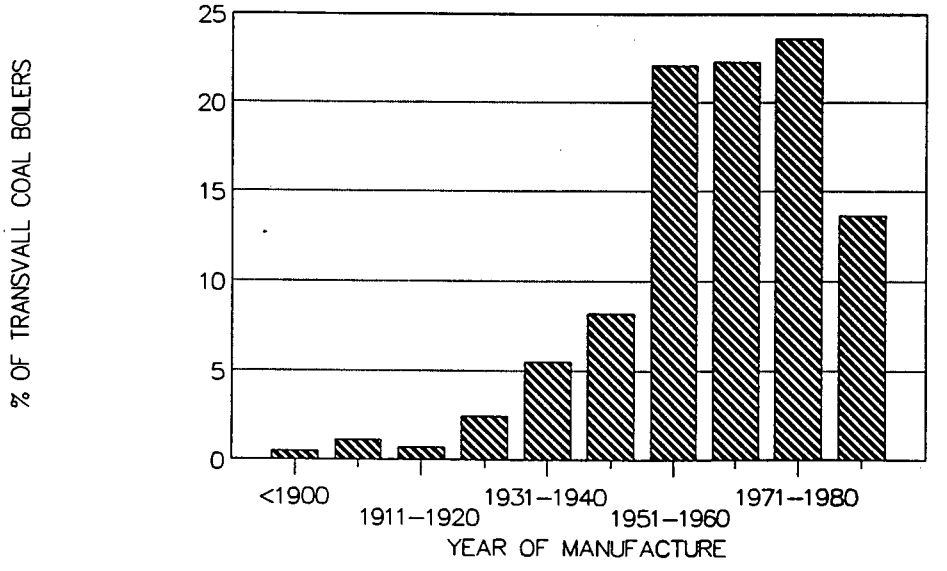
ELECTRICAL BOILER DISTRIBUTION BY USAGE FOR THE WESTERN CAPE



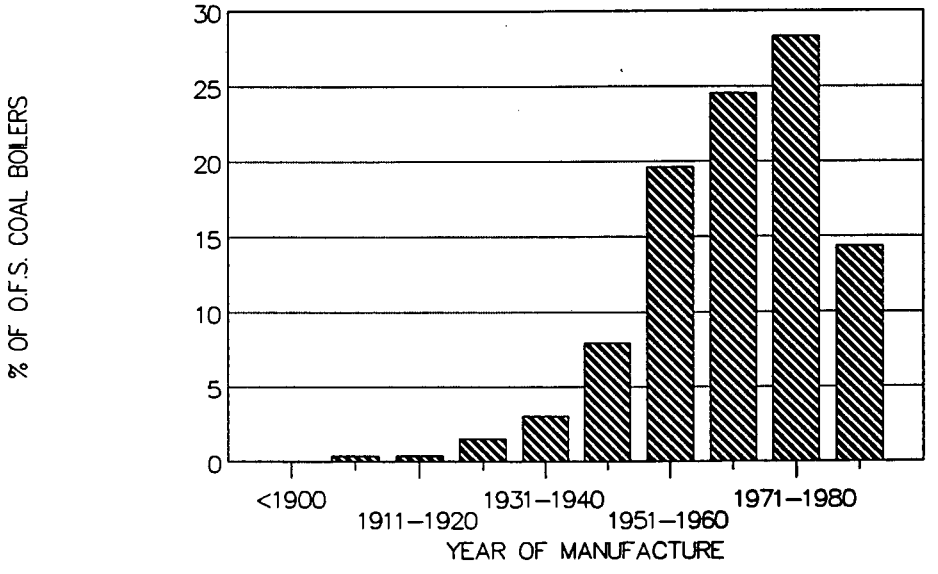
COAL BOILER DISTRIBUTION BY AGE SOUTH AFRICAN BOILER STOCK



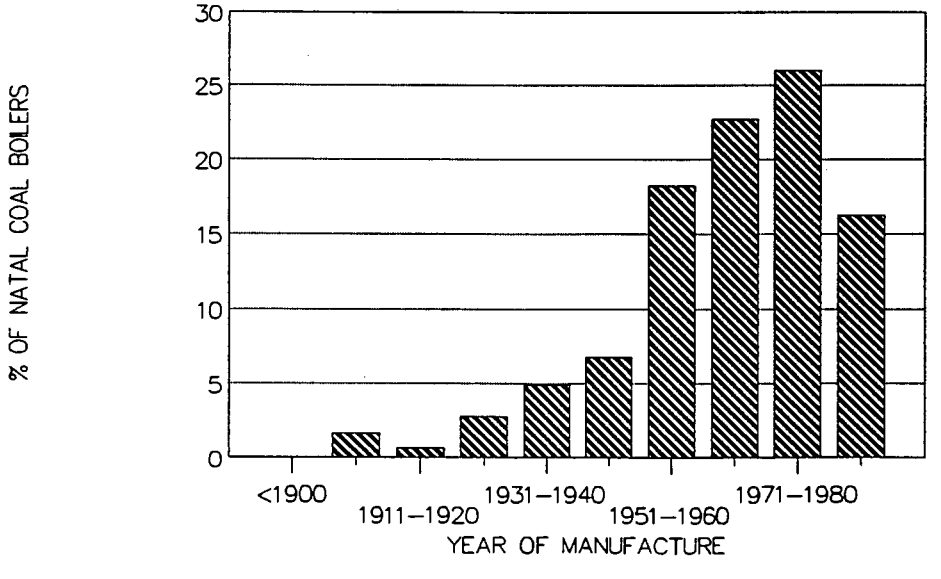
COAL BOILER DISTRIBUTION BY AGE FOR THE TRANSVAAL



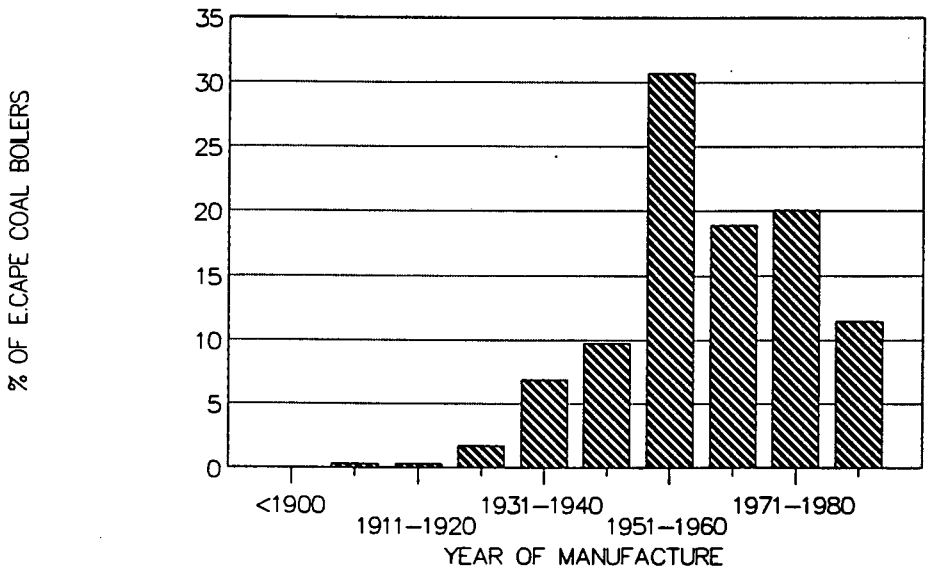
COAL BOILER DISTRIBUTION BY AGE FOR THE ORANGE FREE STATE



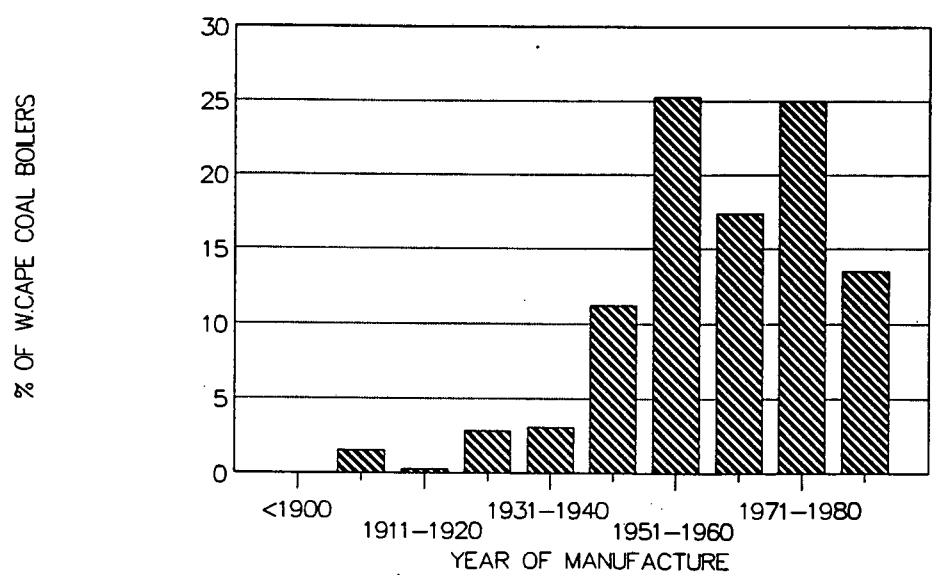
COAL BOILER DISTRIBUTION BY AGE FOR NATAL



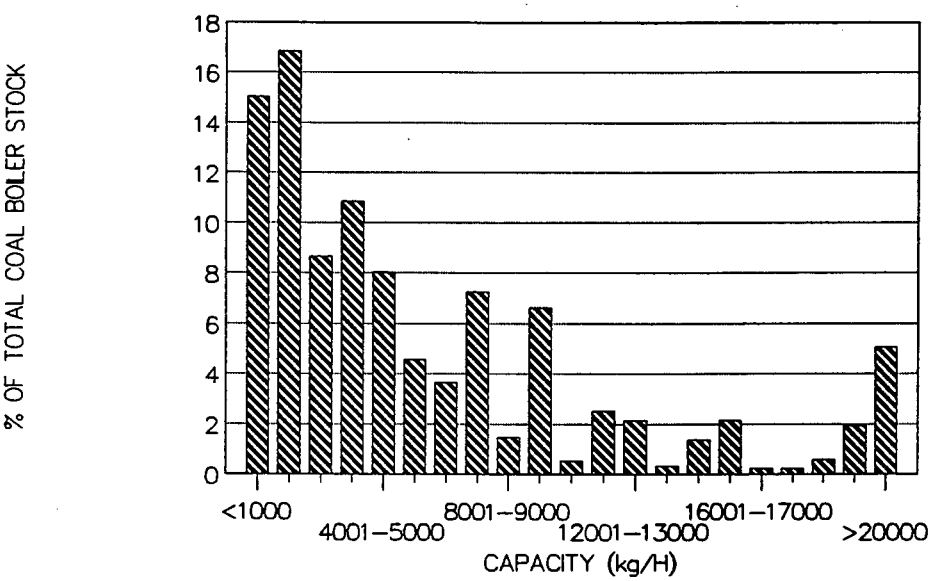
COAL BOILER DISTRIBUTION BY AGE FOR THE EASTERN CAPE



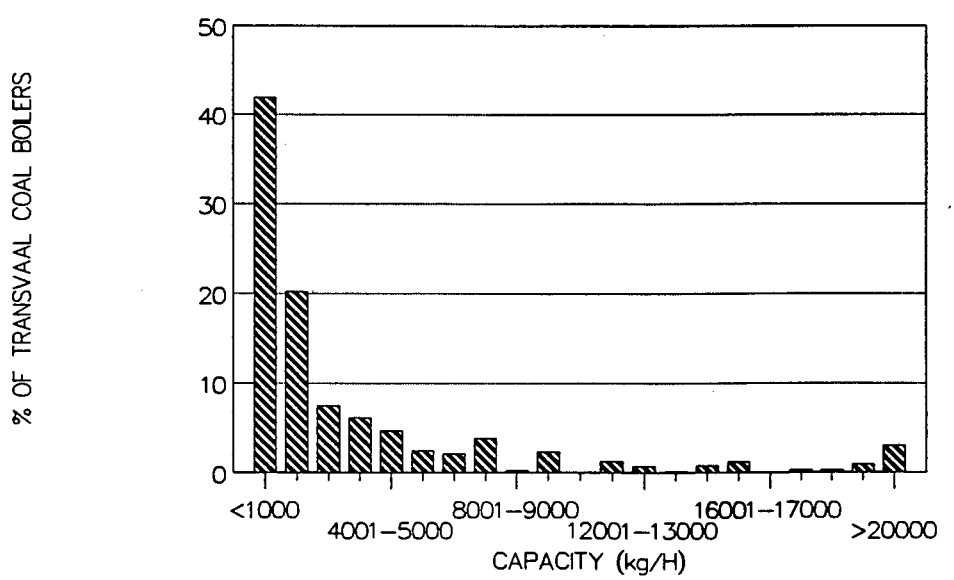
COAL BOILER DISTRIBUTION BY AGE FOR THE WESTERN CAPE



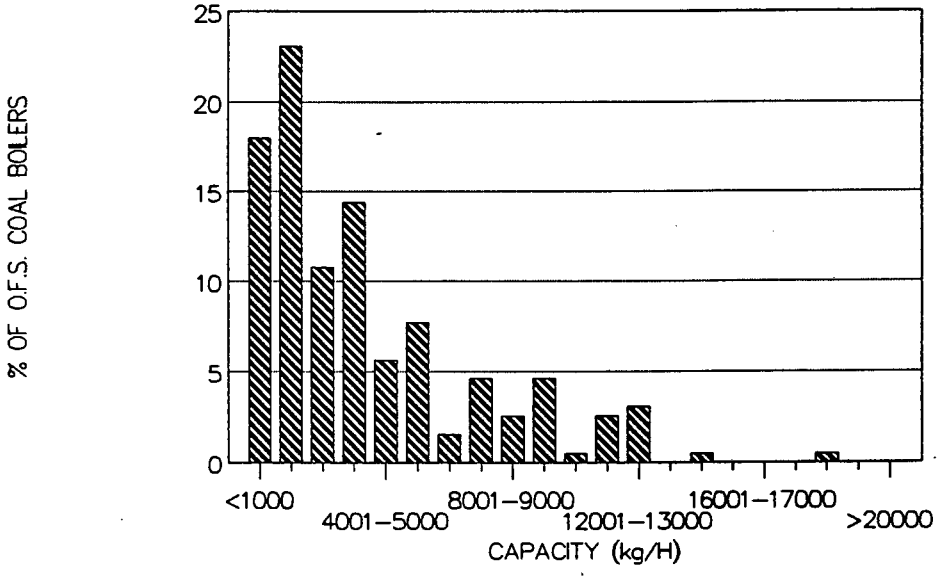
COAL BOILER DISTRIBUTION BY CAPACITY SOUTH AFRICAN BOILER STOCK



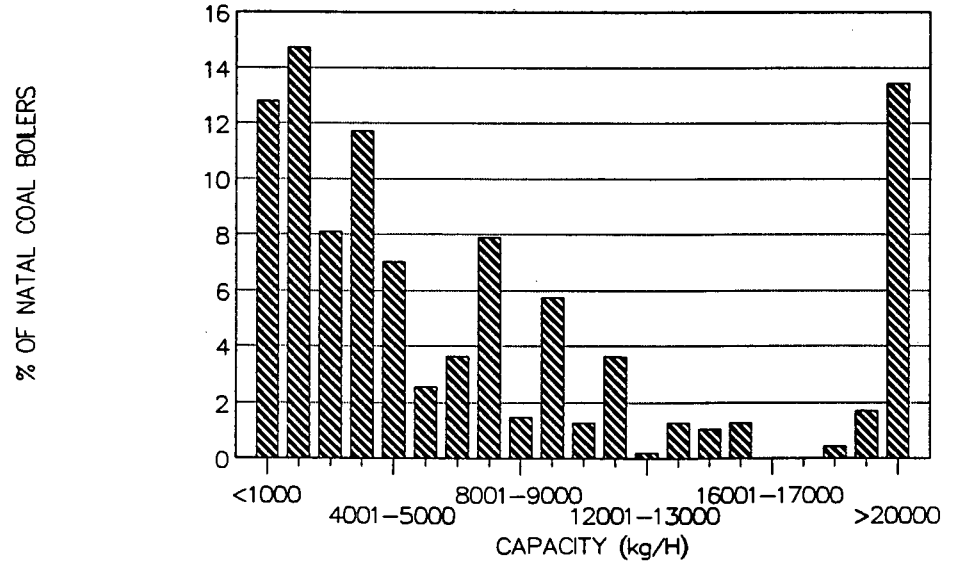
COAL BOILER DISTRIBUTION BY CAPACITY FOR THE TRANSVAAL



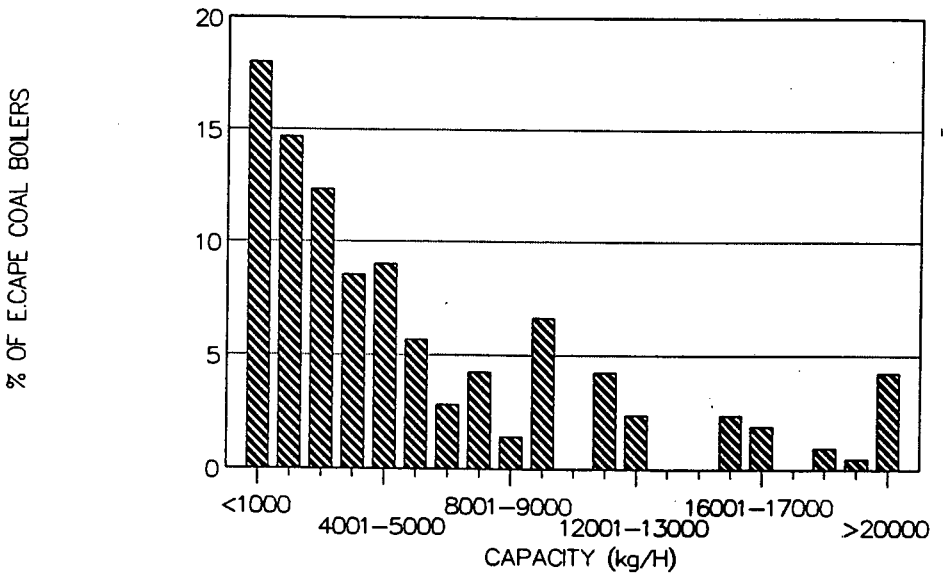
COAL BOILER DISTRIBUTION BY CAPACITY FOR THE ORANGE FREE STATE



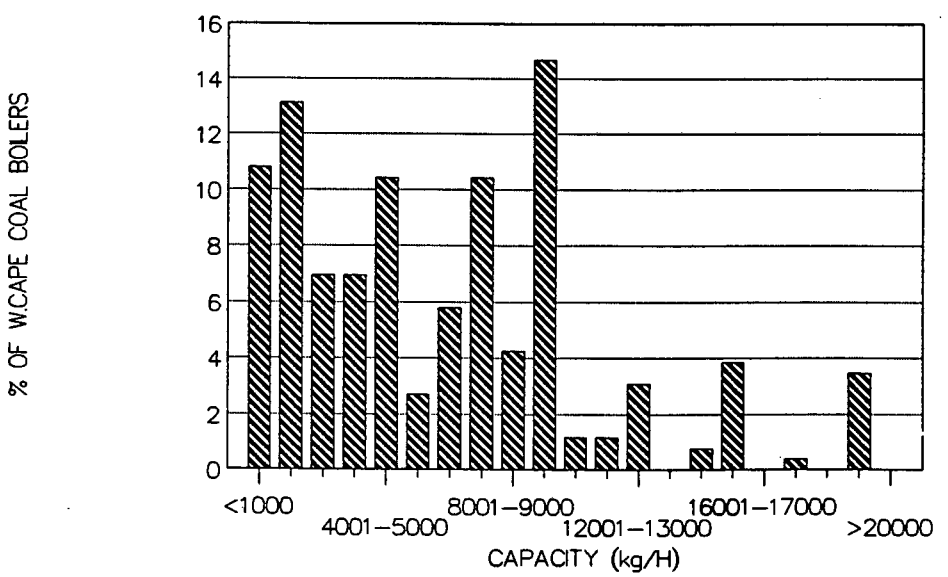
COAL BOILER DISTRIBUTION BY CAP. FOR NATAL



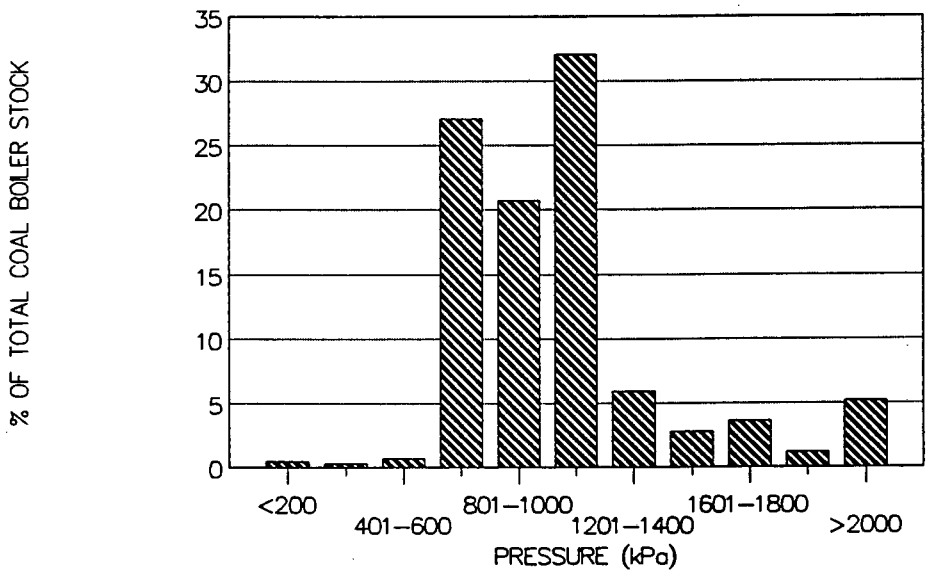
COAL BOILER DISTRIBUTION BY CAPACITY FOR THE EASTERN CAPE



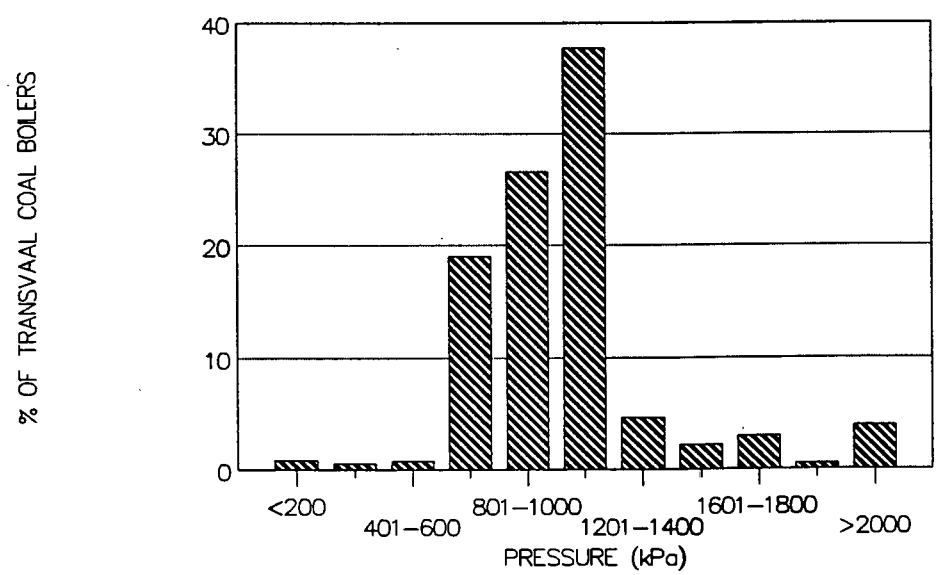
COAL BOILER DISTRIBUTION BY CAP. FOR THE WESTERN CAPE



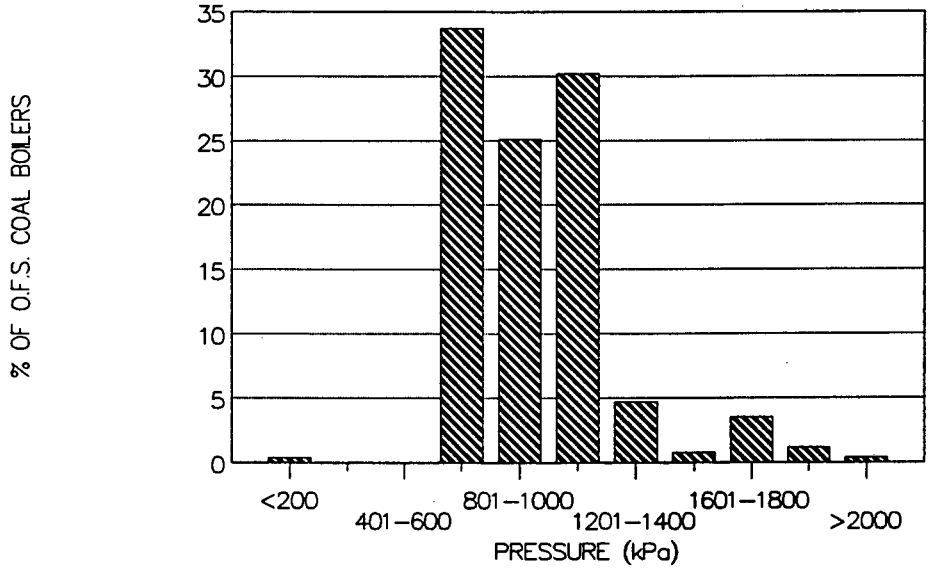
COAL BOILER DISTRIBUTION BY PRESSURE SOUTH AFRICAN BOILER STOCK



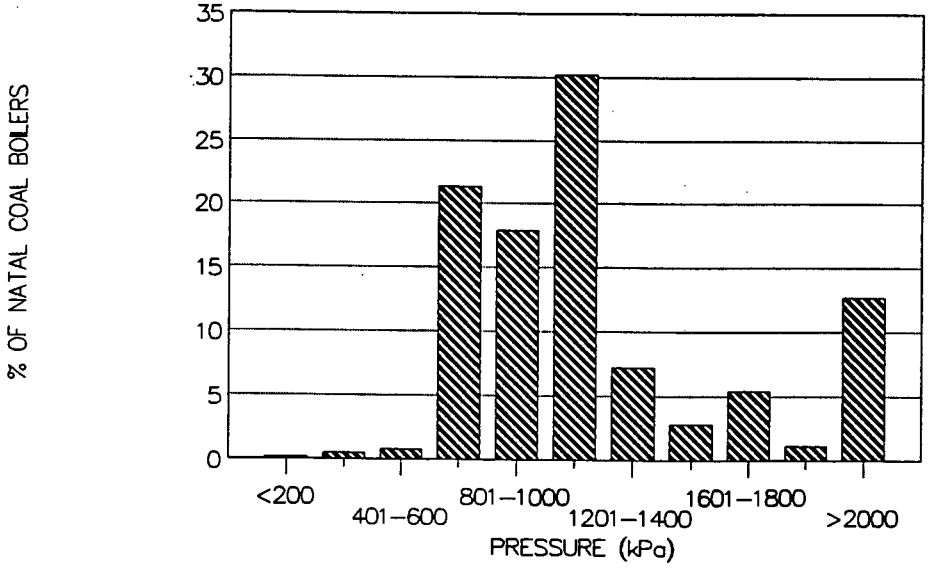
COAL BOILER DISTRIBUTION BY PRESSURE FOR THE TRANSVAAL



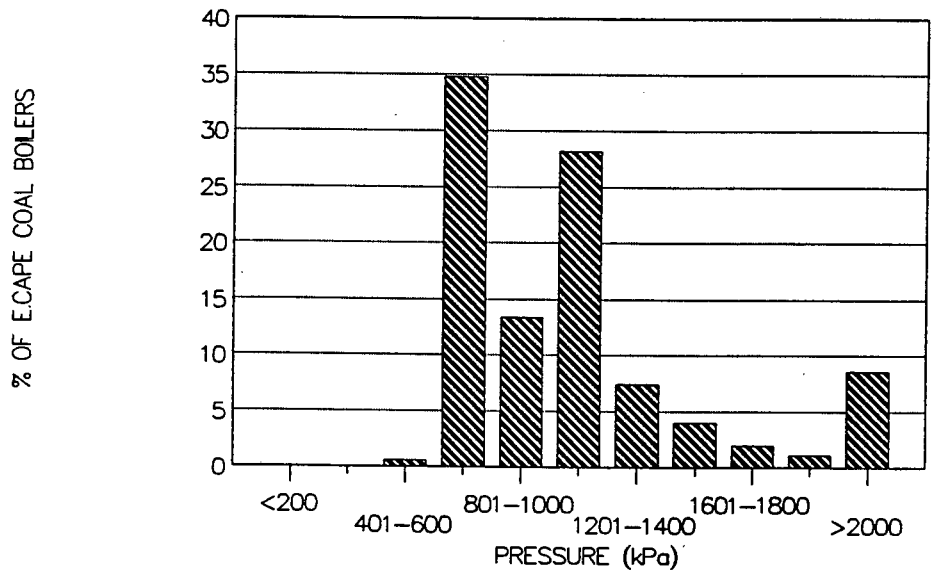
COAL BOILER DISTRIBUTION BY PRESSURE FOR THE ORANGE FREE STATE



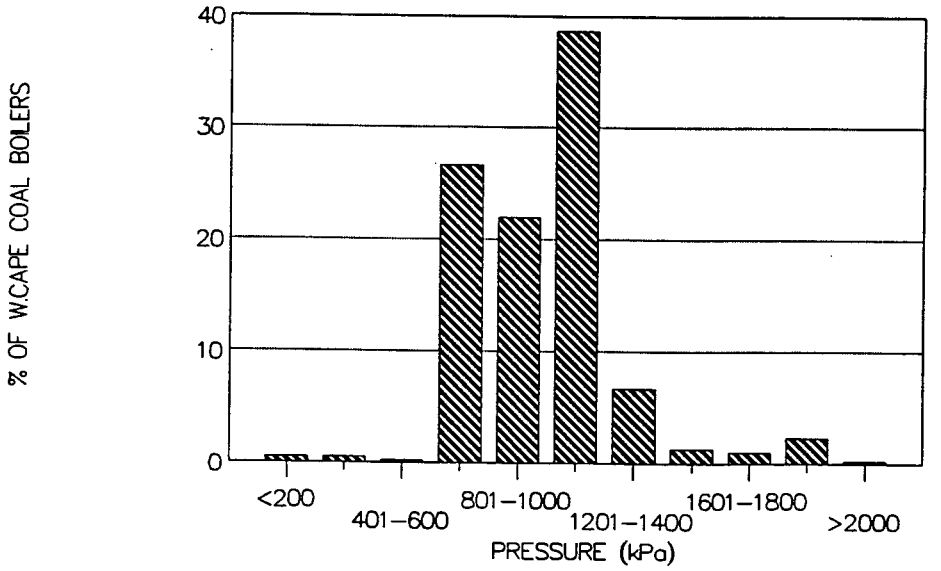
COAL BOILER DISTRIBUTION BY PRESSURE FOR NATAL



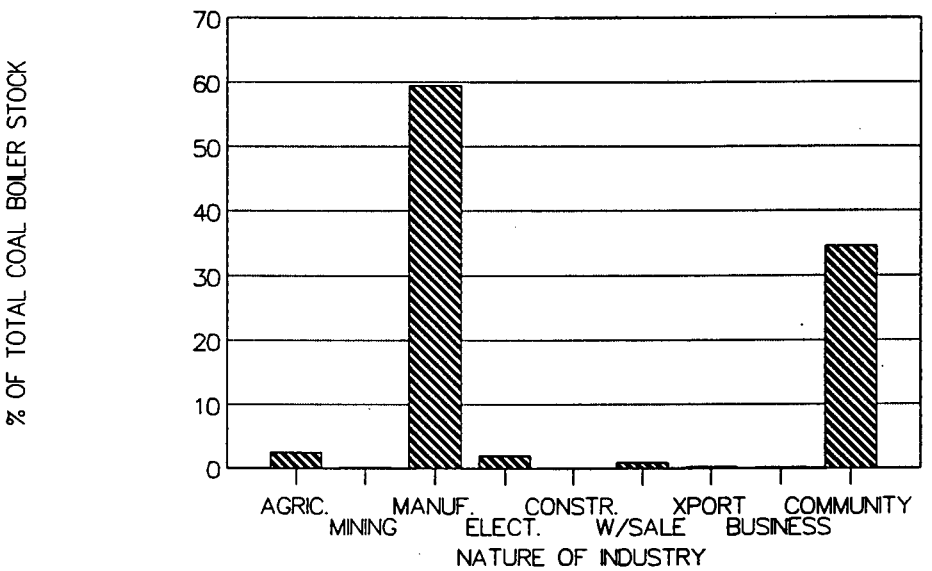
COAL BOILER DISTRIBUTION BY PRESSURE FOR THE EASTERN CAPE



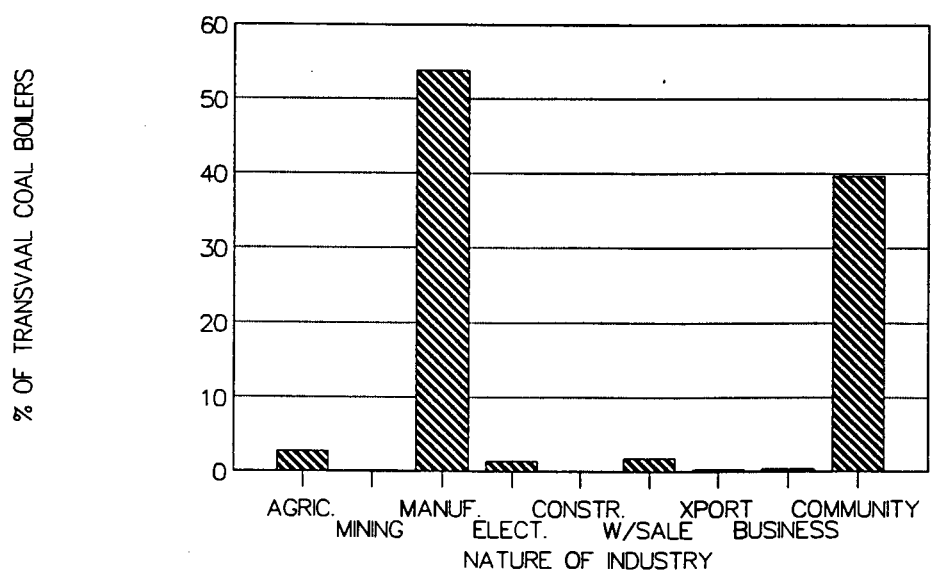
COAL BOILER DISTRIBUTION BY PRES. FOR THE WESTERN CAPE



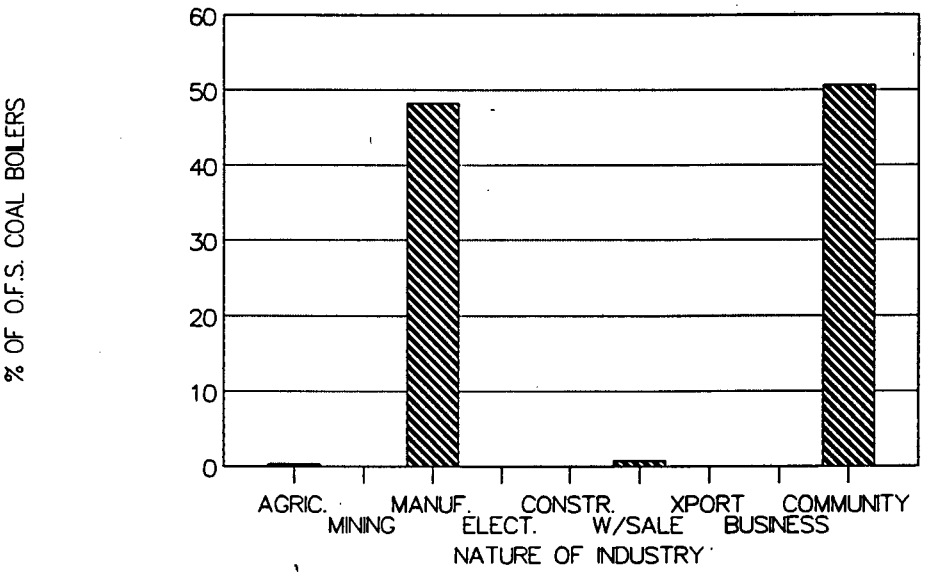
COAL BOILER DISTRIBUTION BY USAGE
SOUTH AFRICAN BOILER STOCK



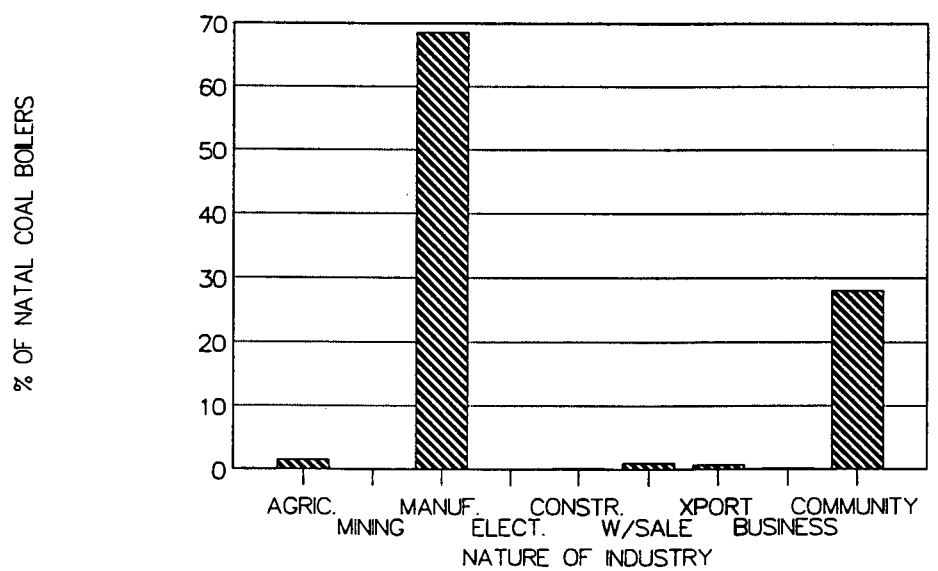
COAL BOILER DISTRIBUTION BY USAGE
FOR THE TRANSVAAL



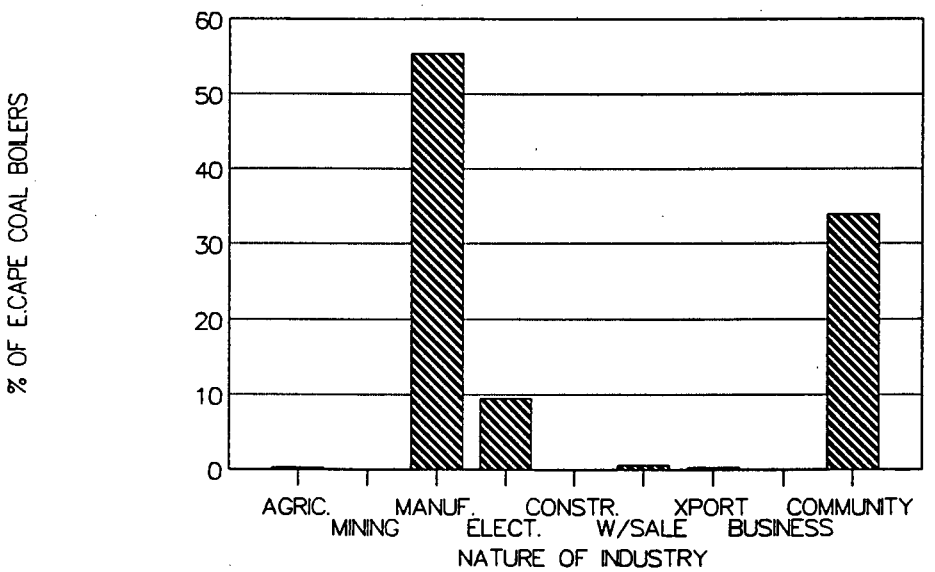
COAL BOILER DISTRIBUTION BY USAGE FOR THE ORANGE FREE STATE



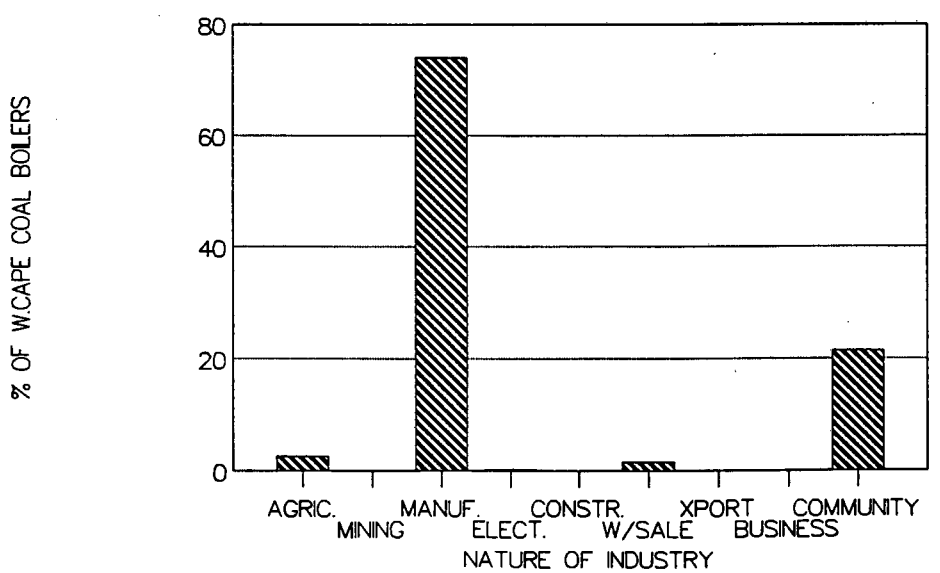
COAL BOILER DISTRIBUTION BY USAGE FOR NATAL



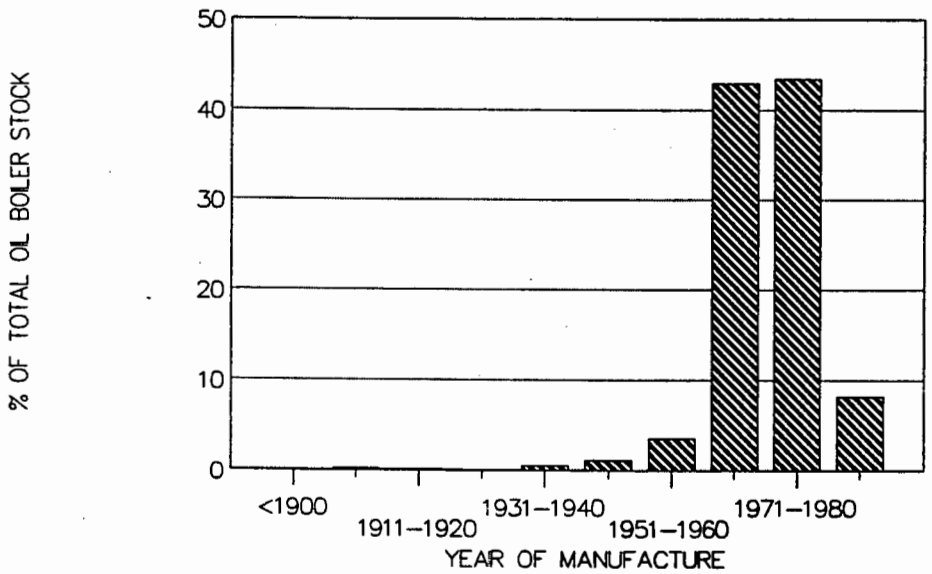
COAL BOILER DISTRIBUTION BY USAGE FOR THE EASTERN CAPE



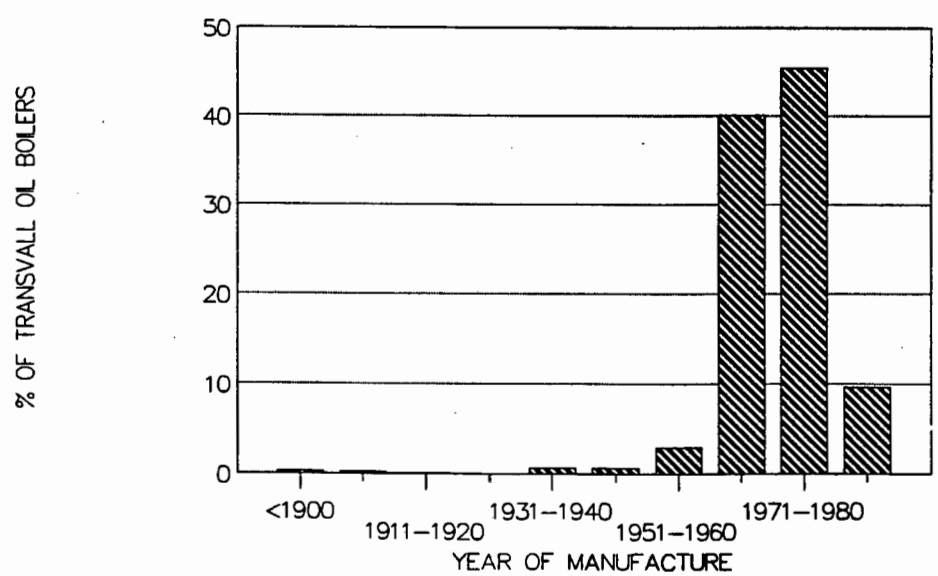
COAL BOILER DISTRIBUTION BY USAGE FOR THE WESTERN CAPE



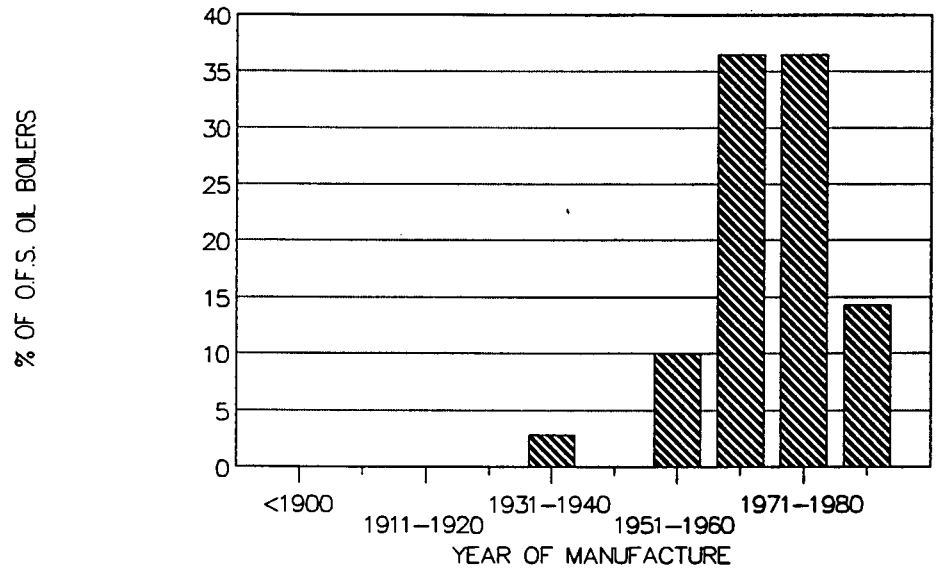
OIL BOILER DISTRIBUTION BY AGE SOUTH AFRICAN BOILER STOCK



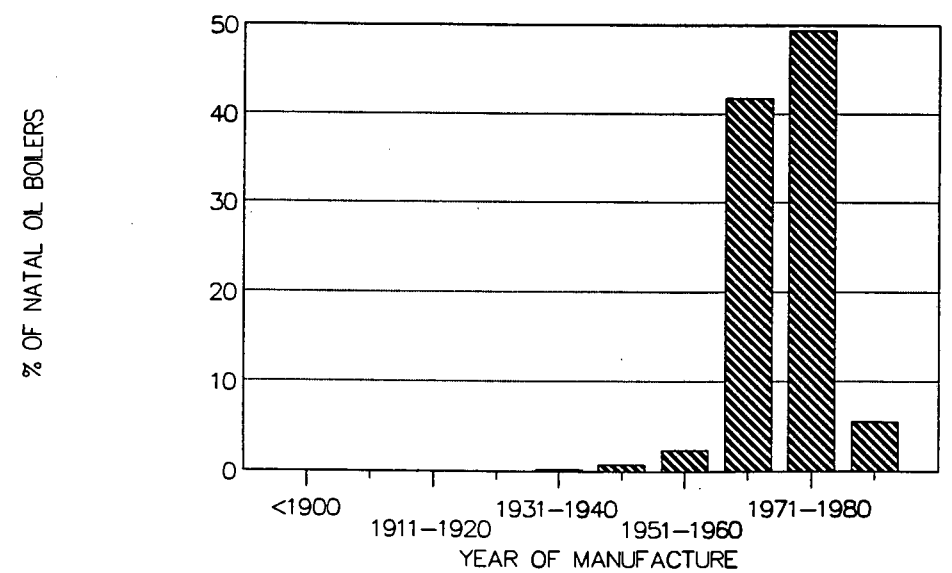
OIL BOILER DISTRIBUTION BY AGE FOR THE TRANSVAAL



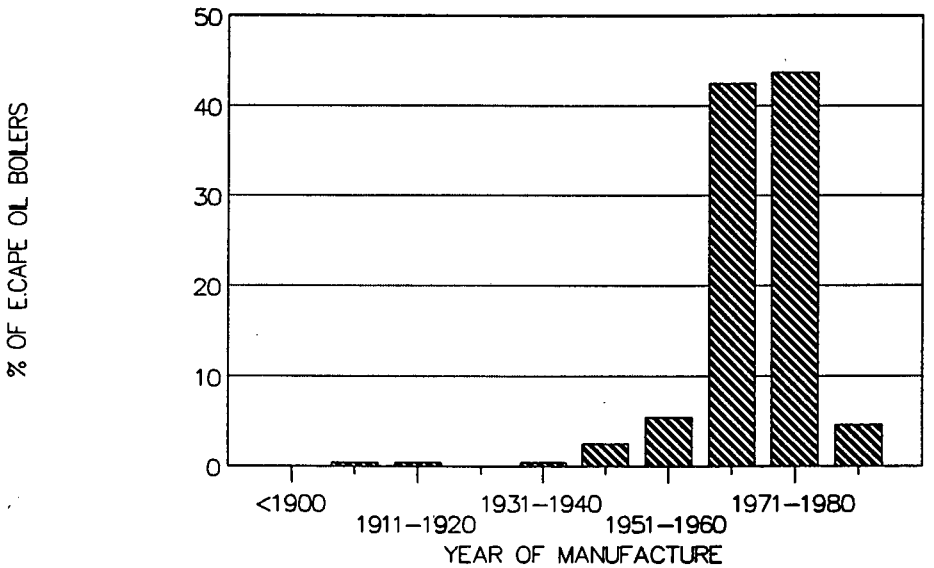
OIL BOILER DISTRIBUTION BY AGE FOR THE ORANGE FREE STATE



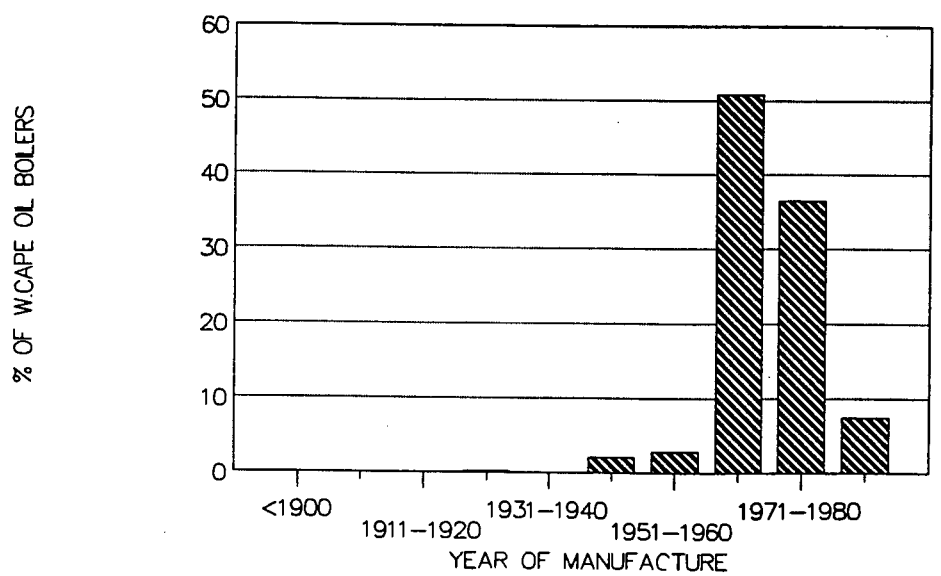
OIL BOILER DISTRIBUTION BY AGE FOR NATAL



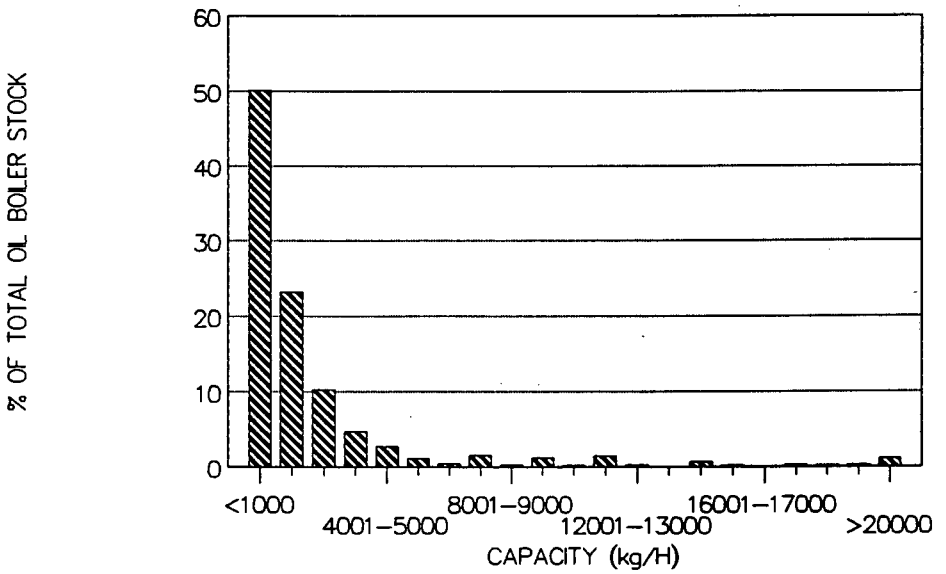
OIL BOILER DISTRIBUTION BY AGE FOR THE EASTERN CAPE



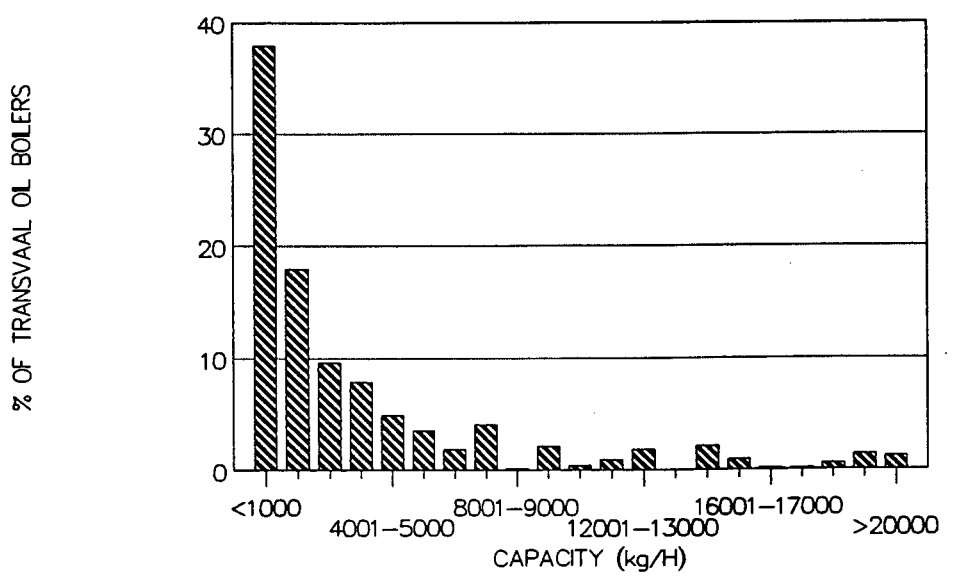
OIL BOILER DISTRIBUTION BY AGE FOR THE WESTERN CAPE



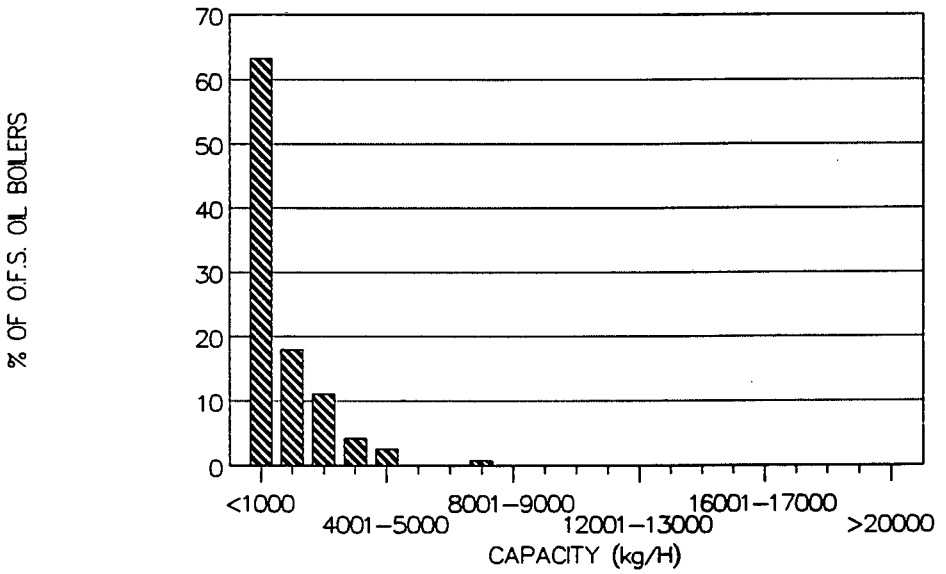
OIL BOILER DISTRIBUTION BY CAPACITY
SOUTH AFRICAN BOILER STOCK



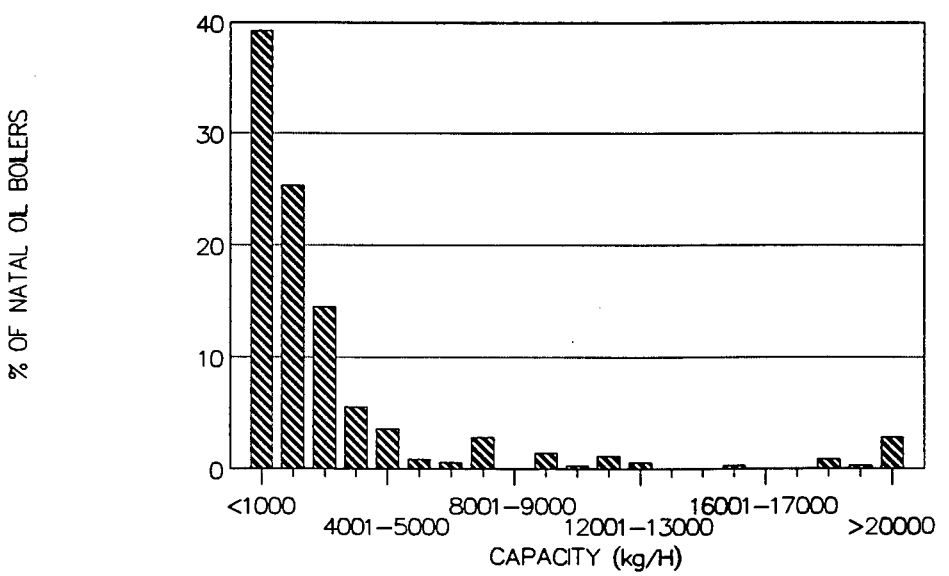
OIL BOILER DISTRIBUTION BY CAPACITY
FOR THE TRANSVAAL



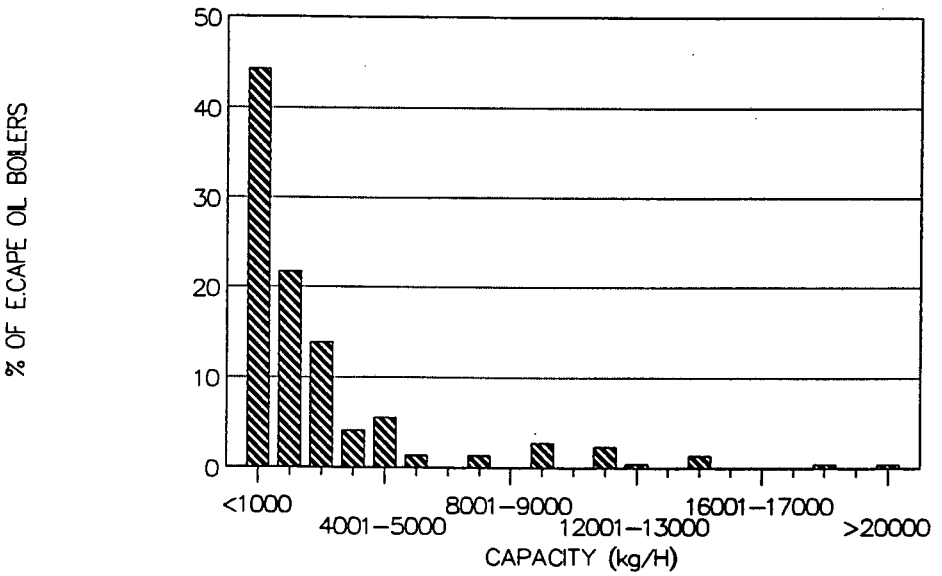
OIL BOILER DISTRIBUTION BY CAPACITY FOR THE ORANGE FREE STATE



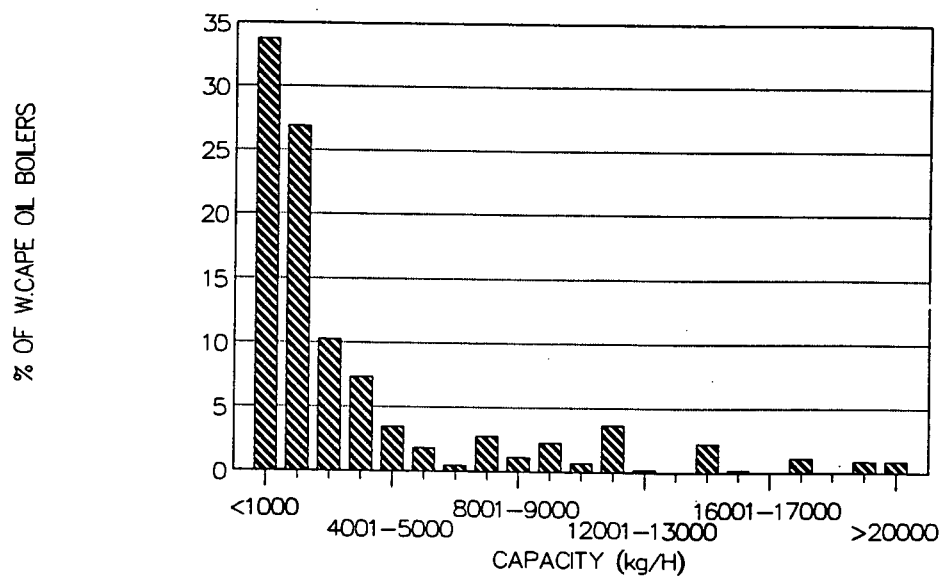
OIL BOILER DISTRIBUTION BY CAP. FOR NATAL



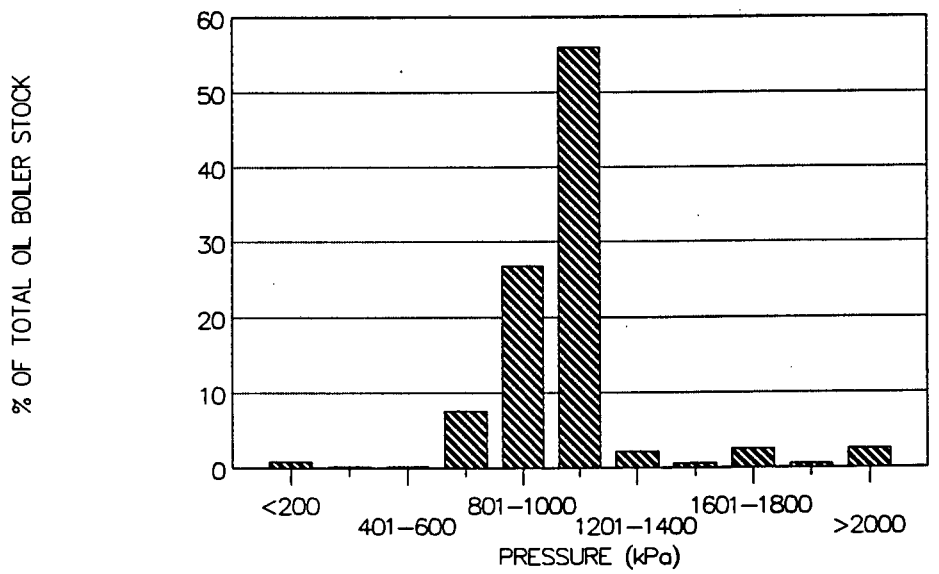
OIL BOILER DISTRIBUTION BY CAPACITY FOR THE EASTERN CAPE



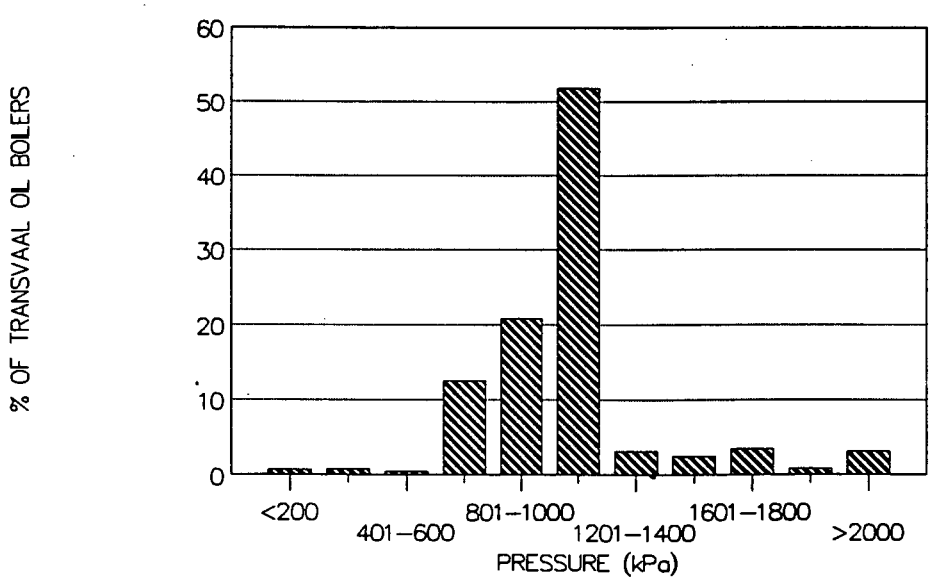
OIL BOILER DISTRIBUTION BY CAP. FOR THE WESTERN CAPE



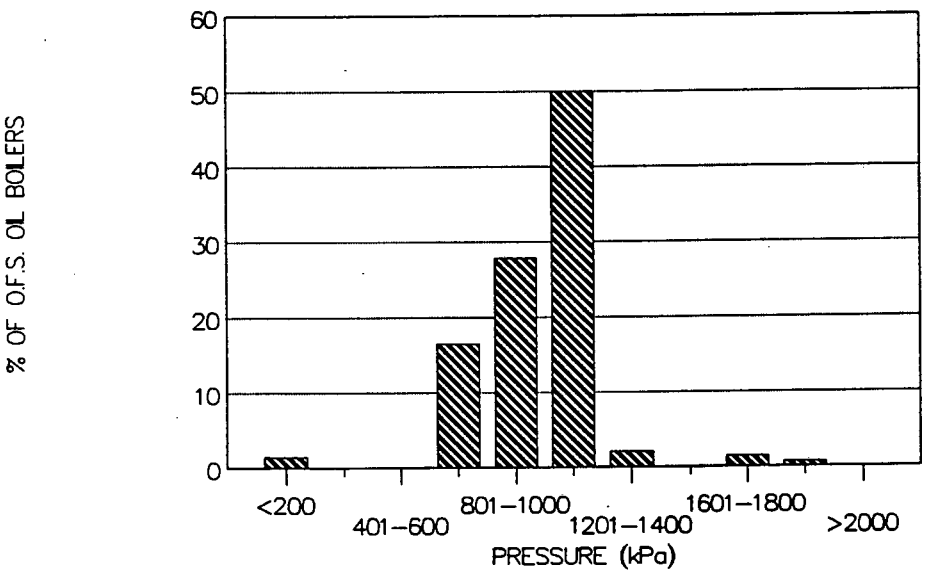
OIL BOILER DISTRIBUTION BY PRESSURE SOUTH AFRICAN BOILER STOCK



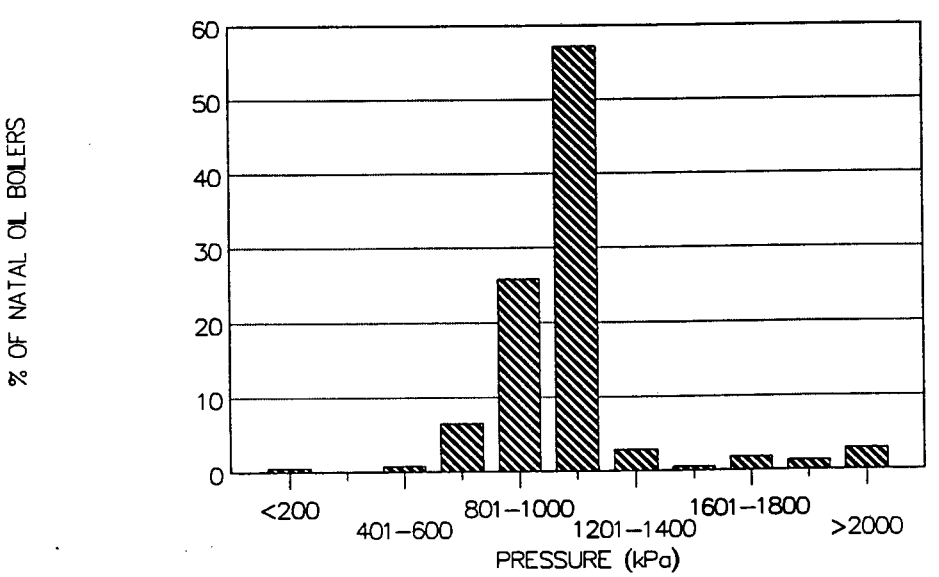
OIL BOILER DISTRIBUTION BY PRESSURE FOR THE TRANSVAAL



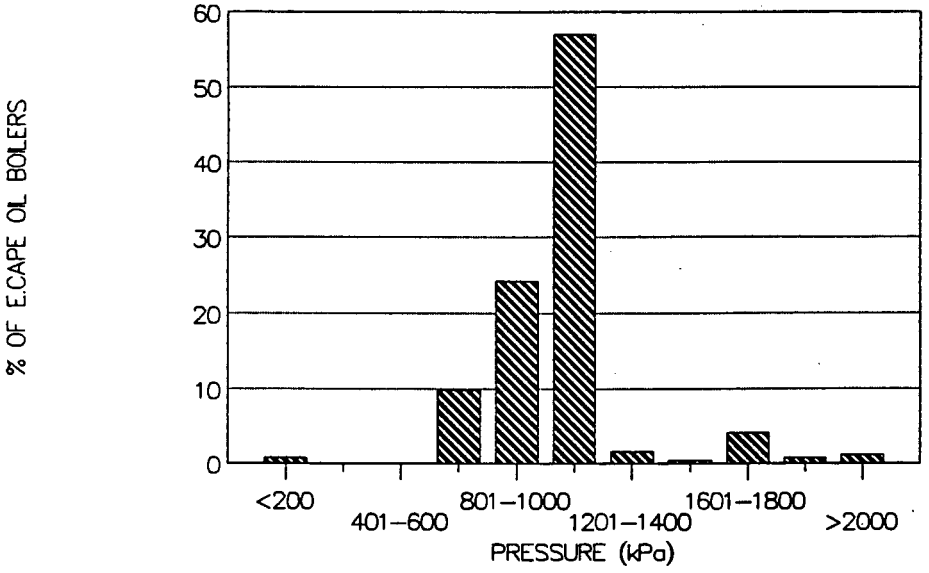
OIL BOILER DISTRIBUTION BY PRESSURE FOR THE ORANGE FREE STATE



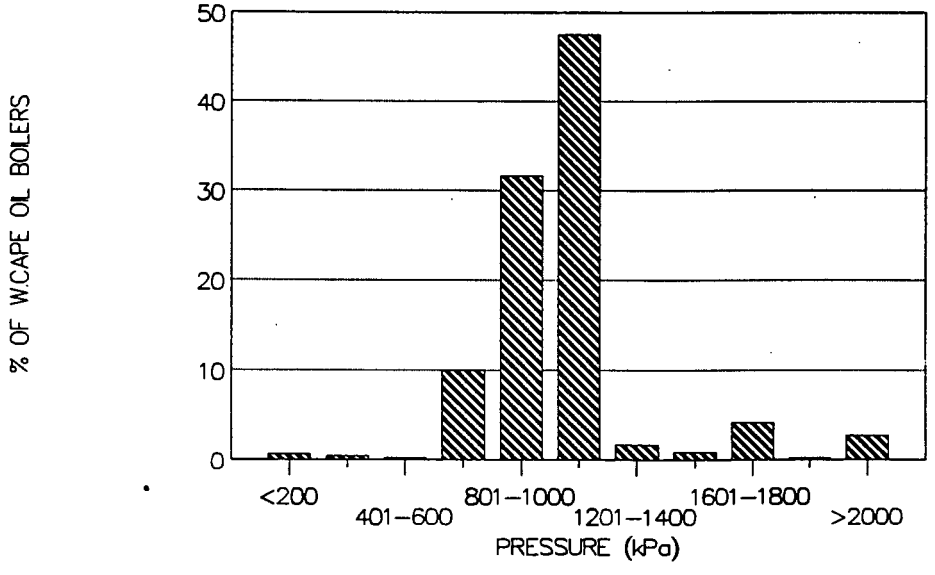
OIL BOILER DISTRIBUTION BY PRESSURE FOR NATAL



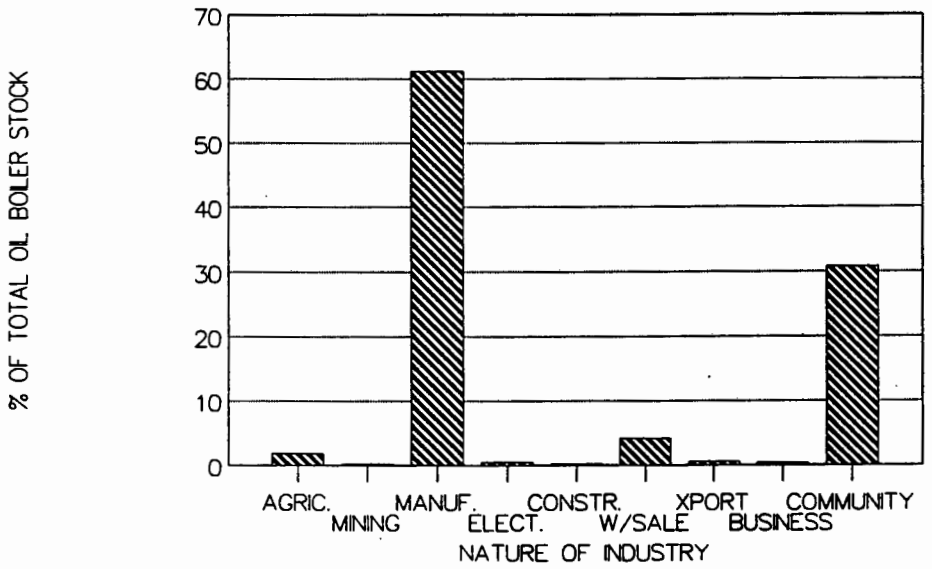
OIL BOILER DISTRIBUTION BY PRESSURE FOR THE EASTERN CAPE



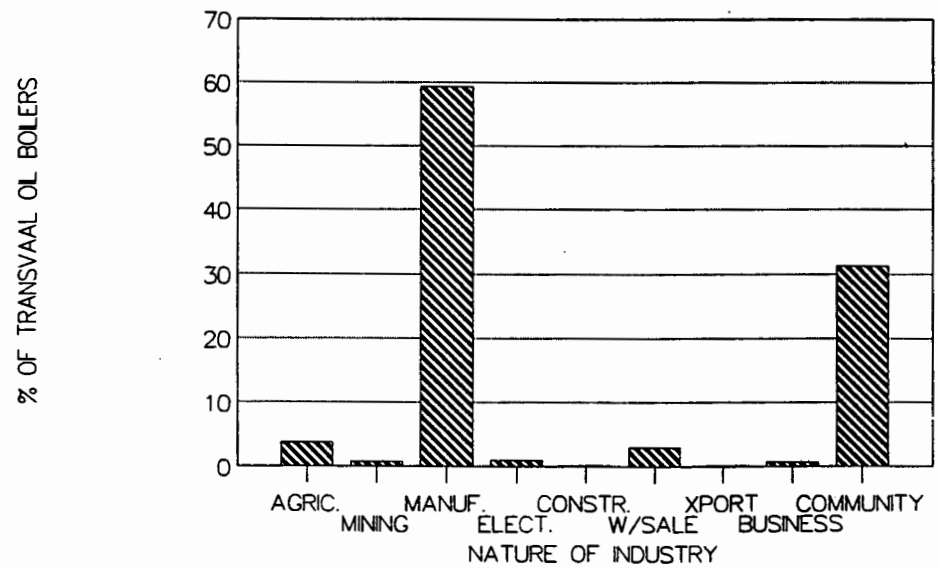
OIL BOILER DISTRIBUTION BY PRES. FOR THE WESTERN CAPE



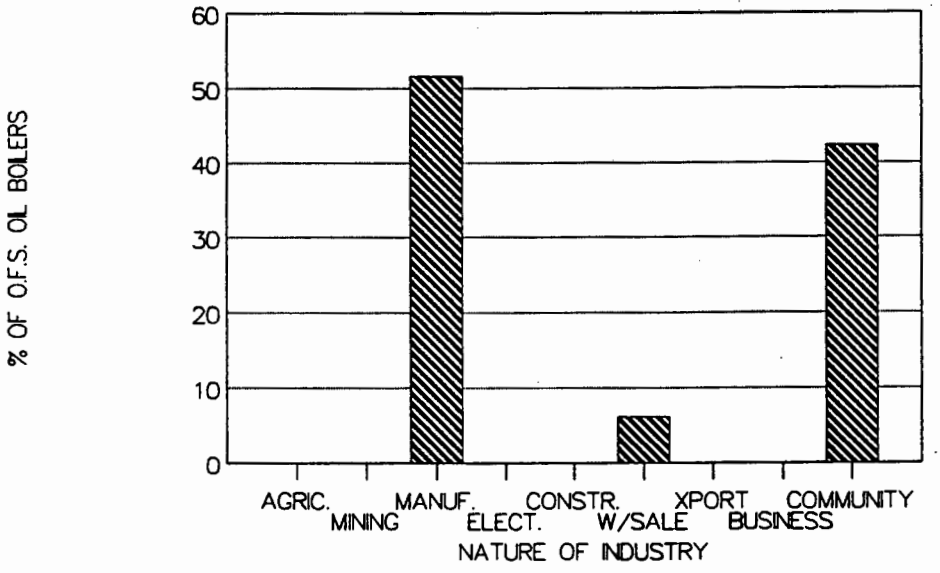
OIL BOILER DISTRIBUTION BY USAGE SOUTH AFRICAN BOILER STOCK



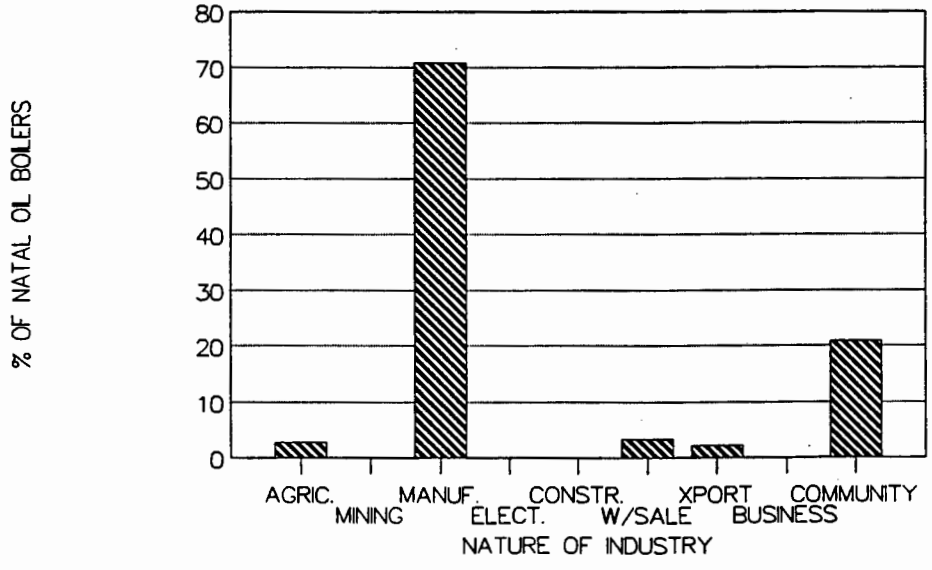
OIL BOILER DISTRIBUTION BY USAGE FOR THE TRANSVAAL



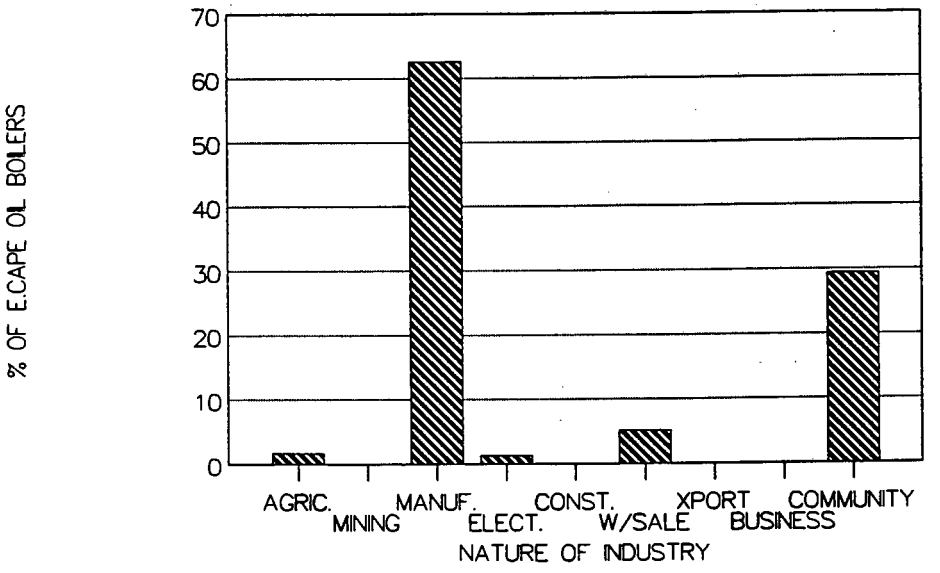
OIL BOILER DISTRIBUTION BY USAGE FOR THE ORANGE FREE STATE



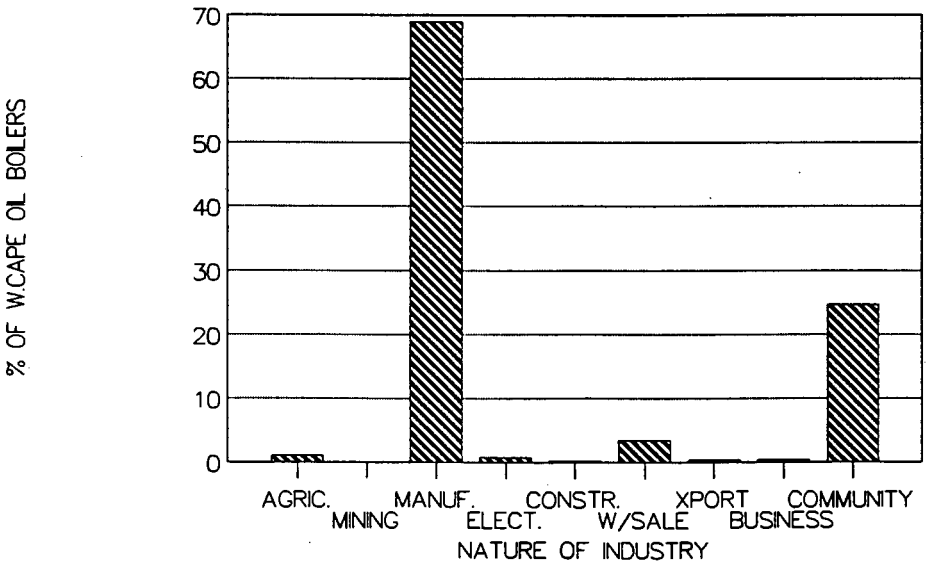
OIL BOILER DISTRIBUTION BY USAGE FOR NATAL



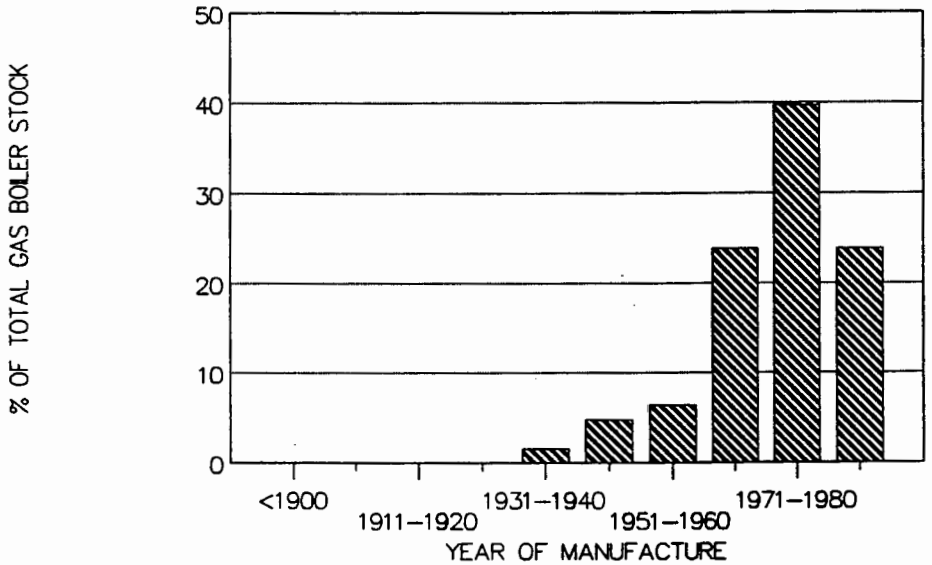
OIL BOILER DISTRIBUTION BY USAGE FOR THE EASTERN CAPE



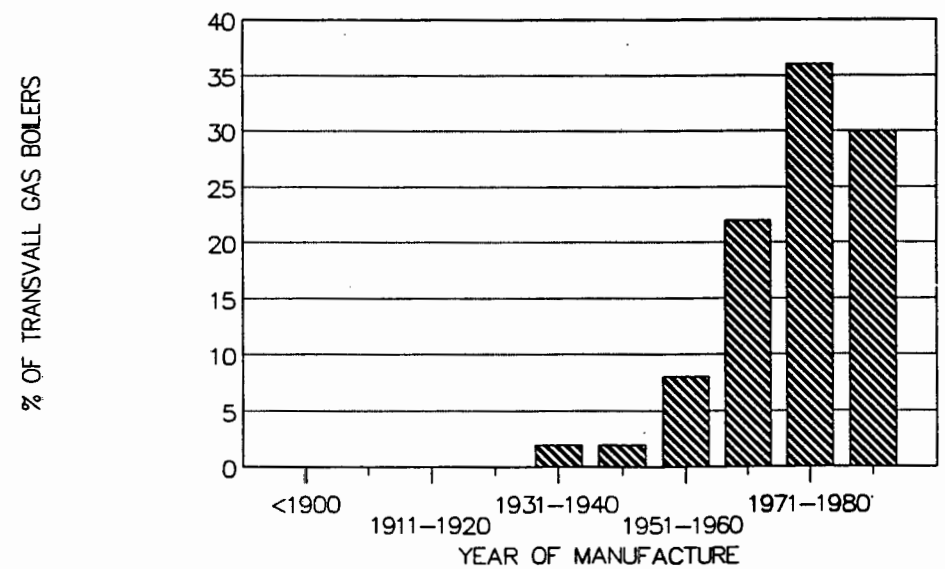
OIL BOILER DISTRIBUTION BY USAGE FOR THE WESTERN CAPE



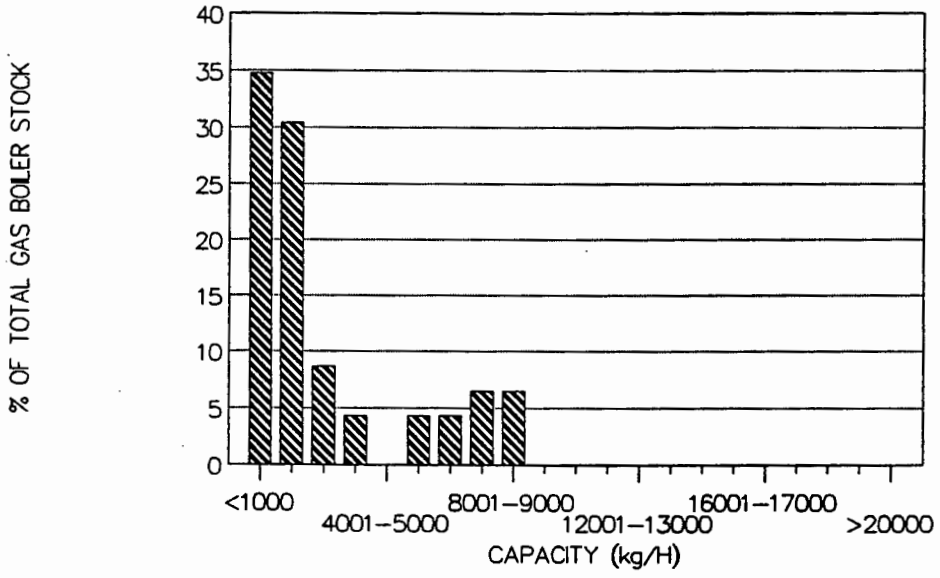
GAS BOILER DISTRIBUTION BY AGE SOUTH AFRICAN BOILER STOCK



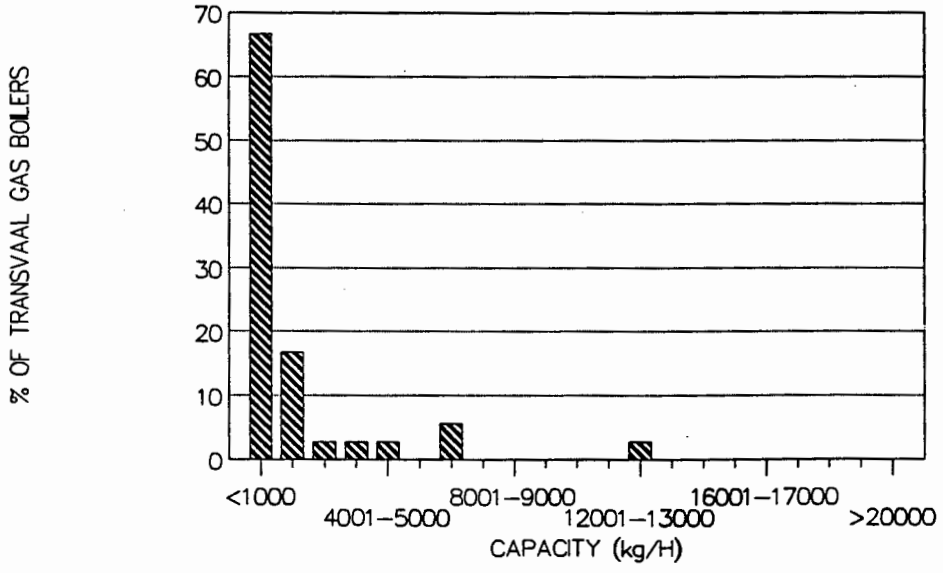
GAS BOILER DISTRIBUTION BY AGE FOR THE TRANSVAAL



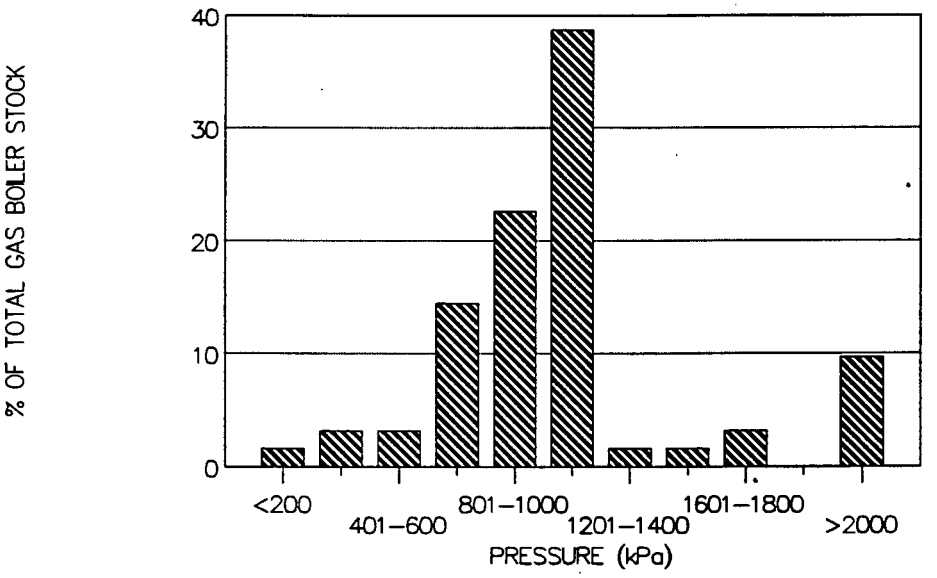
GAS BOILER DISTRIBUTION BY CAPACITY
SOUTH AFRICAN BOILER STOCK



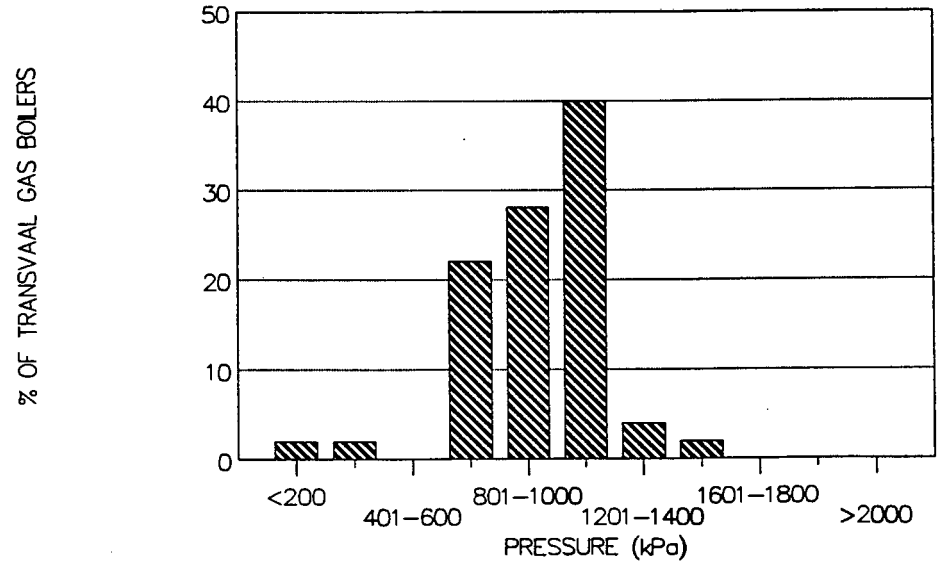
GAS BOILER DISTRIBUTION BY CAPACITY
FOR THE TRANSVAAL



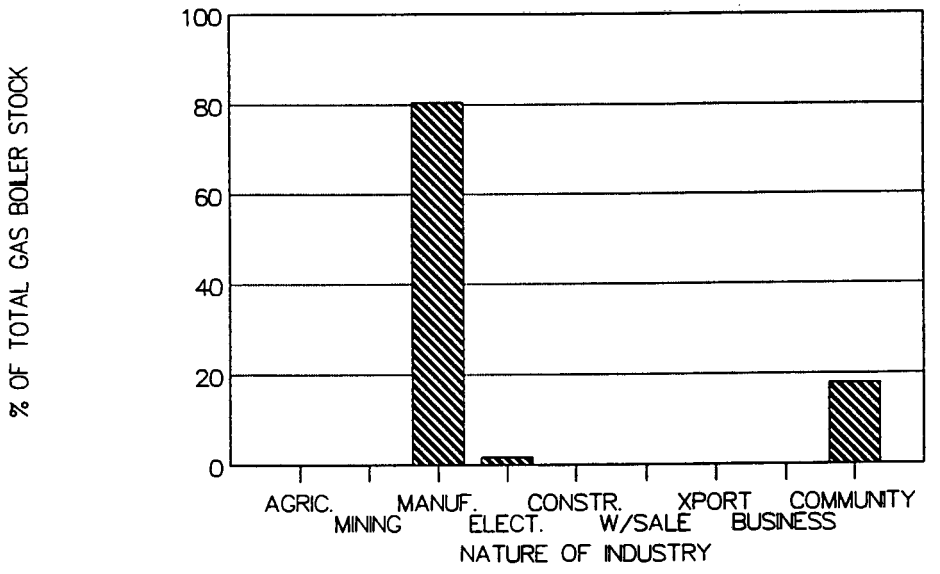
GAS BOILER DISTRIBUTION BY PRESSURE SOUTH AFRICAN BOILER STOCK



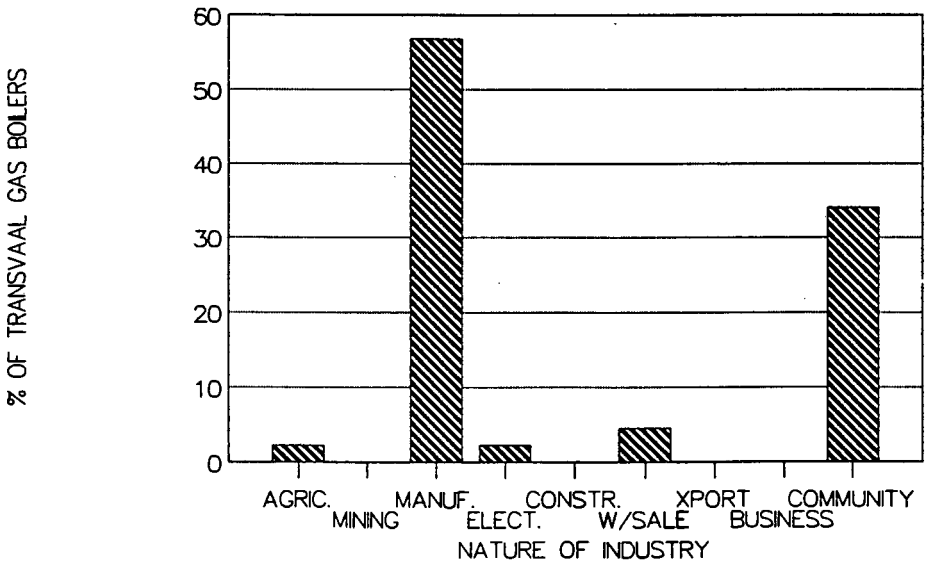
GAS BOILER DISTRIBUTION BY PRESSURE FOR THE TRANSVAAL



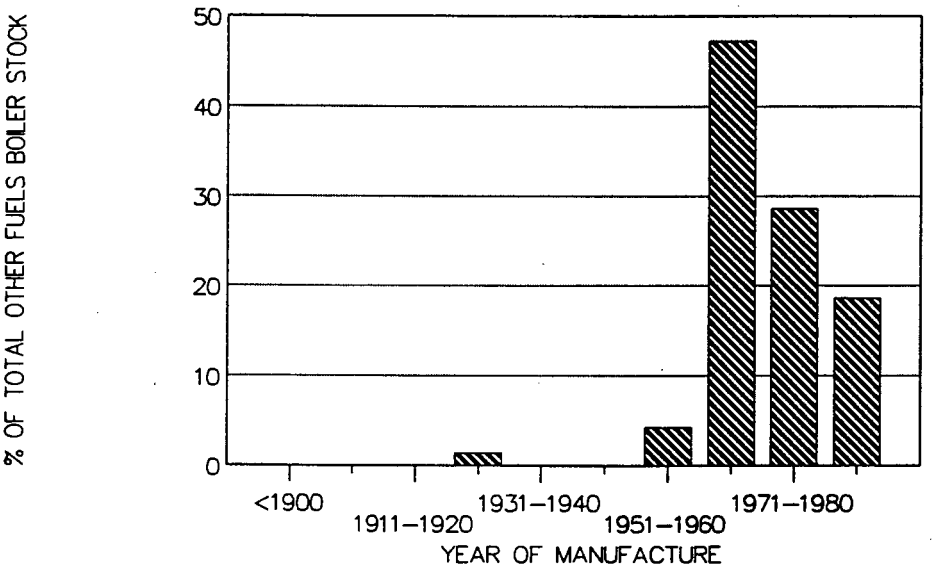
GAS BOILER DISTRIBUTION BY USAGE SOUTH AFRICAN BOILER STOCK



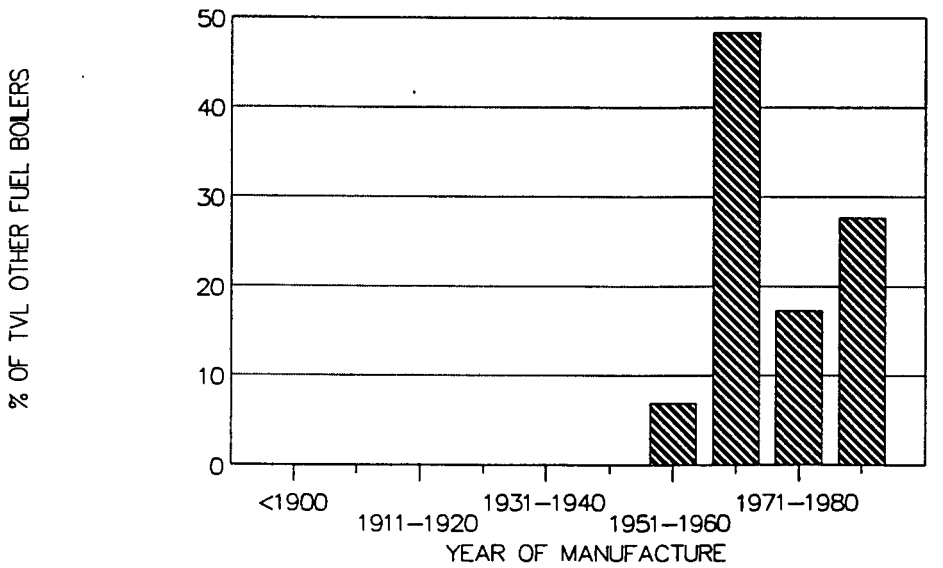
GAS BOILER DISTRIBUTION BY USAGE FOR THE TRANSVAAL



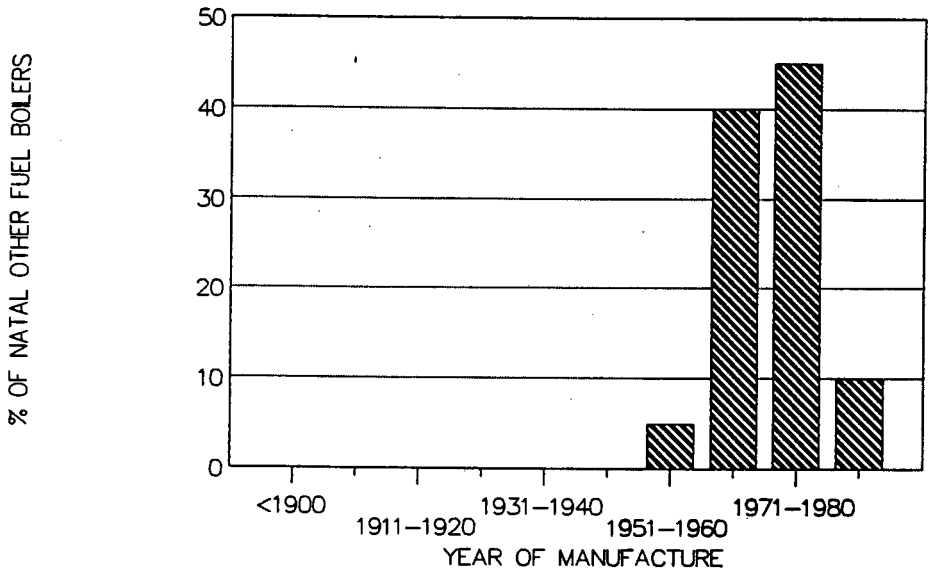
OTHER FUELS BOILER DISTRIBUTION BY AGE SOUTH AFRICAN BOILER STOCK



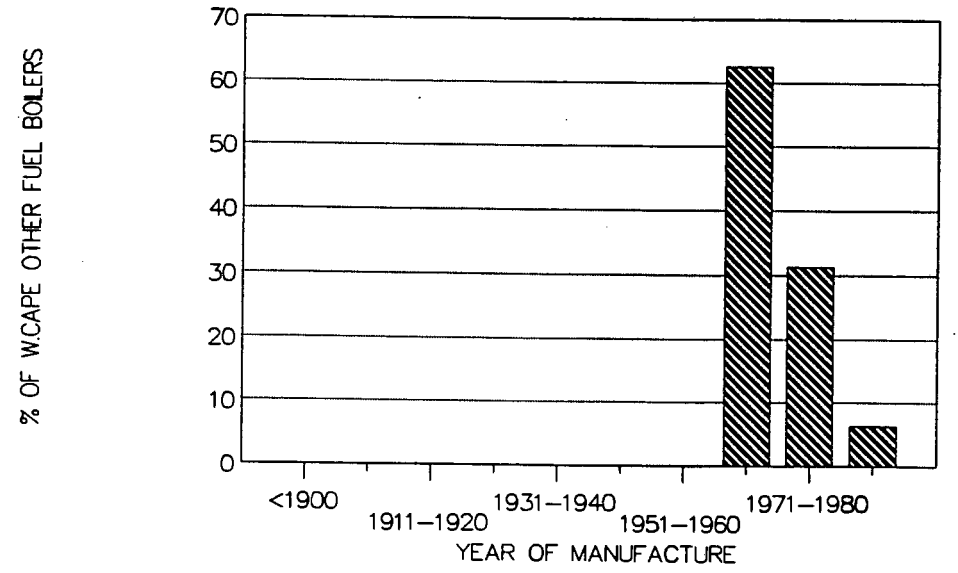
OTHER FUEL BOILER DISTRIBUTION BY AGE FOR THE TRANSVAAL



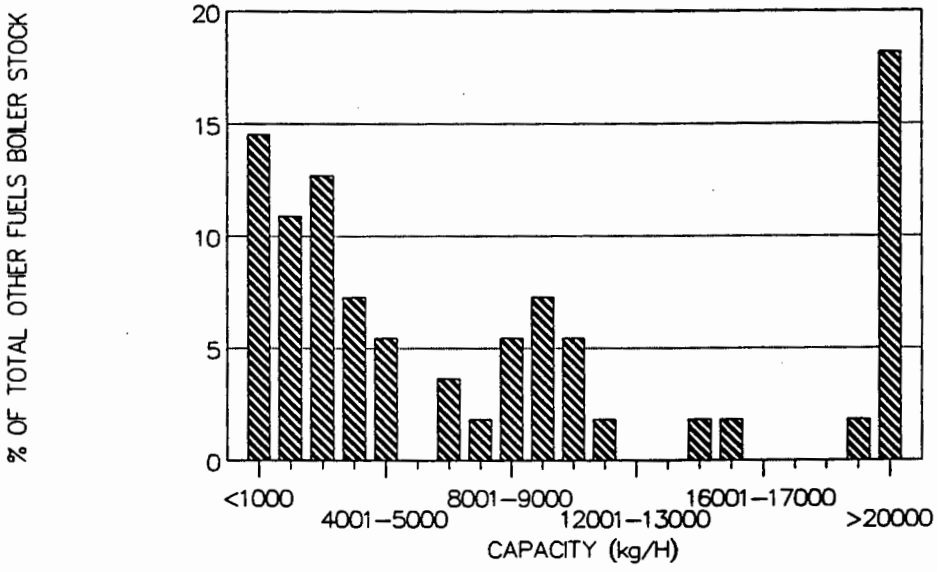
OTHER FUELS BOILER DISTRIBUTION BY AGE FOR NATAL



OTHER FUELS BOILER DISTRIBUTION BY AGE FOR THE WESTERN CAPE



OTHER FUELS BOILER DISTRIBUTION BY CAP. SOUTH AFRICAN BOILER STOCK



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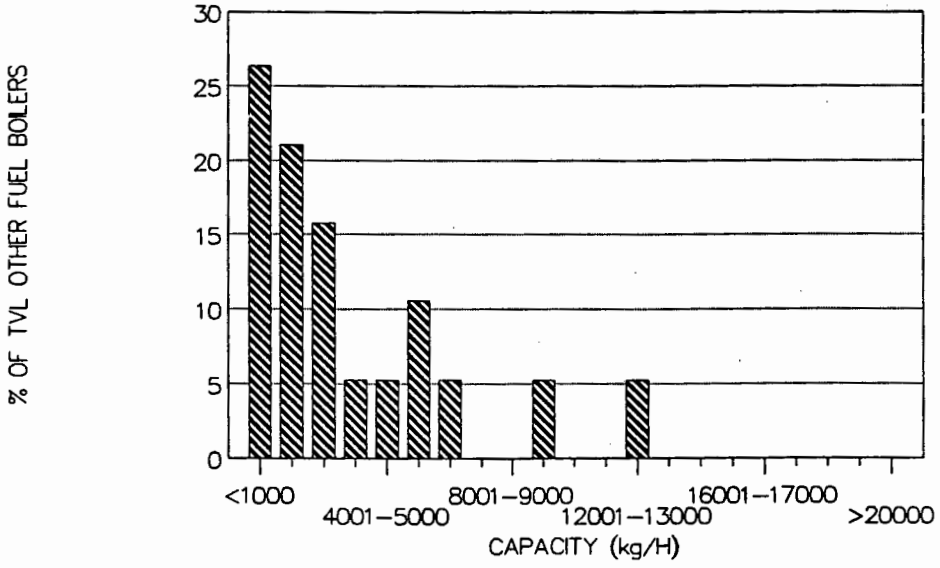

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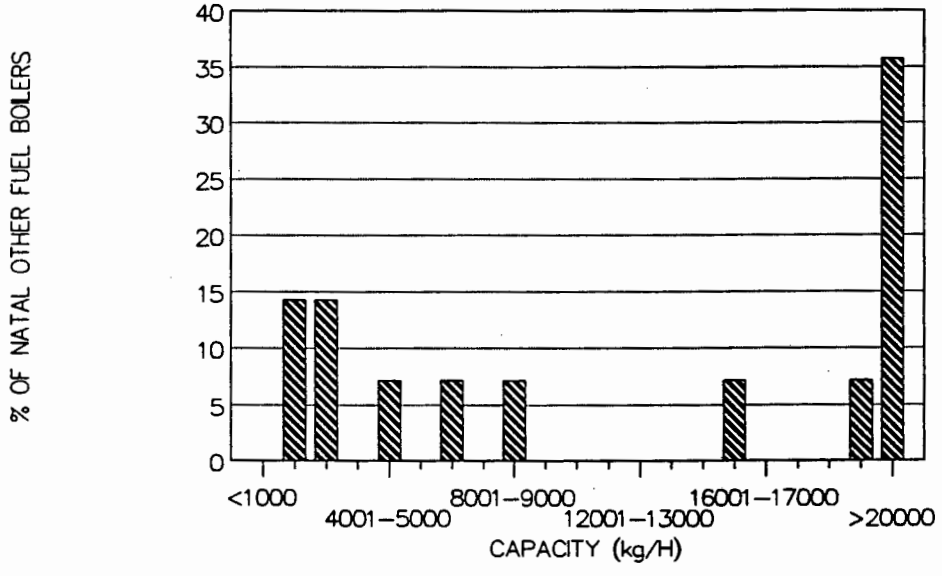

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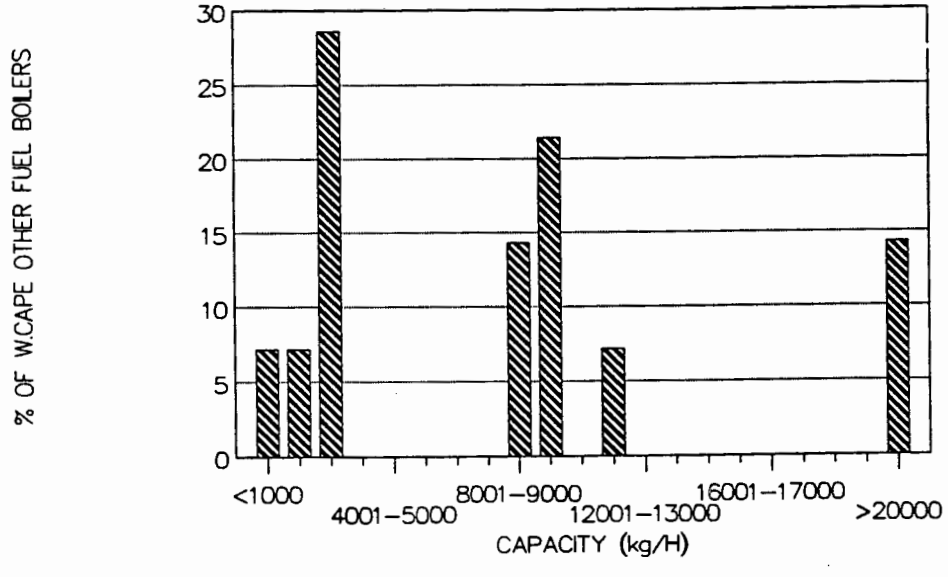

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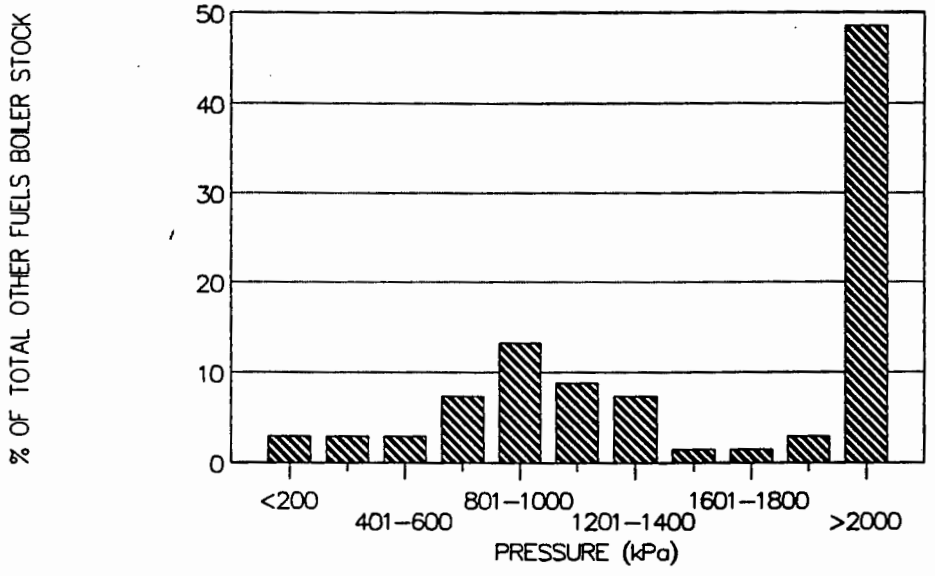
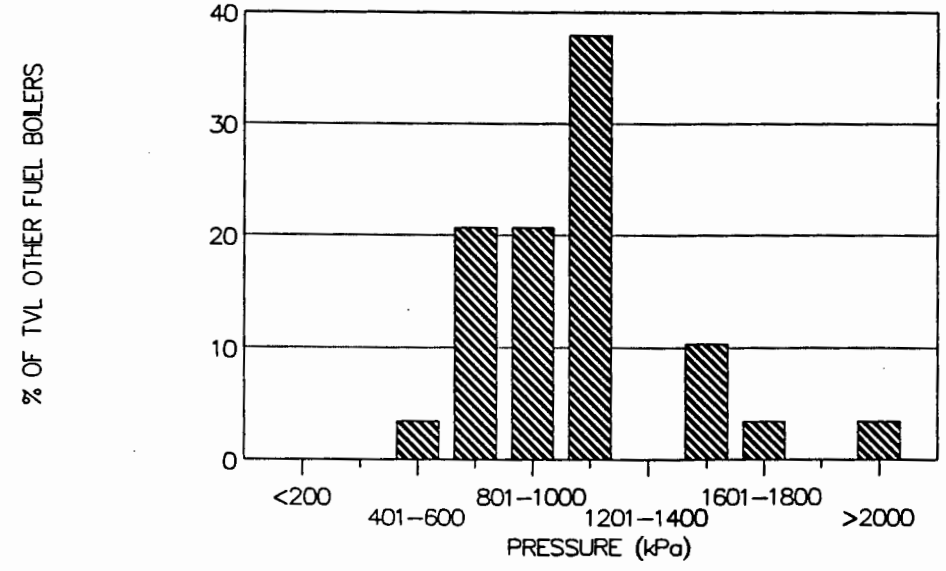
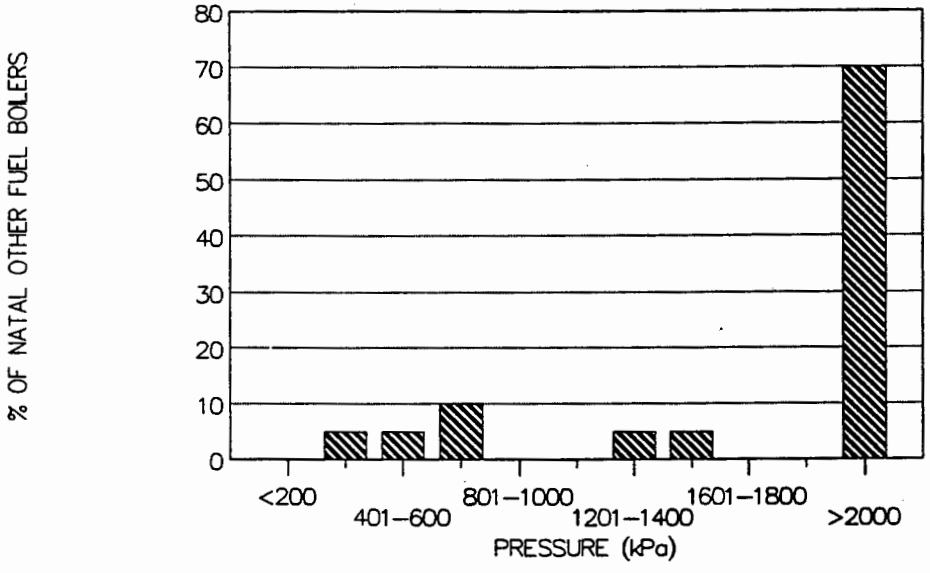


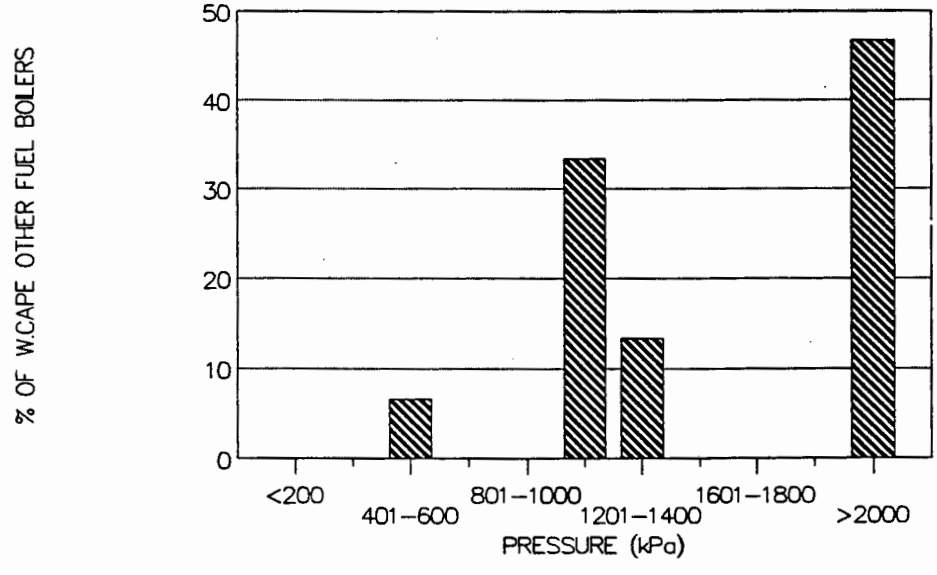
OTHER FUEL BOILER DISTRIBUTION BY PRES. FOR THE TRANSVAAL



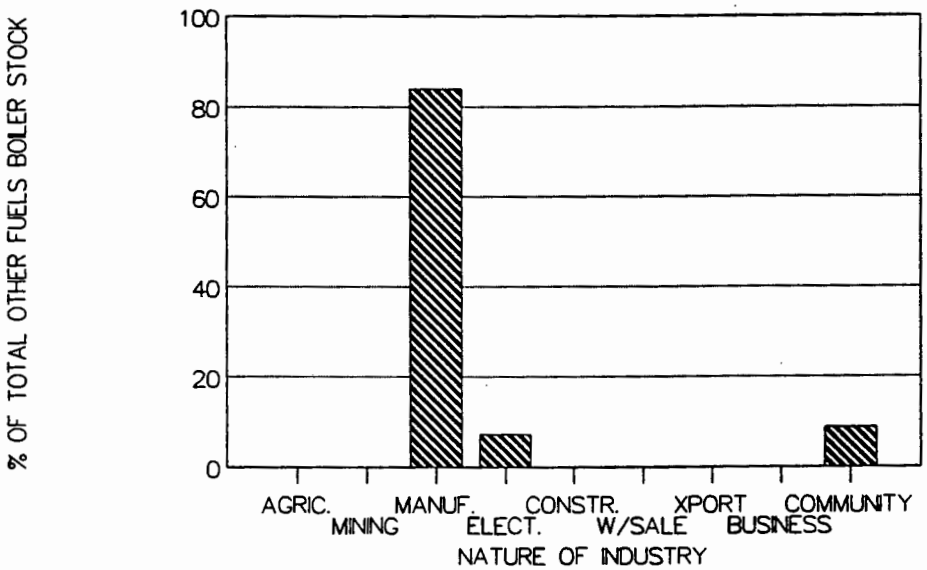
OTHER FUEL BOILER DISTRIBUTION BY PRES. FOR NATAL



OTHER FUELS BOILER DISTRIBUTION BY PRES FOR THE WESTERN CAPE



OTHER FUEL BOILER DISTRIBUTION BY USAGE SOUTH AFRICAN BOILER STOCK



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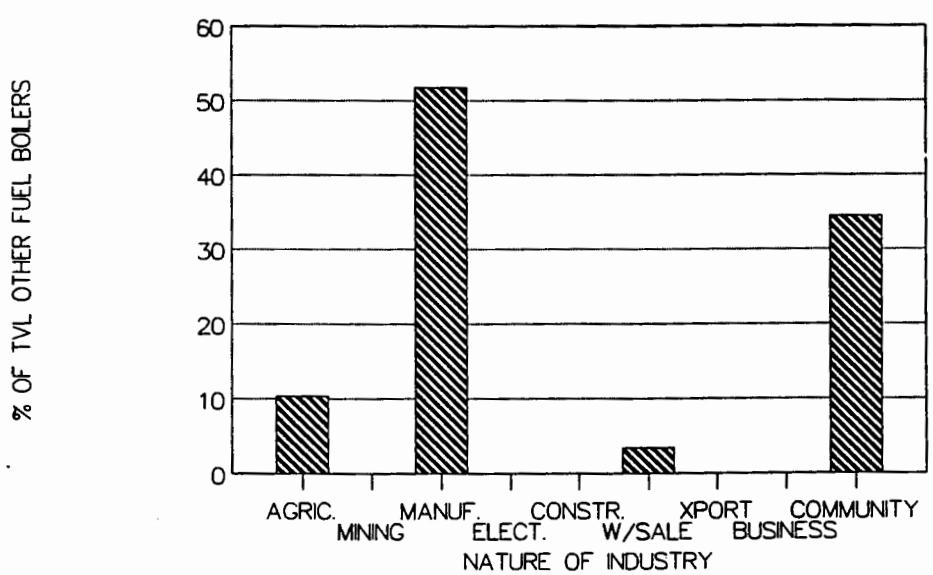

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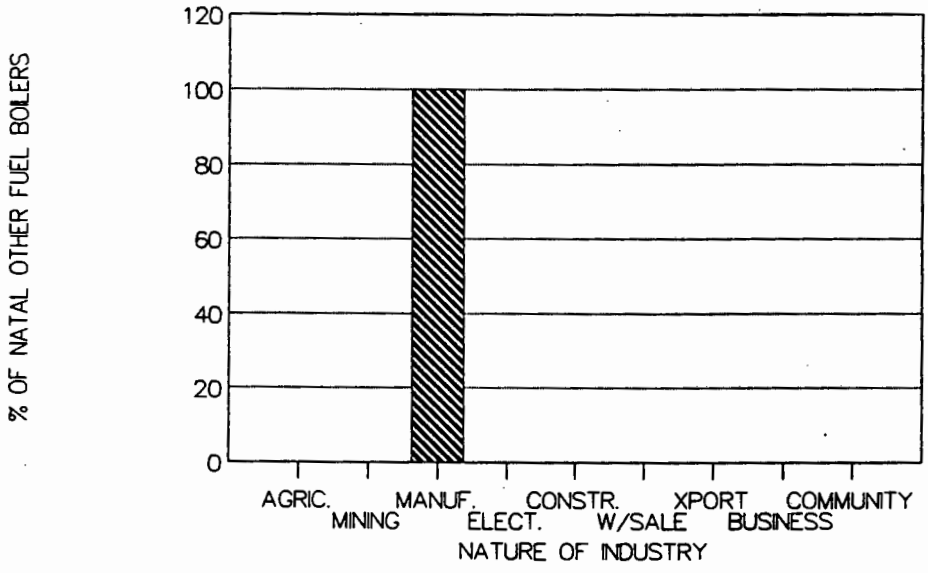

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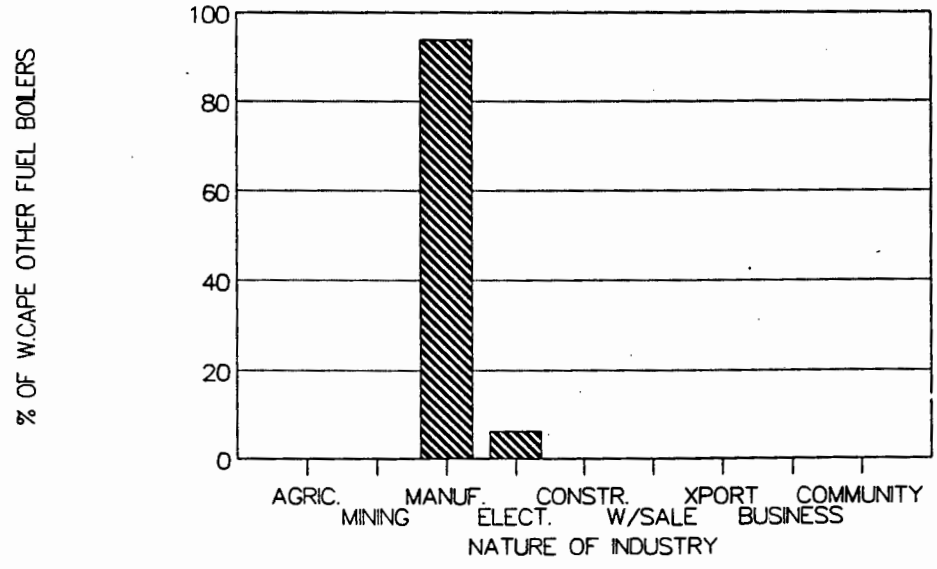

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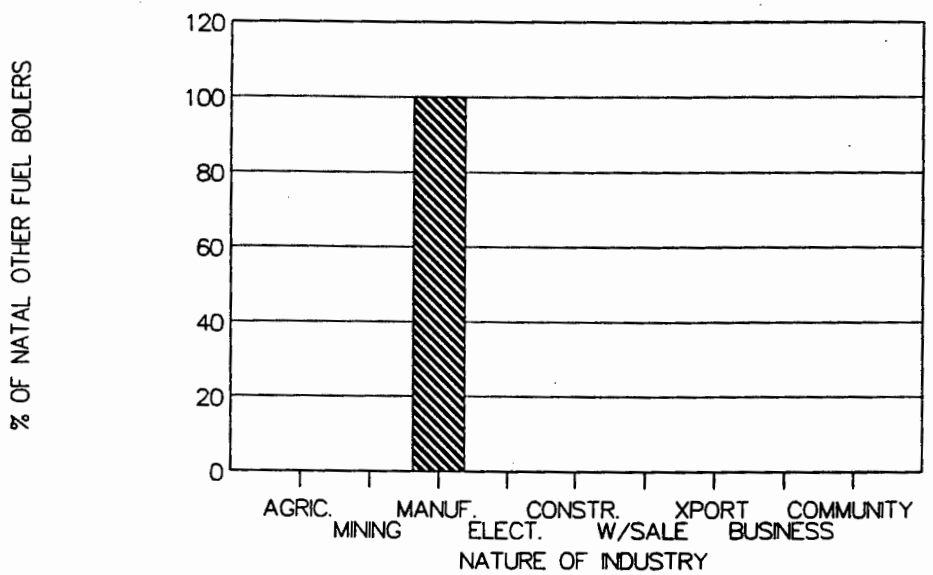
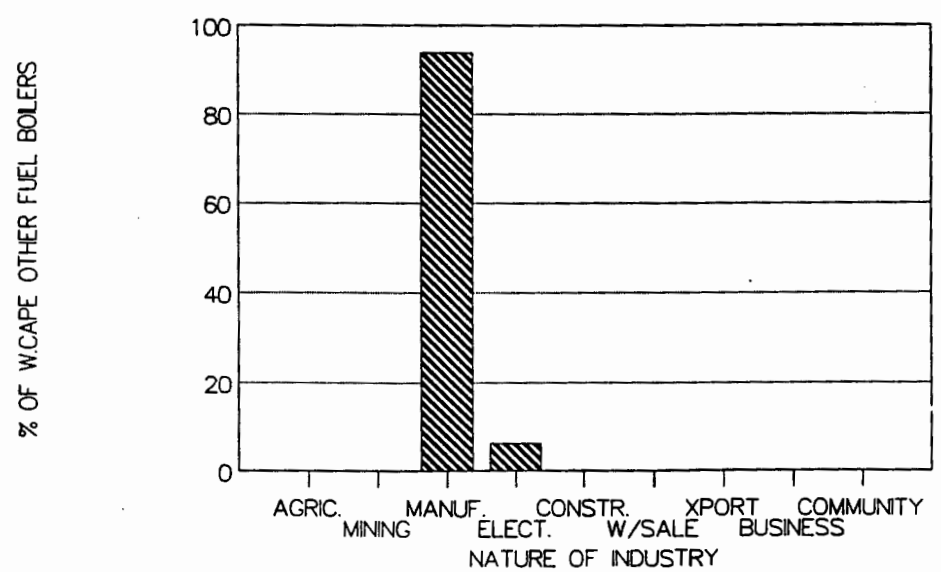


OTHER FUELS BOILER DISTRIBUTION BY USE FOR THE WESTERN CAPE



SOUTH AFRICAN BOILER STOCK
BOILER DISTRUBTION BY:

TYPE	TYPE	NUMBER	%
MISSING	0	227	
W/TUBE	1	931	15.8
SHELL	2	3960	67.4
VERTICAL (SHELL)	3	735	12.5
ELECTRICAL	4	248	4.2
TOTAL		5874	100

FUEL	FUEL	NUMBER	%
MISSING	0	481	
COAL	1	3070	54.6
OIL	2	2169	38.6
GAS	3	63	1.1
ELECTRICAL	4	248	4.4
OTHER	5	70	1.2
TOTAL		5620	100

YEAR	YEAR	NUMBER	%
MISSING	0	71	
<1900	1900	5	0.1
1901-1910	1910	47	0.8
1911-1920	1920	25	0.4
1921-1930	1930	85	1.4
1931-1940	1940	189	3.1
1941-1950	1950	313	5.2
1951-1960	1960	830	13.8
1961-1970	1970	1786	29.6
1971-1980	1980	1930	32.0
1981-1990	1990	820	13.6
TOTAL		6030	100

USAGE	USAGE	NUMBER	%
MISSING	0	342	
AGRIC.	199	127	2.2
MINING	299	9	0.2
MANUF.	399	3498	60.7
ELECT.	499	92	1.6
CONSTR.	599	5	0.1
W/SALE	699	129	2.2
XPORT	799	25	0.4
BUSINESS	899	17	0.3
COMMUNITY	999	1857	32.2
TOTAL		5759	100

CAPACITY	CAPACITY	NUMBER	%
MISSING	0	1540	
<1000	1000	1577	34.6
1001-2000	2000	907	19.9
2001-3000	3000	426	9.3
3001-4000	4000	334	7.3
4001-5000	5000	228	5.0
5001-6000	6000	120	2.6
6001-7000	7000	90	2.0
7001-8000	8000	185	4.1
8001-9000	9000	42	0.9
9001-10000	10000	165	3.6
10001-1100	11000	18	0.4
11001-1200	12000	85	1.9
12001-1300	13000	51	1.1
13001-1400	14000	7	0.2
14001-1500	15000	45	1.0
15001-1600	16000	49	1.1
16001-1700	17000	5	0.1
17001-1800	18000	10	0.2
18001-1900	19000	16	0.4
19001-2000	20000	46	1.0
>20000		155	3.4
TOTAL		4561	100

PRESSURE	PRESSURE	NUMBER	%
MISSING	0	105	
<200	200	43	0.7
201-400	400	39	0.7
401-600	600	60	1.0
601-800	800	1043	17.4
801-1000	1000	1409	23.5
1001-1200	1200	2461	41.0
1201-1400	1400	264	4.4
1401-1600	1600	117	2.0
1601-1800	1800	185	3.1
1801-2000	2000	50	0.8
>2000		325	5.4
TOTAL		5996	100

SOUTH AFRICAN BOILER STOCK
BOILERS CATEGORISED BY BOILER TYPE

WATER-TUBE BOILER DISTRIBUTION BY:

FUEL	FUEL	NUMBER	%
MISSING	0	116	
COAL	1	728	89.3
GAS	3	6	0.7
OIL	2	65	8.0
OTHER	5	16	2.0
TOTAL		815.0	100.0

YEAR	YEAR	NUMBER	%
MISSING	0	9	
<1900	1900	2	0.2
1901-1910	1910	29	3.1
1911-1920	1920	13	1.4
1921-1930	1930	48	5.2
1931-1940	1940	90	9.8
1941-1950	1950	96	10.4
1951-1960	1960	262	28.4
1961-1970	1970	202	21.9
1971-1980	1980	125	13.6
1981-1990	1990	55	6.0
TOTAL		922	100

USAGE	USAGE	NUMBER	%
MISSING	0	22	
AGRIC.	199	17	1.9
MINING	299	0	0.0
MANUF.	399	529	58.2
ELECT.	499	61	6.7
CONSTR.	599	1	0.1
W/SALE	699	13	1.4
XPORT	799	5	0.6
BUSINESS	899	2	0.2
COMMUNITY	999	281	30.9
TOTAL		909	100

CAPACITY	CAPACITY	NUMBER	%
MISSING	0	506	
<1000	1000	103	24.2
1001-2000	2000	97	22.8
2001-3000	3000	17	4.0
3001-4000	4000	15	3.5
4001-5000	5000	5	1.2
5001-6000	6000	10	2.4
6001-7000	7000	4	0.9
7001-8000	8000	4	0.9
8001-9000	9000	9	2.1
9001-10000	10000	3	0.7
10001-1100	11000	2	0.5
11001-1200	12000	8	1.9
12001-1300	13000	1	0.2
13001-1400	14000	4	0.9
14001-1500	15000	4	0.9
15001-1600	16000	4	0.9
16001-1700	17000	4	0.9
17001-1800	18000	0	0.0
18001-1900	19000	1	0.2
19001-2000	20000	2	0.5
>20000		128	30.1
TOTAL		425.0	100.0

PRESSURE	PRESSURE	NUMBER	%
MISSING	0	18	
<200	200	5	0.5
201-400	400	5	0.5
401-600	600	19	2.1
601-800	800	217	23.8
801-1000	1000	192	21.0
1001-1200	1200	92	10.1
1201-1400	1400	88	9.6
1401-1600	1600	38	4.2
1601-1800	1800	44	4.8
1801-2000	2000	6	0.7
>2000		207	22.7
TOTAL		913.0	100.0

SOUTH AFRICAN BOILER STOCK
BOILERS CATEGORISED BY BOILER TYPE

SHELL AND VERTICAL BOILER DISTRIBUTION BY:

FUEL	FUEL	NUMBER	%
MISSING	0	270	
COAL	1	2267	51.2
OIL	2	2066	46.7
GAS	3	52	1.2
OTHER	5	40	0.9
TOTAL		4425.0	100.0

YEAR	YEAR	NUMBER	%
MISSING	0	38	
<1900	1900	1	0.0
1901-1910	1910	11	0.2
1911-1920	1920	10	0.2
1921-1930	1930	33	0.7
1931-1940	1940	71	1.5
1941-1950	1950	200	4.3
1951-1960	1960	526	11.3
1961-1970	1970	1505	32.3
1971-1980	1980	1676	36.0
1981-1990	1990	624	13.4
TOTAL		4657	100

USAGE	USAGE	NUMBER	%
MISSING	0	265	
AGRIC.	199	102	2.3
MINING	299	7	0.2
MANUF.	399	2700	60.9
ELECT.	499	20	0.5
CONSTR.	599	3	0.1
W/SALE	699	107	2.4
XPORT	799	17	0.4
BUSINESS	899	13	0.3
COMMUNITY	999	1461	33.0
TOTAL		4430	100

CAPACITY	CAPACITY	NUMBER	%
MISSING	0	812	
<1000	1000	1322	34.0
1001-2000	2000	763	19.6
2001-3000	3000	399	10.3
3001-4000	4000	313	8.1
4001-5000	5000	222	5.7
5001-6000	6000	106	2.7
6001-7000	7000	84	2.2
7001-8000	8000	178	4.6
8001-9000	9000	32	0.8
9001-10000	10000	157	4.0
10001-1100	11000	15	0.4
11001-1200	12000	76	2.0
12001-1300	13000	48	1.2
13001-1400	14000	2	0.1
14001-1500	15000	41	1.1
15001-1600	16000	41	1.1
16001-1700	17000	1	0.0
17001-1800	18000	10	0.3
18001-1900	19000	15	0.4
19001-2000	20000	42	1.1
>20000		16	0.4
TOTAL		3883.0	100.0

PRESSURE	PRESSURE	NUMBER	%
MISSING	0	56	
<200	200	23	0.5
201-400	400	16	0.3
401-600	600	21	0.5
601-800	800	787	17.0
801-1000	1000	1148	24.7
1001-1200	1200	2200	47.4
1201-1400	1400	155	3.3
1401-1600	1600	63	1.4
1601-1800	1800	122	2.6
1801-2000	2000	37	0.8
>2000		67	1.4
TOTAL		4639.0	100.0

SOUTH AFRICAN BOILER STOCK
BOILERS CATEGORISED BY BOILER TYPE

ELECTRICAL BOILER DISTRIBUTION BY:

YEAR	YEAR	NUMBER	%
MISSING	0	0	
<1900	1900	0	0.0
1901-1910	1910	0	0.0
1911-1920	1920	0	0.0
1921-1930	1930	0	0.0
1931-1940	1940	0	0.0
1941-1950	1950	3	1.2
1951-1960	1960	11	4.4
1961-1970	1970	34	13.7
1971-1980	1980	90	36.3
1981-1990	1990	110	44.4
TOTAL		248	100

USAGE	USAGE	NUMBER	%
MISSING	0	27	
AGRIC.	199	1	0.5
MINING	299	0	0.0
MANUF.	399	128	57.9
ELECT.	499	5	2.3
CONSTR.	599	0	0.0
W/SALE	699	7	3.2
XPORT	799	2	0.9
BUSINESS	899	0	0.0
COMMUNITY	999	78	35.3
TOTAL		221	100

CAPACITY	CAPACITY	NUMBER	%
MISSING	0	71	
<1000	1000	134	75.7
1001-2000	2000	33	18.6
2001-3000	3000	3	1.7
3001-4000	4000	4	2.3
4001-5000	5000	1	0.6
5001-6000	6000	0	0.0
6001-7000	7000	0	0.0
7001-8000	8000	0	0.0
8001-9000	9000	0	0.0
9001-10000	10000	1	0.6
10001-1100	11000	0	0.0
11001-1200	12000	0	0.0
12001-1300	13000	1	0.6
13001-1400	14000	0	0.0
14001-1500	15000	0	0.0
15001-1600	16000	0	0.0
16001-1700	17000	0	0.0
17001-1800	18000	0	0.0
18001-1900	19000	0	0.0
19001-2000	20000	0	0.0
>20000		0	0.0
TOTAL		177.0	100.0

PRESSURE	PRESSURE	NUMBER	%
MISSING	0	4	
<200	200	4	1.6
201-400	400	16	6.6
401-600	600	17	7.0
601-800	800	11	4.5
801-1000	1000	39	16.0
1001-1200	1200	134	54.9
1201-1400	1400	5	2.0
1401-1600	1600	4	1.6
1601-1800	1800	4	1.6
1801-2000	2000	0	0.0
>2000		10	4.1
TOTAL		244.0	100.0

SOUTH AFRICAN BOILER STOCK
BOILERS CATEGORISED BY FUEL TYPE

COAL BOILER DISTRIBUTION BY:

YEAR	YEAR	NUMBER	%
MISSING	0	26	
<1900	1900	3	0.1
1901-1910	1910	34	1.1
1911-1920	1920	17	0.6
1921-1930	1930	73	2.4
1931-1940	1940	152	5.0
1941-1950	1950	256	8.5
1951-1960	1960	682	22.5
1961-1970	1970	654	21.6
1971-1980	1980	735	24.3
1981-1990	1990	423	14.0
TOTAL		3029.0	100.0

PRESSURE	PRESS	NUMBER	%
MISSING	0	46	
<200	200	14	0.5
201-400	400	9	0.3
401-600	600	21	0.7
601-800	800	814	27.1
801-1000	1000	623	20.7
1001-1200	1200	964	32.0
1201-1400	1400	179	5.9
1401-1600	1600	84	2.8
1601-1800	1800	109	3.6
1801-2000	2000	36	1.2
>2000		156	5.2
TOTAL		3009.0	100.0

CAPACITY	CAPACITY	NUMBER	%
MISSING	0	998	
<1000	1000	309	15.0
1001-2000	2000	346	16.8
2001-3000	3000	178	8.7
3001-4000	4000	223	10.8
4001-5000	5000	165	8.0
5001-6000	6000	94	4.6
6001-7000	7000	75	3.6
7001-8000	8000	149	7.2
8001-9000	9000	30	1.5
9001-10000	10000	136	6.6
10001-1100	11000	11	0.5
11001-1200	12000	52	2.5
12001-1300	13000	44	2.1
13001-1400	14000	7	0.3
14001-1500	15000	28	1.4
15001-1600	16000	44	2.1
16001-1700	17000	5	0.2
17001-1800	18000	5	0.2
18001-1900	19000	12	0.6
19001-2000	20000	40	1.9
>20000		104	5.1
TOTAL		2057.0	100.0

USAGE	USAGE	NUMBER	%
MISSING	0	129	
AGRIC.	199	72	2.5
MINING	299	5	0.2
MANUF.	399	1737	59.4
ELECT.	499	59	2.0
CONSTR.	599	1	0.0
W/SALE	699	28	1.0
XPORT	799	7	0.2
BUSINESS	899	5	0.2
COMMUNITY	999	1012	34.6
TOTAL		2926	100

SOUTH AFRICAN BOILER STOCK
BOILERS CATEGORISED BY FUEL TYPE

OIL BOILER DISTRIBUTION BY:

YEAR	YEAR	NUMBER	%
MISSING	0	22	
<1900	1900	0	0.0
1901-1910	1910	3	0.1
1911-1920	1920	2	0.1
1921-1930	1930	1	0.0
1931-1940	1940	11	0.5
1941-1950	1950	25	1.2
1951-1960	1960	77	3.6
1961-1970	1970	928	42.9
1971-1980	1980	938	43.4
1981-1990	1990	177	8.2
TOTAL		2162.0	100.0

PRESSURE	PRESS	NUMBER	%
MISSING	0	28	
<200	200	18	0.8
201-400	400	5	0.2
401-600	600	5	0.2
601-800	800	163	7.6
801-1000	1000	577	26.8
1001-1200	1200	1206	55.9
1201-1400	1400	47	2.2
1401-1600	1600	14	0.6
1601-1800	1800	55	2.6
1801-2000	2000	11	0.5
>2000		55	2.6
TOTAL		2156.0	100.0

CAPACITY	CAPACITY	NUMBER	%
MISSING	0	240	
<1000	1000	973	50.1
1001-2000	2000	450	23.1
2001-3000	3000	199	10.2
3001-4000	4000	91	4.7
4001-5000	5000	53	2.7
5001-6000	6000	21	1.1
6001-7000	7000	8	0.4
7001-8000	8000	30	1.5
8001-9000	9000	6	0.3
9001-10000	10000	23	1.2
10001-1100	11000	4	0.2
11001-1200	12000	28	1.4
12001-1300	13000	6	0.3
13001-1400	14000	0	0.0
14001-1500	15000	14	0.7
15001-1600	16000	3	0.2
16001-1700	17000	0	0.0
17001-1800	18000	5	0.3
18001-1900	19000	4	0.2
19001-2000	20000	5	0.3
>20000		21	1.1
TOTAL		1944.0	100.0

USAGE	USAGE	NUMBER	%
MISSING	0	133	
AGRIC.	199	39	1.9
MINING	299	4	0.2
MANUF.	399	1255	61.2
ELECT.	499	11	0.5
CONSTR.	599	4	0.2
W/SALE	699	87	4.2
XPORT	799	12	0.6
BUSINESS	899	8	0.4
COMMUNITY	999	631	30.8
TOTAL		2051	100

SOUTH AFRICAN BOILER STOCK
BOILERS CATEGORISED BY FUEL TYPE

GAS BOILER DISTRIBUTION BY:

YEAR	YEAR	NUMBER	%
MISSING	0	0	
<1900	1900	0	0.0
1901-1910	1910	0	0.0
1911-1920	1920	0	0.0
1921-1930	1930	0	0.0
1931-1940	1940	1	1.6
1941-1950	1950	3	4.8
1951-1960	1960	4	6.3
1961-1970	1970	15	23.8
1971-1980	1980	25	39.7
1981-1990	1990	15	23.8
TOTAL		63.0	100.0

PRESSURE	PRESS	NUMBER	%
MISSING	0	1	
<200	200	1	1.6
201-400	400	2	3.2
401-600	600	2	3.2
601-800	800	9	14.5
801-1000	1000	14	22.6
1001-1200	1200	24	38.7
1201-1400	1400	1	1.6
1401-1600	1600	1	1.6
1601-1800	1800	2	3.2
1801-2000	2000	0	0.0
>2000		6	9.7
TOTAL		62.0	100.0

CAPACITY	CAPACITY	NUMBER	%
MISSING	0	17	
<1000	1000	16	34.8
1001-2000	2000	14	30.4
2001-3000	3000	4	8.7
3001-4000	4000	2	4.3
4001-5000	5000	0	0.0
5001-6000	6000	2	4.3
6001-7000	7000	2	4.3
7001-8000	8000	3	6.5
8001-9000	9000	3	6.5
9001-10000	10000	0	0.0
10001-1100	11000	0	0.0
11001-1200	12000	0	0.0
12001-1300	13000	0	0.0
13001-1400	14000	0	0.0
14001-1500	15000	0	0.0
15001-1600	16000	0	0.0
16001-1700	17000	0	0.0
17001-1800	18000	0	0.0
18001-1900	19000	0	0.0
19001-2000	20000	0	0.0
>20000		0	0.0
TOTAL		46.0	100.0

USAGE	USAGE	NUMBER	%
MISSING	0	7	
AGRIC.	199	0	0.0
MINING	299	0	0.0
MANUF.	399	45	80.4
ELECT.	499	1	1.8
CONSTR.	599	0	0.0
W/SALE	699	0	0.0
XPORT	799	0	0.0
BUSINESS	899	0	0.0
COMMUNITY	999	10	17.9
TOTAL		56	100

SOUTH AFRICAN BOILER STOCK
BOILERS CATEGORISED BY FUEL TYPE

OTHER FUELS BOILER DISTRIBUTION BY:

YEAR	YEAR	NUMBER	%
MISSING	0	0	
<1900	1900	0	0.0
1901-1910	1910	0	0.0
1911-1920	1920	0	0.0
1921-1930	1930	1	1.4
1931-1940	1940	0	0.0
1941-1950	1950	0	0.0
1951-1960	1960	3	4.3
1961-1970	1970	33	47.1
1971-1980	1980	20	28.6
1981-1990	1990	13	18.6
TOTAL		70.0	100.0

PRESSURE	PRESS	NUMBER	%
MISSING	0	2	
<200	200	2	2.9
201-400	400	2	2.9
401-600	600	2	2.9
601-800	800	5	7.4
801-1000	1000	9	13.2
1001-1200	1200	6	8.8
1201-1400	1400	5	7.4
1401-1600	1600	1	1.5
1601-1800	1800	1	1.5
1801-2000	2000	2	2.9
>2000		33	48.5
TOTAL		68.0	100.0

CAPACITY	CAPACITY	NUMBER	%
MISSING	0	15	
<1000	1000	8	14.5
1001-2000	2000	6	10.9
2001-3000	3000	7	12.7
3001-4000	4000	4	7.3
4001-5000	5000	3	5.5
5001-6000	6000	0	0.0
6001-7000	7000	2	3.6
7001-8000	8000	1	1.8
8001-9000	9000	3	5.5
9001-10000	10000	4	7.3
10001-1100	11000	3	5.5
11001-1200	12000	1	1.8
12001-1300	13000	0	0.0
13001-1400	14000	0	0.0
14001-1500	15000	1	1.8
15001-1600	16000	1	1.8
16001-1700	17000	0	0.0
17001-1800	18000	0	0.0
18001-1900	19000	0	0.0
19001-2000	20000	1	1.8
>20000		10	18.2
TOTAL		55.0	100.0

USAGE	USAGE	NUMBER	%
MISSING	0	2	
AGRIC.	199	0	0.0
MINING	299	0	0.0
MANUF.	399	57	83.8
ELECT.	499	5	7.4
CONSTR.	599	0	0.0
W/SALE	699	0	0.0
XPORT	799	0	0.0
BUSINESS	899	0	0.0
COMMUNITY	999	6	8.8
TOTAL		68	100

TRANSVAAL BOILER STOCK
BOILER DISTRIBUTION BY:

TYPE	TYPE	NUMBER	%
MISSING	0	125	
W/TUBE	1	420	15.5
SHELL	2	1818	67.2
VERTICAL (SHELL)	3	356	13.2
ELECTRICAL	4	113	4.2
TOTAL		2707	100

FUEL	FUEL	NUMBER	%
MISSING	0	279	
COAL	1	1433	56.1
OIL	2	928	36.3
GAS	3	50	2.0
ELECTRICAL	4	113	4.4
OTHER	5	29	1.1
TOTAL		2553	100

YEAR	YEAR	NUMBER	%
MISSING	0	31	
<1900	1900	12	0.4
1901-1910	1910	26	0.9
1911-1920	1920	17	0.6
1921-1930	1930	41	1.5
1931-1940	1940	105	3.7
1941-1950	1950	146	5.2
1951-1960	1960	387	13.8
1961-1970	1970	787	28.1
1971-1980	1980	883	31.5
1981-1990	1990	397	14.2
TOTAL		2801	100

USAGE	USAGE	NUMBER	%
MISSING	0	168	
AGRIC.	199	84	3.2
MINING	299	9	0.3
MANUF.	399	1486	55.8
ELECT.	499	41	1.5
CONSTR.	599	3	0.1
W/SALE	699	56	2.1
XPORT	799	6	0.2
BUSINESS	899	14	0.5
COMMUNITY	999	965	36.2
TOTAL		2664	100

CAPACITY	CAPACITY	NUMBER	%
MISSING	0	827	
<1000	1000	811	40.4
1001-2000	2000	400	20.0
2001-3000	3000	156	7.8
3001-4000	4000	138	6.9
4001-5000	5000	89	4.4
5001-6000	6000	57	2.8
6001-7000	7000	43	2.1
7001-8000	8000	75	3.7
8001-9000	9000	5	0.2
9001-10000	10000	51	2.5
10001-1100	11000	4	0.2
11001-1200	12000	21	1.0
12001-1300	13000	26	1.3
13001-1400	14000	1	0.0
14001-1500	15000	24	1.2
15001-1600	16000	25	1.2
16001-1700	17000	1	0.0
17001-1800	18000	4	0.2
18001-1900	19000	7	0.3
19001-2000	20000	22	1.1
>20000		45	2.2
TOTAL		2005	100

PRESSURE	PRESSURE	NUMBER	%
MISSING	0	66	
<200	200	28	1.0
201-400	400	16	0.6
401-600	600	24	0.9
601-800	800	460	16.6
801-1000	1000	666	24.1
1001-1200	1200	1173	42.4
1201-1400	1400	115	4.2
1401-1600	1600	65	2.3
1601-1800	1800	85	3.1
1801-2000	2000	17	0.6
>2000		117	4.2
TOTAL		2766	100

TRANSVAAL BOILER STOCK
BOILERS CATEGORISED BY BOILER TYPE

WATER-TUBE BOILER DISTRIBUTION BY:

FUEL	FUEL	NUMBER	%
MISSING	0	64	
COAL	1	327	91.9
GAS	3	2	0.6
OIL	2	21	5.9
OTHER	5	6	1.7
TOTAL		356.0	100.0

YEAR	YEAR	NUMBER	%
MISSING	0	6	
<1900	1900	3	0.7
1901-1910	1910	15	3.6
1911-1920	1920	11	2.7
1921-1930	1930	20	4.8
1931-1940	1940	44	10.6
1941-1950	1950	46	11.1
1951-1960	1960	105	25.4
1961-1970	1970	99	23.9
1971-1980	1980	47	11.4
1981-1990	1990	24	5.8
TOTAL		414	100

USAGE	USAGE	NUMBER	%
MISSING	0	10	
AGRIC.	199	10	2.4
MINING	299	0	0.0
MANUF.	399	224	54.6
ELECT.	499	23	5.6
CONSTR.	599	0	0.0
W/SALE	699	4	1.0
XPORT	799	2	0.5
BUSINESS	899	1	0.2
COMMUNITY	999	146	35.6
TOTAL		410	100

CAPACITY	CAPACITY	NUMBER	%
MISSING	0	249	
<1000	1000	58	33.9
1001-2000	2000	58	33.9
2001-3000	3000	7	4.1
3001-4000	4000	2	1.2
4001-5000	5000	0	0.0
5001-6000	6000	2	1.2
6001-7000	7000	4	2.3
7001-8000	8000	1	0.6
8001-9000	9000	0	0.0
9001-10000	10000	2	1.2
10001-1100	11000	0	0.0
11001-1200	12000	2	1.2
12001-1300	13000	0	0.0
13001-1400	14000	0	0.0
14001-1500	15000	3	1.8
15001-1600	16000	1	0.6
16001-1700	17000	0	0.0
17001-1800	18000	0	0.0
18001-1900	19000	0	0.0
19001-2000	20000	0	0.0
>20000		31	18.1
TOTAL		171.0	100.0

PRESSURE	PRESSURE	NUMBER	%
MISSING	0	11	
<200	200	4	1.0
201-400	400	2	0.5
401-600	600	10	2.4
601-800	800	108	26.4
801-1000	1000	117	28.6
1001-1200	1200	41	10.0
1201-1400	1400	29	7.1
1401-1600	1600	20	4.9
1601-1800	1800	19	4.6
1801-2000	2000	1	0.2
>2000		58	14.2
TOTAL		409.0	100.0

TRANSVAAL BOILER STOCK
BOILERS CATEGORISED BY BOILER TYPE

SHELL AND VERTICAL BOILER DISTRIBUTION BY:

FUEL	FUEL	NUMBER	%
MISSING	0	162	
COAL	1	1067	53.0
OIL	2	883	43.9
GAS	3	44	2.2
OTHER	5	18	0.9
TOTAL		2012.0	100.0

YEAR	YEAR	NUMBER	%
MISSING	0	16	
<1900	1900	7	0.3
1901-1910	1910	5	0.2
1911-1920	1920	4	0.2
1921-1930	1930	19	0.9
1931-1940	1940	40	1.9
1941-1950	1950	90	4.2
1951-1960	1960	250	11.6
1961-1970	1970	649	30.1
1971-1980	1980	788	36.5
1981-1990	1990	306	14.2
TOTAL		2158	100

USAGE	USAGE	NUMBER	%
MISSING	0	139	
AGRIC.	199	67	3.3
MINING	299	7	0.3
MANUF.	399	1131	55.6
ELECT.	499	11	0.5
CONSTR.	599	2	0.1
W/SALE	699	50	2.5
XPORT	799	4	0.2
BUSINESS	899	11	0.5
COMMUNITY	999	752	37.0
TOTAL		2035	100

CAPACITY	CAPACITY	NUMBER	%
MISSING	0	450	
<1000	1000	689	40.0
1001-2000	2000	315	18.3
2001-3000	3000	148	8.6
3001-4000	4000	132	7.7
4001-5000	5000	89	5.2
5001-6000	6000	54	3.1
6001-7000	7000	38	2.2
7001-8000	8000	72	4.2
8001-9000	9000	5	0.3
9001-10000	10000	47	2.7
10001-1100	11000	3	0.2
11001-1200	12000	19	1.1
12001-1300	13000	25	1.5
13001-1400	14000	0	0.0
14001-1500	15000	21	1.2
15001-1600	16000	22	1.3
16001-1700	17000	1	0.1
17001-1800	18000	4	0.2
18001-1900	19000	7	0.4
19001-2000	20000	21	1.2
>20000		12	0.7
TOTAL		1724.0	100.0

PRESSURE	PRESSURE	NUMBER	%
MISSING	0	39	
<200	200	11	0.5
201-400	400	12	0.6
401-600	600	11	0.5
601-800	800	333	15.6
801-1000	1000	503	23.6
1001-1200	1200	1045	48.9
1201-1400	1400	75	3.5
1401-1600	1600	37	1.7
1601-1800	1800	54	2.5
1801-2000	2000	13	0.6
>2000		41	1.9
TOTAL		2135.0	100.0

TRANSVAAL BOILER STOCK
BOILERS CATEGORISED BY BOILER TYPE

ELECTRICAL BOILER DISTRIBUTION BY:

YEAR	YEAR	NUMBER	%
MISSING	0	0	
<1900	1900	0	0.0
1901-1910	1910	0	0.0
1911-1920	1920	0	0.0
1921-1930	1930	0	0.0
1931-1940	1940	0	0.0
1941-1950	1950	2	1.8
1951-1960	1960	9	8.0
1961-1970	1970	22	19.5
1971-1980	1980	31	27.4
1981-1990	1990	49	43.4
TOTAL		113	100

PRESSURE	PRESS	NUMBER	%
MISSING	0	2	
<200	200	3	2.7
201-400	400	2	1.8
401-600	600	1	0.9
601-800	800	3	2.7
801-1000	1000	23	20.7
1001-1200	1200	69	62.2
1201-1400	1400	4	3.6
1401-1600	1600	2	1.8
1601-1800	1800	1	0.9
1801-2000	2000	0	0.0
>2000		3	2.7
TOTAL		111.0	100.0

CAPACITY	CAPACITY	NUMBER	%
MISSING	0	38	
<1000	1000	54	72.0
1001-2000	2000	17	22.7
2001-3000	3000	1	1.3
3001-4000	4000	3	4.0
4001-5000	5000	0	0.0
5001-6000	6000	0	0.0
6001-7000	7000	0	0.0
7001-8000	8000	0	0.0
8001-9000	9000	0	0.0
9001-10000	10000	0	0.0
10001-1100	11000	0	0.0
11001-1200	12000	0	0.0
12001-1300	13000	0	0.0
13001-1400	14000	0	0.0
14001-1500	15000	0	0.0
15001-1600	16000	0	0.0
16001-1700	17000	0	0.0
17001-1800	18000	0	0.0
18001-1900	19000	0	0.0
19001-2000	20000	0	0.0
>20000		0	0.0
TOTAL		75.0	100.0

USAGE	USAGE	NUMBER	%
MISSING	0	7	
AGRIC.	199	0	0.0
MINING	299	0	0.0
MANUF.	399	58	54.7
ELECT.	499	5	4.7
CONSTR.	599	0	0.0
W/SALE	699	1	0.9
XPORT	799	0	0.0
BUSINESS	899	0	0.0
COMMUNITY	999	42	39.6
TOTAL		106	100

TRANSVAAL BOILER STOCK
BOILERS CATEGORISED BY FUEL TYPE

COAL BOILER DISTRIBUTION BY:

YEAR	YEAR	NUMBER	%
MISSING	0	15	
<1900	1900	7	0.5
1901-1910	1910	16	1.1
1911-1920	1920	10	0.7
1921-1930	1930	35	2.5
1931-1940	1940	78	5.5
1941-1950	1950	116	8.2
1951-1960	1960	312	22.0
1961-1970	1970	315	22.2
1971-1980	1980	334	23.6
1981-1990	1990	193	13.6
TOTAL		1416.0	100.0

PRESSURE	PRESS	NUMBER	%
MISSING	0	22	
<200	200	12	0.9
201-400	400	8	0.6
401-600	600	11	0.8
601-800	800	268	19.0
801-1000	1000	375	26.6
1001-1200	1200	531	37.7
1201-1400	1400	66	4.7
1401-1600	1600	32	2.3
1601-1800	1800	43	3.1
1801-2000	2000	7	0.5
>2000		56	4.0
TOTAL		1409.0	100.0

CAPACITY	CAPACITY	NUMBER	%
MISSING	0	428	
<1000	1000	420	41.9
1001-2000	2000	203	20.2
2001-3000	3000	75	7.5
3001-4000	4000	62	6.2
4001-5000	5000	47	4.7
5001-6000	6000	25	2.5
6001-7000	7000	21	2.1
7001-8000	8000	39	3.9
8001-9000	9000	2	0.2
9001-10000	10000	23	2.3
10001-1100	11000	0	0.0
11001-1200	12000	13	1.3
12001-1300	13000	7	0.7
13001-1400	14000	1	0.1
14001-1500	15000	8	0.8
15001-1600	16000	12	1.2
16001-1700	17000	0	0.0
17001-1800	18000	3	0.3
18001-1900	19000	3	0.3
19001-2000	20000	9	0.9
>20000		30	3.0
TOTAL		1003.0	100.0

USAGE	USAGE	NUMBER	%
MISSING	0	74	
AGRIC.	199	37	2.7
MINING	299	1	0.1
MANUF.	399	730	53.8
ELECT.	499	18	1.3
CONSTR.	599	0	0.0
W/SALE	699	24	1.8
XPORT	799	4	0.3
BUSINESS	899	5	0.4
COMMUNITY	999	538	39.6
TOTAL		1357	100

TRANSVAAL BOILER STOCK
BOILERS CATEGORISED BY FUEL TYPE

OIL BOILER DISTRIBUTION BY:

YEAR	YEAR	NUMBER	%
MISSING	0	6	
<1900	1900	3	0.3
1901-1910	1910	2	0.2
1911-1920	1920	1	0.1
1921-1930	1930	0	0.0
1931-1940	1940	6	0.6
1941-1950	1950	6	0.6
1951-1960	1960	27	2.9
1961-1970	1970	370	40.0
1971-1980	1980	420	45.5
1981-1990	1990	89	9.6
TOTAL		924.0	100.0

PRESSURE	PRESS	NUMBER	%
MISSING	0	28	
<200	200	6	0.7
201-400	400	7	0.8
401-600	600	4	0.4
601-800	800	113	12.5
801-1000	1000	188	20.8
1001-1200	1200	467	51.8
1201-1400	1400	28	3.1
1401-1600	1600	22	2.4
1601-1800	1800	31	3.4
1801-2000	2000	8	0.9
>2000		28	3.1
TOTAL		902.0	100.0

CAPACITY	CAPACITY	NUMBER	%
MISSING	0	223	
<1000	1000	268	37.9
1001-2000	2000	127	18.0
2001-3000	3000	68	9.6
3001-4000	4000	56	7.9
4001-5000	5000	35	5.0
5001-6000	6000	25	3.5
6001-7000	7000	13	1.8
7001-8000	8000	29	4.1
8001-9000	9000	1	0.1
9001-10000	10000	15	2.1
10001-1100	11000	3	0.4
11001-1200	12000	7	1.0
12001-1300	13000	13	1.8
13001-1400	14000	0	0.0
14001-1500	15000	15	2.1
15001-1600	16000	7	1.0
16001-1700	17000	1	0.1
17001-1800	18000	1	0.1
18001-1900	19000	4	0.6
19001-2000	20000	10	1.4
>20000		9	1.3
TOTAL		707.0	100.0

USAGE	USAGE	NUMBER	%
MISSING	0	55	
AGRIC.	199	33	3.8
MINING	299	7	0.8
MANUF.	399	519	59.3
ELECT.	499	9	1.0
CONSTR.	599	1	0.1
W/SALE	699	26	3.0
XPORT	799	1	0.1
BUSINESS	899	6	0.7
COMMUNITY	999	273	31.2
TOTAL		875	100

TRANSVAAL BOILER STOCK
BOILERS CATEGORISED BY FUEL TYPE

GAS BOILER DISTRIBUTION BY:

YEAR	YEAR	NUMBER	%
MISSING	0	0	
<1900	1900	0	0.0
1901-1910	1910	0	0.0
1911-1920	1920	0	0.0
1921-1930	1930	0	0.0
1931-1940	1940	1	2.0
1941-1950	1950	1	2.0
1951-1960	1960	4	8.0
1961-1970	1970	11	22.0
1971-1980	1980	18	36.0
1981-1990	1990	15	30.0
TOTAL		50.0	100.0

PRESSURE	PRESS	NUMBER	%
MISSING	0	0	
<200	200	1	2.0
201-400	400	1	2.0
401-600	600	0	0.0
601-800	800	11	22.0
801-1000	1000	14	28.0
1001-1200	1200	20	40.0
1201-1400	1400	2	4.0
1401-1600	1600	1	2.0
1601-1800	1800	0	0.0
1801-2000	2000	0	0.0
>2000		0	0.0
TOTAL		50.0	100.0

CAPACITY	CAPACITY	NUMBER	%
MISSING	0	14	
<1000	1000	24	66.7
1001-2000	2000	6	16.7
2001-3000	3000	1	2.8
3001-4000	4000	1	2.8
4001-5000	5000	1	2.8
5001-6000	6000	0	0.0
6001-7000	7000	2	5.6
7001-8000	8000	0	0.0
8001-9000	9000	0	0.0
9001-10000	10000	0	0.0
10001-1100	11000	0	0.0
11001-1200	12000	0	0.0
12001-1300	13000	1	2.8
13001-1400	14000	0	0.0
14001-1500	15000	0	0.0
15001-1600	16000	0	0.0
16001-1700	17000	0	0.0
17001-1800	18000	0	0.0
18001-1900	19000	0	0.0
19001-2000	20000	0	0.0
>20000		0	0.0
TOTAL		36.0	100.0

USAGE	USAGE	NUMBER	%
MISSING	0	6	
AGRIC.	199	1	2.3
MINING	299	0	0.0
MANUF.	399	25	56.8
ELECT.	499	1	2.3
CONSTR..	599	0	0.0
W/SALE	699	2	4.5
XPORT	799	0	0.0
BUSINESS	899	0	0.0
COMMUNITY	999	15	34.1
TOTAL		44	100

TRANSVAAL BOILER STOCK
BOILERS CATEGORISED BY FUEL TYPE

OTHER FUELS BOILER DISTRIBUTION BY:

YEAR	YEAR	NUMBER	%
MISSING	0	0	
<1900	1900	0	0.0
1901-1910	1910	0	0.0
1911-1920	1920	0	0.0
1921-1930	1930	0	0.0
1931-1940	1940	0	0.0
1941-1950	1950	0	0.0
1951-1960	1960	2	6.9
1961-1970	1970	14	48.3
1971-1980	1980	5	17.2
1981-1990	1990	8	27.6
TOTAL		29.0	100.0

PRESSURE	PRESS	NUMBER	%
MISSING	0	0	
<200	200	0	0.0
201-400	400	0	0.0
401-600	600	1	3.4
601-800	800	6	20.7
801-1000	1000	6	20.7
1001-1200	1200	11	37.9
1201-1400	1400	0	0.0
1401-1600	1600	3	10.3
1601-1800	1800	1	3.4
1801-2000	2000	0	0.0
>2000		1	3.4
TOTAL		29.0	100.0

CAPACITY	CAPACITY	NUMBER	%
MISSING	0	10	
<1000	1000	5	26.3
1001-2000	2000	4	21.1
2001-3000	3000	3	15.8
3001-4000	4000	1	5.3
4001-5000	5000	1	5.3
5001-6000	6000	2	10.5
6001-7000	7000	1	5.3
7001-8000	8000	0	0.0
8001-9000	9000	0	0.0
9001-10000	10000	1	5.3
10001-1100	11000	0	0.0
11001-1200	12000	0	0.0
12001-1300	13000	1	5.3
13001-1400	14000	0	0.0
14001-1500	15000	0	0.0
15001-1600	16000	0	0.0
16001-1700	17000	0	0.0
17001-1800	18000	0	0.0
18001-1900	19000	0	0.0
19001-2000	20000	0	0.0
>20000		0	0.0
TOTAL		19.0	100.0

USAGE	USAGE	NUMBER	%
MISSING	0	0	
AGRIC.	199	3	10.3
MINING	299	0	0.0
MANUF.	399	15	51.7
ELECT.	499	0	0.0
CONSTR.	599	0	0.0
W/SALE	699	1	3.4
XPORT	799	0	0.0
BUSINESS	899	0	0.0
COMMUNITY	999	10	34.5
TOTAL		29	100

ORANGE FREE STATE BOILER STOCK
BOILER DISTRIBUTION BY:

TYPE	TYPE	NUMBER	%
MISSING	0	8	
W/TUBE	1	26	6.2
SHELL	2	272	64.5
VERTICAL(SHELL)	3	111	26.3
ELECTRICAL	4	13	3.1
TOTAL		422	100

FUEL	FUEL	NUMBER	%
MISSING	0	7	
COAL	1	266	62.7
OIL	2	142	33.5
GAS	3	2	0.5
ELECTRICAL	4	13	3.1
OTHER	5	1	0.2
TOTAL		424	100

YEAR	YEAR	NUMBER	%
MISSING	0	8	
<1900	1900	0	0.0
1901-1910	1910	1	0.2
1911-1920	1920	1	0.2
1921-1930	1930	5	1.2
1931-1940	1940	12	2.8
1941-1950	1950	22	5.2
1951-1960	1960	66	15.6
1961-1970	1970	118	28.0
1971-1980	1980	131	31.0
1981-1990	1990	66	15.6
TOTAL		422	100

USAGE	USAGE	NUMBER	%
MISSING	0	30	
AGRIC.	199	2	0.5
MINING	299	0	0.0
MANUF.	399	196	49.0
ELECT.	499	0	0.0
CONSTR.	599	0	0.0
W/SALE	699	14	3.5
XPORT	799	0	0.0
BUSINESS	899	0	0.0
COMMUNITY	999	188	47.0
TOTAL		400	100

CAPACITY	CAPACITY	NUMBER	%
MISSING	0	106	
<1000	1000	118	36.4
1001-2000	2000	69	21.3
2001-3000	3000	34	10.5
3001-4000	4000	33	10.2
4001-5000	5000	14	4.3
5001-6000	6000	15	4.6
6001-7000	7000	3	0.9
7001-8000	8000	10	3.1
8001-9000	9000	5	1.5
9001-10000	10000	9	2.8
10001-1100	11000	1	0.3
11001-1200	12000	5	1.5
12001-1300	13000	6	1.9
13001-1400	14000	0	0.0
14001-1500	15000	1	0.3
15001-1600	16000	0	0.0
16001-1700	17000	0	0.0
17001-1800	18000	0	0.0
18001-1900	19000	1	0.3
19001-2000	20000	0	0.0
>20000		0	0.0
TOTAL		324	100

PRESSURE	PRESSURE	NUMBER	%
MISSING	0	21	
<200	200	3	0.7
201-400	400	0	0.0
401-600	600	0	0.0
601-800	800	110	26.9
801-1000	1000	109	26.7
1001-1200	1200	152	37.2
1201-1400	1400	15	3.7
1401-1600	1600	2	0.5
1601-1800	1800	13	3.2
1801-2000	2000	4	1.0
>2000		1	0.2
TOTAL		409	100

ORANGE FREE STATE BOILER STOCK
BOILERS CATEGORISED BY BOILER TYPE

WATER TUBE BOILER DISTRIBUTION BY:

FUEL	FUEL	NUMBER	%
MISSING	0	0	
COAL	1	24	92.3
OIL	2	2	7.7
GAS	3	0	0.0
OTHER	5	0	0.0
TOTAL		26.0	100.0

YEAR	YEAR	NUMBER	%
	0	0	
<1900	1900	0	0.0
1901-1910	1910	0	0.0
1911-1920	1920	0	0.0
1921-1930	1930	0	0.0
1931-1940	1940	0	0.0
1941-1950	1950	4	15.4
1951-1960	1960	5	19.2
1961-1970	1970	7	26.9
1971-1980	1980	10	38.5
1981-1990	1990	0	0.0
TOTAL		26	100

USAGE	USAGE	NUMBER	%
MISSING	0	0	
AGRIC.	199	0	0.0
MINING	299	0	0.0
MANUF.	399	6	23.1
ELECT.	499	0	0.0
CONSTR.	599	0	0.0
W/SALE	699	0	0.0
XPORT	799	0	0.0
BUSINESS	899	0	0.0
COMMUNITY	999	20	76.9
TOTAL		26	100

CAPACITY	CAPACITY	NUMBER	%
MISSING	0	8	
<1000	1000	5	27.8
1001-2000	2000	7	38.9
2001-3000	3000	0	0.0
3001-4000	4000	0	0.0
4001-5000	5000	0	0.0
5001-6000	6000	1	5.6
6001-7000	7000	0	0.0
7001-8000	8000	0	0.0
8001-9000	9000	3	16.7
9001-10000	10000	0	0.0
10001-1100	11000	1	5.6
11001-1200	12000	0	0.0
12001-1300	13000	1	5.6
13001-1400	14000	0	0.0
14001-1500	15000	0	0.0
15001-1600	16000	0	0.0
16001-1700	17000	0	0.0
17001-1800	18000	0	0.0
18001-1900	19000	0	0.0
19001-2000	20000	0	0.0
>20000		0	0.0
TOTAL		18.0	100.0

PRESSURE	PRESSURE	NUMBER	%
MISSING	0	1	
<200	200	0	0.0
201-400	400	0	0.0
401-600	600	0	0.0
601-800	800	5	20.0
801-1000	1000	13	52.0
1001-1200	1200	2	8.0
1201-1400	1400	5	20.0
1401-1600	1600	0	0.0
1601-1800	1800	0	0.0
1801-2000	2000	0	0.0
>2000		0	0.0
TOTAL		25.0	100.0

ORANGE FREE STATE BOILER STOCK
BOILERS CATEGORISED BY BOILER TYPE

SHELL AND VERTICAL BOILER DISTRIBUTION BY:

FUEL	FUEL	NUMBER	%
MISSING	0	1	
COAL	1	239	62.6
OIL	2	140	36.6
GAS	3	2	0.5
OTHER	5	1	0.3
TOTAL		382.0	100.0

YEAR	YEAR	NUMBER	%
MISSING	0	3	
<1900	1900	0	0.0
1901-1910	1910	1	0.3
1911-1920	1920	1	0.3
1921-1930	1930	4	1.1
1931-1940	1940	11	2.9
1941-1950	1950	18	4.7
1951-1960	1960	61	16.1
1961-1970	1970	109	28.7
1971-1980	1980	117	30.8
1981-1990	1990	58	15.3
TOTAL		380	100

USAGE	USAGE	NUMBER	%
MISSING	0	24	
AGRIC.	199	1	0.3
MINING	299	0	0.0
MANUF.	399	181	50.4
ELECT.	499	0	0.0
CONSTR.	599	0	0.0
W/SALE	699	10	2.8
XPORT	799	0	0.0
BUSINESS	899	0	0.0
COMMUNITY	999	167	46.5
TOTAL		359	100

CAPACITY	CAPACITY	NUMBER	%
MISSING	0	88	
<1000	1000	104	35.3
1001-2000	2000	60	20.3
2001-3000	3000	34	11.5
3001-4000	4000	33	11.2
4001-5000	5000	14	4.7
5001-6000	6000	14	4.7
6001-7000	7000	3	1.0
7001-8000	8000	10	3.4
8001-9000	9000	2	0.7
9001-10000	10000	9	3.1
10001-1100	11000	0	0.0
11001-1200	12000	5	1.7
12001-1300	13000	5	1.7
13001-1400	14000	0	0.0
14001-1500	15000	1	0.3
15001-1600	16000	0	0.0
16001-1700	17000	0	0.0
17001-1800	18000	0	0.0
18001-1900	19000	1	0.3
19001-2000	20000	0	0.0
>20000		0	0.0
TOTAL		295.0	100.0

PRESSURE	PRESSURE	NUMBER	%
MISSING	0	13	
<200	200	3	0.8
201-400	400	0	0.0
401-600	600	0	0.0
601-800	800	103	27.8
801-1000	1000	92	24.9
1001-1200	1200	145	39.2
1201-1400	1400	9	2.4
1401-1600	1600	2	0.5
1601-1800	1800	11	3.0
1801-2000	2000	4	1.1
>2000		1	0.3
TOTAL		370.0	100.0

ORANGE FREE STATE BOILER STOCK
BOILERS CATEGORISED BY BOILER TYPE

ELECTRICAL BOILER DISTRIBUTION BY:

YEAR	YEAR	NUMBER	%
MISSING	0	0	
<1900	1900	0	0.0
1901-1910	1910	0	0.0
1911-1920	1920	0	0.0
1921-1930	1930	0	0.0
1931-1940	1940	0	0.0
1941-1950	1950	0	0.0
1951-1960	1960	0	0.0
1961-1970	1970	1	7.7
1971-1980	1980	4	30.8
1981-1990	1990	8	61.5
TOTAL		13	100

PRESSURE	PRESS	NUMBER	%
MISSING	0	1	
<200	200	0	0.0
201-400	400	0	0.0
401-600	600	0	0.0
601-800	800	1	8.3
801-1000	1000	4	33.3
1001-1200	1200	5	41.7
1201-1400	1400	0	0.0
1401-1600	1600	0	0.0
1601-1800	1800	2	16.7
1801-2000	2000	0	0.0
>2000		0	0.0
TOTAL		12.0	100.0

CAPACITY	CAPACITY	NUMBER	%
MISSING	0	2	
<1000	1000	9	81.8
1001-2000	2000	2	18.2
2001-3000	3000	0	0.0
3001-4000	4000	0	0.0
4001-5000	5000	0	0.0
5001-6000	6000	0	0.0
6001-7000	7000	0	0.0
7001-8000	8000	0	0.0
8001-9000	9000	0	0.0
9001-10000	10000	0	0.0
10001-1100	11000	0	0.0
11001-1200	12000	0	0.0
12001-1300	13000	0	0.0
13001-1400	14000	0	0.0
14001-1500	15000	0	0.0
15001-1600	16000	0	0.0
16001-1700	17000	0	0.0
17001-1800	18000	0	0.0
18001-1900	19000	0	0.0
19001-2000	20000	0	0.0
>20000		0	0.0
TOTAL		11.0	100.0

USAGE	USAGE	NUMBER	%
MISSING	0	1	
AGRIC.	199	1	8.3
MINING	299	0	0.0
MANUF.	399	6	50.0
ELECT.	499	0	0.0
CONSTR.	599	0	0.0
W/SALE	699	4	33.3
XPORT	799	0	0.0
BUSINESS	899	0	0.0
COMMUNITY	999	1	8.3
TOTAL		12	100

ORANGE FREE STATE BOILER STOCK
BOILERS CATEGORISED BY FUEL TYPE

COAL BOILER DISTRIBUTION BY:

YEAR	YEAR	NUMBER	%
	0	1	
<1900	1900	0	0.0
1901-1910	1910	1	0.4
1911-1920	1920	1	0.4
1921-1930	1930	4	1.5
1931-1940	1940	8	3.0
1941-1950	1950	21	7.9
1951-1960	1960	52	19.6
1961-1970	1970	65	24.5
1971-1980	1980	75	28.3
1981-1990	1990	38	14.3
TOTAL		265.0	100.0

PRESSURE	PRESS	NUMBER	%
MISSING	0	11	
<200	200	1	0.4
201-400	400	0	0.0
401-600	600	0	0.0
601-800	800	86	33.7
801-1000	1000	64	25.1
1001-1200	1200	77	30.2
1201-1400	1400	12	4.7
1401-1600	1600	2	0.8
1601-1800	1800	9	3.5
1801-2000	2000	3	1.2
>2000		1	0.4
TOTAL		255.0	100.0

CAPACITY	CAPACITY	NUMBER	%
MISSING	0	71	
<1000	1000	35	17.9
1001-2000	2000	45	23.1
2001-3000	3000	21	10.8
3001-4000	4000	28	14.4
4001-5000	5000	11	5.6
5001-6000	6000	15	7.7
6001-7000	7000	3	1.5
7001-8000	8000	9	4.6
8001-9000	9000	5	2.6
9001-10000	10000	9	4.6
10001-1100	11000	1	0.5
11001-1200	12000	5	2.6
12001-1300	13000	6	3.1
13001-1400	14000	0	0.0
14001-1500	15000	1	0.5
15001-1600	16000	0	0.0
16001-1700	17000	0	0.0
17001-1800	18000	0	0.0
18001-1900	19000	1	0.5
19001-2000	20000	0	0.0
>20000		0	0.0
TOTAL		195.0	100.0

USAGE	USAGE	NUMBER	%
MISSING	0	11	
AGRIC.	199	1	0.4
MINING	299	0	0.0
MANUF.	399	123	48.2
ELECT.	499	0	0.0
CONSTR.	599	0	0.0
W/SALE	699	2	0.8
XPORT	799	0	0.0
BUSINESS	899	0	0.0
COMMUNITY	999	129	50.6
TOTAL		255	100

ORANGE FREE STATE BOILER STOCK
BOILERS CATEGORISED BY FUEL TYPE

OIL BOILER DISTRIBUTION BY:

YEAR	YEAR	NUMBER	%
MISSING	0	2	
<1900	1900	0	0.0
1901-1910	1910	0	0.0
1911-1920	1920	0	0.0
1921-1930	1930	0	0.0
1931-1940	1940	4	2.9
1941-1950	1950	0	0.0
1951-1960	1960	14	10.0
1961-1970	1970	51	36.4
1971-1980	1980	51	36.4
1981-1990	1990	20	14.3
TOTAL		140.0	100.0

PRESSURE	PRESS	NUMBER	%
MISSING	0	2	
<200	200	2	1.4
201-400	400	0	0.0
401-600	600	0	0.0
601-800	800	23	16.4
801-1000	1000	39	27.9
1001-1200	1200	70	50.0
1201-1400	1400	3	2.1
1401-1600	1600	0	0.0
1601-1800	1800	2	1.4
1801-2000	2000	1	0.7
>2000		0	0.0
TOTAL		140.0	100.0

CAPACITY	CAPACITY	NUMBER	%
MISSING	0	25	
<1000	1000	74	63.2
1001-2000	2000	21	17.9
2001-3000	3000	13	11.1
3001-4000	4000	5	4.3
4001-5000	5000	3	2.6
5001-6000	6000	0	0.0
6001-7000	7000	0	0.0
7001-8000	8000	1	0.9
8001-9000	9000	0	0.0
9001-10000	10000	0	0.0
10001-1100	11000	0	0.0
11001-1200	12000	0	0.0
12001-1300	13000	0	0.0
13001-1400	14000	0	0.0
14001-1500	15000	0	0.0
15001-1600	16000	0	0.0
16001-1700	17000	0	0.0
17001-1800	18000	0	0.0
18001-1900	19000	0	0.0
19001-2000	20000	0	0.0
>20000		0	0.0
TOTAL		117.0	100.0

USAGE	USAGE	NUMBER	%
MISSING	0	12	
AGRIC.	199	0	0.0
MINING	299	0	0.0
MANUF.	399	67	51.5
ELECT.	499	0	0.0
CONSTR.	599	0	0.0
W/SALE	699	8	6.2
XPORT	799	0	0.0
BUSINESS	899	0	0.0
COMMUNITY	999	55	42.3
TOTAL		130	100

NATAL BOILER STOCK
BOILER DISTRIBUTION BY:

TYPE	TYPE	NUMBER	%
MISSING	0	66	
W/TUBE	1	260	21.8
SHELL	2	733	61.3
VERTICAL (SHELL)	3	133	11.1
ELECTRICAL	4	69	5.8
TOTAL		1195	100

FUEL	FUEL	NUMBER	%
MISSING	0	170	
COAL	1	615	56.4
OIL	2	384	35.2
GAS	3	3	0.3
ELECTRICAL	4	69	6.3
OTHER	5	20	1.8
TOTAL		1091	100

YEAR	YEAR	NUMBER	%
MISSING	0	15	
<1900	1900	0	0.0
1901-1910	1910	12	1.0
1911-1920	1920	4	0.3
1921-1930	1930	19	1.5
1931-1940	1940	33	2.6
1941-1950	1950	48	3.9
1951-1960	1960	142	11.4
1961-1970	1970	369	29.6
1971-1980	1980	442	35.5
1981-1990	1990	177	14.2
TOTAL		1246	100

USAGE	USAGE	NUMBER	%
MISSING	0	76	
AGRIC.	199	20	1.7
MINING	299	0	0.0
MANUF.	399	827	69.8
ELECT.	499	0	0.0
CONSTR.	599	1	0.1
W/SALE	699	23	1.9
XPORT	799	13	1.1
BUSINESS	899	1	0.1
COMMUNITY	999	300	25.3
TOTAL		1185	100

CAPACITY	CAPACITY	NUMBER	%
MISSING	0	233	
<1000	1000	299	29.1
1001-2000	2000	194	18.9
2001-3000	3000	110	10.7
3001-4000	4000	83	8.1
4001-5000	5000	51	5.0
5001-6000	6000	18	1.8
6001-7000	7000	21	2.0
7001-8000	8000	49	4.8
8001-9000	9000	8	0.8
9001-10000	10000	34	3.3
10001-1100	11000	7	0.7
11001-1200	12000	25	2.4
12001-1300	13000	4	0.4
13001-1400	14000	6	0.6
14001-1500	15000	5	0.5
15001-1600	16000	8	0.8
16001-1700	17000	0	0.0
17001-1800	18000	0	0.0
18001-1900	19000	5	0.5
19001-2000	20000	10	1.0
>20000		91	8.9
TOTAL		1028	100

PRESSURE	PRESSURE	NUMBER	%
MISSING	0	5	
<200	200	5	0.4
201-400	400	15	1.2
401-600	600	18	1.4
601-800	800	170	13.5
801-1000	1000	275	21.9
1001-1200	1200	485	38.6
1201-1400	1400	64	5.1
1401-1600	1600	26	2.1
1601-1800	1800	45	3.6
1801-2000	2000	13	1.0
>2000		140	11.1
TOTAL		1256	100

NATAL BOILER STOCK
BOILERS CATEGORISED BY BOILER TYPE:

WATER-TUBE BOILER DISTRIBUTION BY:

FUEL	FUEL	NUMBER	%
MISSING	0	44	
COAL	1	195	90.3
OIL	2	17	7.9
OTHER	5	4	1.9
GAS	3	0	0.0
TOTAL		216.0	100.0

YEAR	YEAR	NUMBER	%
MISSING	0	1	
<1900	1900	0	0.0
1901-1910	1910	9	3.5
1911-1920	1920	2	0.8
1921-1930	1930	13	5.0
1931-1940	1940	21	8.1
1941-1950	1950	28	10.8
1951-1960	1960	60	23.2
1961-1970	1970	52	20.1
1971-1980	1980	51	19.7
1981-1990	1990	23	8.9
TOTAL		259	100

USAGE	USAGE	NUMBER	%
MISSING	0	6	
AGRIC.	199	4	1.6
MINING	299	0	0.0
MANUF.	399	195	76.8
ELECT.	499	0	0.0
CONSTR.	599	1	0.4
W/SALE	699	4	1.6
XPORT	799	3	1.2
BUSINESS	899	0	0.0
COMMUNITY	999	47	18.5
TOTAL		254	100

CAPACITY	CAPACITY	NUMBER	%
MISSING	0	101	
<1000	1000	19	11.9
1001-2000	2000	23	14.5
2001-3000	3000	7	4.4
3001-4000	4000	9	5.7
4001-5000	5000	3	1.9
5001-6000	6000	7	4.4
6001-7000	7000	0	0.0
7001-8000	8000	0	0.0
8001-9000	9000	1	0.6
9001-10000	10000	0	0.0
10001-1100	11000	1	0.6
11001-1200	12000	4	2.5
12001-1300	13000	0	0.0
13001-1400	14000	4	2.5
14001-1500	15000	0	0.0
15001-1600	16000	3	1.9
16001-1700	17000	0	0.0
17001-1800	18000	0	0.0
18001-1900	19000	0	0.0
19001-2000	20000	0	0.0
>20000		78	49.1
TOTAL		159.0	100.0

PRESSURE	PRESSURE	NUMBER	%
MISSING	0	3	
<200	200	1	0.4
201-400	400	2	0.8
401-600	600	5	1.9
601-800	800	32	12.5
801-1000	1000	40	15.6
1001-1200	1200	26	10.1
1201-1400	1400	26	10.1
1401-1600	1600	8	3.1
1601-1800	1800	16	6.2
1801-2000	2000	5	1.9
>2000		96	37.4
TOTAL		257.0	100.0

NATAL BOILER STOCK
BOILERS CATEGORISED BY BOILER TYPE:

SHELL AND VERTICAL BOILER DISTRIBUTION BY:

FUEL	FUEL	NUMBER	%
MISSING	0	96	
COAL	1	403	52.3
OIL	2	357	46.4
OTHER	5	8	1.0
GAS	3	2	0.3
TOTAL		770.0	100.0

YEAR	YEAR	NUMBER	%
MISSING	0	8	
<1900	1900	0	0.0
1901-1910	1910	2	0.2
1911-1920	1920	2	0.2
1921-1930	1930	5	0.6
1931-1940	1940	11	1.3
1941-1950	1950	18	2.1
1951-1960	1960	76	8.9
1961-1970	1970	286	33.3
1971-1980	1980	333	38.8
1981-1990	1990	125	14.6
TOTAL		858	100

USAGE	USAGE	NUMBER	%
MISSING	0	55	
AGRIC.	199	16	2.0
MINING	299	0	0.0
MANUF.	399	539	66.5
ELECT.	499	0	0.0
CONSTR.	599	0	0.0
W/SALE	699	16	2.0
XPORT	799	9	1.1
BUSINESS	899	1	0.1
COMMUNITY	999	230	28.4
TOTAL		811	100

CAPACITY	CAPACITY	NUMBER	%
MISSING	0	80	
<1000	1000	235	29.9
1001-2000	2000	162	20.6
2001-3000	3000	96	12.2
3001-4000	4000	72	9.2
4001-5000	5000	47	6.0
5001-6000	6000	10	1.3
6001-7000	7000	20	2.5
7001-8000	8000	49	6.2
8001-9000	9000	6	0.8
9001-10000	10000	31	3.9
10001-1100	11000	6	0.8
11001-1200	12000	20	2.5
12001-1300	13000	3	0.4
13001-1400	14000	2	0.3
14001-1500	15000	5	0.6
15001-1600	16000	4	0.5
16001-1700	17000	0	0.0
17001-1800	18000	0	0.0
18001-1900	19000	5	0.6
19001-2000	20000	9	1.1
>20000		4	0.5
TOTAL		786.0	100.0

PRESSURE	PRESSURE	NUMBER	%
MISSING	0	0	
<200	200	2	0.2
201-400	400	1	0.1
401-600	600	9	1.0
601-800	800	127	14.7
801-1000	1000	229	26.4
1001-1200	1200	404	46.7
1201-1400	1400	31	3.6
1401-1600	1600	13	1.5
1601-1800	1800	26	3.0
1801-2000	2000	6	0.7
>2000		18	2.1
TOTAL		866.0	100.0

NATAL BOILER STOCK
BOILERS CATEGORISED BY BOILER TYPE:

ELECTRICAL BOILER DISTRIBUTION BY:

YEAR	YEAR	NUMBER	%
MISSING	0	0	
<1900	1900	0	0.0
1901-1910	1910	0	0.0
1911-1920	1920	0	0.0
1921-1930	1930	0	0.0
1931-1940	1940	0	0.0
1941-1950	1950	1	1.4
1951-1960	1960	1	1.4
1961-1970	1970	6	8.7
1971-1980	1980	41	59.4
1981-1990	1990	20	29.0
TOTAL		69	100

PRESSURE	PRESS	NUMBER	%
MISSING	0	0	
<200	200	1	1.4
201-400	400	10	14.5
401-600	600	4	5.8
601-800	800	5	7.2
801-1000	1000	3	4.3
1001-1200	1200	40	58.0
1201-1400	1400	1	1.4
1401-1600	1600	2	2.9
1601-1800	1800	1	1.4
1801-2000	2000	0	0.0
>2000		2	2.9
TOTAL		69.0	100.0

CAPACITY	CAPACITY	NUMBER	%
MISSING	0	17	
<1000	1000	41	78.8
1001-2000	2000	5	9.6
2001-3000	3000	2	3.8
3001-4000	4000	1	1.9
4001-5000	5000	1	1.9
5001-6000	6000	0	0.0
6001-7000	7000	0	0.0
7001-8000	8000	0	0.0
8001-9000	9000	0	0.0
9001-10000	10000	1	1.9
10001-1100	11000	0	0.0
11001-1200	12000	0	0.0
12001-1300	13000	1	1.9
13001-1400	14000	0	0.0
14001-1500	15000	0	0.0
15001-1600	16000	0	0.0
16001-1700	17000	0	0.0
17001-1800	18000	0	0.0
18001-1900	19000	0	0.0
19001-2000	20000	0	0.0
>20000		0	0.0
TOTAL		52.0	100.0

USAGE	USAGE	NUMBER	%
MISSING	0	9	
AGRIC.	199	0	0.0
MINING	299	0	0.0
MANUF.	399	42	70.0
ELECT.	499	0	0.0
CONSTR.	599	0	0.0
W/SALE	699	2	3.3
XPORT	799	0	0.0
BUSINESS	899	0	0.0
COMMUNITY	999	16	26.7
TOTAL		60	100

NATAL BOILER STOCK
BOILERS CATEGORISED BY FUEL TYPE:

COAL BOILER DISTRIBUTION BY:

YEAR	YEAR	NUMBER	%
MISSING	0	4	
<1900	1900	0	0.0
1901-1910	1910	10	1.6
1911-1920	1920	4	0.7
1921-1930	1930	17	2.8
1931-1940	1940	30	4.9
1941-1950	1950	41	6.7
1951-1960	1960	111	18.3
1961-1970	1970	138	22.7
1971-1980	1980	158	26.0
1981-1990	1990	99	16.3
TOTAL		608.0	100.0

PRESSURE	PRESS	NUMBER	%
MISSING	0	2	
<200	200	1	0.2
201-400	400	3	0.5
401-600	600	5	0.8
601-800	800	130	21.3
801-1000	1000	109	17.9
1001-1200	1200	184	30.2
1201-1400	1400	44	7.2
1401-1600	1600	17	2.8
1601-1800	1800	33	5.4
1801-2000	2000	7	1.1
>2000		77	12.6
TOTAL		610.0	100.0

CAPACITY	CAPACITY	NUMBER	%
MISSING	0	143	
<1000	1000	60	12.8
1001-2000	2000	69	14.7
2001-3000	3000	38	8.1
3001-4000	4000	55	11.7
4001-5000	5000	33	7.0
5001-6000	6000	12	2.6
6001-7000	7000	17	3.6
7001-8000	8000	37	7.9
8001-9000	9000	7	1.5
9001-10000	10000	27	5.8
10001-1100	11000	6	1.3
11001-1200	12000	17	3.6
12001-1300	13000	1	0.2
13001-1400	14000	6	1.3
14001-1500	15000	5	1.1
15001-1600	16000	6	1.3
16001-1700	17000	0	0.0
17001-1800	18000	0	0.0
18001-1900	19000	2	0.4
19001-2000	20000	8	1.7
>20000		63	13.4
TOTAL		469.0	100.0

USAGE	USAGE	NUMBER	%
MISSING	0	22	
AGRIC.	199	9	1.5
MINING	299	0	0.0
MANUF.	399	404	68.5
ELECT.	499	0	0.0
CONSTR.	599	1	0.2
W/SALE	699	6	1.0
XPORT	799	4	0.7
BUSINESS	899	1	0.2
COMMUNITY	999	165	28.0
TOTAL		590	100

NATAL BOILER STOCK
BOILERS CATEGORISED BY FUEL TYPE:

OIL BOILER DISTRIBUTION BY:

YEAR	YEAR	NUMBER	%
MISSING	0	6	
<1900	1900	0	0.0
1901-1910	1910	0	0.0
1911-1920	1920	0	0.0
1921-1930	1930	0	0.0
1931-1940	1940	1	0.3
1941-1950	1950	3	0.8
1951-1960	1960	9	2.4
1961-1970	1970	159	41.7
1971-1980	1980	188	49.3
1981-1990	1990	21	5.5
TOTAL		381.0	100.0

PRESSURE	PRESS	NUMBER	%
MISSING	0	0	
<200	200	2	0.5
201-400	400	0	0.0
401-600	600	3	0.8
601-800	800	25	6.5
801-1000	1000	100	25.8
1001-1200	1200	221	57.1
1201-1400	1400	11	2.8
1401-1600	1600	2	0.5
1601-1800	1800	7	1.8
1801-2000	2000	5	1.3
>2000		11	2.8
TOTAL		387.0	100.0

CAPACITY	CAPACITY	NUMBER	%
MISSING	0	28	
<1000	1000	141	39.3
1001-2000	2000	91	25.3
2001-3000	3000	52	14.5
3001-4000	4000	20	5.6
4001-5000	5000	13	3.6
5001-6000	6000	3	0.8
6001-7000	7000	2	0.6
7001-8000	8000	10	2.8
8001-9000	9000	0	0.0
9001-10000	10000	5	1.4
10001-1100	11000	1	0.3
11001-1200	12000	4	1.1
12001-1300	13000	2	0.6
13001-1400	14000	0	0.0
14001-1500	15000	0	0.0
15001-1600	16000	1	0.3
16001-1700	17000	0	0.0
17001-1800	18000	0	0.0
18001-1900	19000	3	0.8
19001-2000	20000	1	0.3
>20000		10	2.8
TOTAL		359.0	100.0

USAGE	USAGE	NUMBER	%
MISSING	0	27	
AGRIC.	199	10	2.8
MINING	299	0	0.0
MANUF.	399	255	70.8
ELECT.	499	0	0.0
CONSTR.	599	0	0.0
W/SALE	699	12	3.3
XPORT	799	8	2.2
BUSINESS	899	0	0.0
COMMUNITY	999	75	20.8
TOTAL		360	100

NATAL BOILER STOCK
BOILERS CATEGORISED BY FUEL TYPE:

OTHER FUEL BOILER DISTRIBUTION BY:

YEAR	YEAR	NUMBER	%
MISSING	0	0	
<1900	1900	0	0.0
1901-1910	1910	0	0.0
1911-1920	1920	0	0.0
1921-1930	1930	0	0.0
1931-1940	1940	0	0.0
1941-1950	1950	0	0.0
1951-1960	1960	1	5.0
1961-1970	1970	8	40.0
1971-1980	1980	9	45.0
1981-1990	1990	2	10.0
TOTAL		20.0	100.0

PRESSURE	PRESS	NUMBER	%
MISSING	0	0	
<200	200	0	0.0
201-400	400	1	5.0
401-600	600	1	5.0
601-800	800	2	10.0
801-1000	1000	0	0.0
1001-1200	1200	0	0.0
1201-1400	1400	1	5.0
1401-1600	1600	1	5.0
1601-1800	1800	0	0.0
1801-2000	2000	0	0.0
>2000		14	70.0
TOTAL		20.0	100.0

CAPACITY	CAPACITY	NUMBER	%
MISSING	0	6	
<1000	1000	0	0.0
1001-2000	2000	2	14.3
2001-3000	3000	2	14.3
3001-4000	4000	0	0.0
4001-5000	5000	1	7.1
5001-6000	6000	0	0.0
6001-7000	7000	1	7.1
7001-8000	8000	0	0.0
8001-9000	9000	1	7.1
9001-10000	10000	0	0.0
10001-1100	11000	0	0.0
11001-1200	12000	0	0.0
12001-1300	13000	0	0.0
13001-1400	14000	0	0.0
14001-1500	15000	0	0.0
15001-1600	16000	1	7.1
16001-1700	17000	0	0.0
17001-1800	18000	0	0.0
18001-1900	19000	0	0.0
19001-2000	20000	1	7.1
>20000		5	35.7
TOTAL		14.0	100.0

USAGE	USAGE	NUMBER	%
MISSING	0	0	
AGRIC.	199	0	0.0
MINING	299	0	0.0
MANUF.	399	20	100.0
ELECT.	499	0	0.0
CONSTR.	599	0	0.0
W/SALE	699	0	0.0
XPORT	799	0	0.0
BUSINESS	899	0	0.0
COMMUNITY	999	0	0.0
TOTAL		20	100

EASTERN CAPE BOILER STOCK
BOILER DISTRIBUTION BY:

TYPE	TYPE	NUMBER	%
MISSING	0	21	
W/TUBE	1	136	22.0
SHELL	2	420	68.1
VERTICAL (SHELL)	3	39	6.3
ELECTRICAL	4	22	3.6
TOTAL		617	100

FUEL	FUEL	NUMBER	%
MISSING	0	14	
COAL	1	355	56.9
OIL	2	242	38.8
GAS	3	1	0.2
ELECTRICAL	4	22	3.5
OTHER	5	4	0.6
TOTAL		624	100

YEAR	YEAR	NUMBER	%
MISSING	0	12	
<1900	1900	0	0.0
1901-1910	1910	2	0.3
1911-1920	1920	2	0.3
1921-1930	1930	7	1.1
1931-1940	1940	25	4.0
1941-1950	1950	41	6.5
1951-1960	1960	121	19.3
1961-1970	1970	174	27.8
1971-1980	1980	182	29.1
1981-1990	1990	72	11.5
TOTAL		626	100

USAGE	USAGE	NUMBER	%
MISSING	0	34	
AGRIC.	199	5	0.8
MINING	299	0	0.0
MANUF.	399	343	56.8
ELECT.	499	45	7.5
CONSTR.	599	0	0.0
W/SALE	699	14	2.3
XPORT	799	1	0.2
BUSINESS	899	0	0.0
COMMUNITY	999	196	32.5
TOTAL		604	100

CAPACITY	CAPACITY	NUMBER	%
MISSING	0	175	
<1000	1000	154	33.3
1001-2000	2000	85	18.4
2001-3000	3000	59	12.7
3001-4000	4000	28	6.0
4001-5000	5000	32	6.9
5001-6000	6000	15	3.2
6001-7000	7000	6	1.3
7001-8000	8000	12	2.6
8001-9000	9000	3	0.6
9001-10000	10000	20	4.3
10001-1100	11000	0	0.0
11001-1200	12000	14	3.0
12001-1300	13000	6	1.3
13001-1400	14000	0	0.0
14001-1500	15000	3	0.6
15001-1600	16000	5	1.1
16001-1700	17000	4	0.9
17001-1800	18000	0	0.0
18001-1900	19000	3	0.6
19001-2000	20000	1	0.2
>20000		13	2.8
TOTAL		463	100

PRESSURE	PRESSURE	NUMBER	%
MISSING	0	5	
<200	200	2	0.3
201-400	400	1	0.2
401-600	600	3	0.5
601-800	800	147	23.2
801-1000	1000	118	18.6
1001-1200	1200	253	40.0
1201-1400	1400	32	5.1
1401-1600	1600	15	2.4
1601-1800	1800	18	2.8
1801-2000	2000	6	0.9
>2000		38	6.0
TOTAL		633	100

EASTERN CAPE BOILER STOCK
BOILERS CATEGORISED BY BOILER TYPE

WATER-TUBE BOILER DISTRIBUTION BY:

FUEL	FUEL	NUMBER	%
MISSING	0	5	
COAL	1	120	91.6
OIL	2	10	7.6
OTHER	5	1	0.8
GAS	3	0	0.0
TOTAL		131	100.0

YEAR	YEAR	NUMBER	%
MISSING	0	1	
<1900	1900	0	0.0
1901-1910	1910	2	1.5
1911-1920	1920	0	0.0
1921-1930	1930	7	5.2
1931-1940	1940	14	10.4
1941-1950	1950	15	11.1
1951-1960	1960	63	46.7
1961-1970	1970	25	18.5
1971-1980	1980	6	4.4
1981-1990	1990	3	2.2
TOTAL		135	100

USAGE	USAGE	NUMBER	%
MISSING	0	4	
AGRIC.	199	0	0.0
MINING	299	0	0.0
MANUF.	399	57	43.2
ELECT.	499	35	26.5
CONSTR.	599	0	0.0
W/SALE	699	1	0.8
XPORT	799	0	0.0
BUSINESS	899	0	0.0
COMMUNITY	999	39	29.5
TOTAL		132	100

CAPACITY	CAPACITY	NUMBER	%
MISSING	0	90	
<1000	1000	7	15.2
1001-2000	2000	5	10.9
2001-3000	3000	3	6.5
3001-4000	4000	4	8.7
4001-5000	5000	1	2.2
5001-6000	6000	0	0.0
6001-7000	7000	0	0.0
7001-8000	8000	3	6.5
8001-9000	9000	2	4.3
9001-10000	10000	0	0.0
10001-1100	11000	0	0.0
11001-1200	12000	2	4.3
12001-1300	13000	0	0.0
13001-1400	14000	0	0.0
14001-1500	15000	1	2.2
15001-1600	16000	0	0.0
16001-1700	17000	4	8.7
17001-1800	18000	0	0.0
18001-1900	19000	1	2.2
19001-2000	20000	0	0.0
>20000		13	28.3
TOTAL		46	100.0

PRESSURE	PRESSURE	NUMBER	%
MISSING	0	1	
<200	200	0	0.0
201-400	400	0	0.0
401-600	600	2	1.5
601-800	800	39	28.9
801-1000	1000	11	8.1
1001-1200	1200	10	7.4
1201-1400	1400	19	14.1
1401-1600	1600	10	7.4
1601-1800	1800	8	5.9
1801-2000	2000	0	0.0
>2000		36	26.7
TOTAL		135	100.0

EASTERN CAPE BOILER STOCK
BOILERS CATEGORISED BY BOILER TYPE

SHELL AND VERTICAL BOILER DISTRIBUTION BY:

FUEL	FUEL	NUMBER	%
MISSING	0	5	
COAL	1	220	48.5
OIL	2	230	50.7
OTHER	5	3	0.7
GAS	3	1	0.2
TOTAL		454	100.0

	YEAR	NUMBER	%
MISSING	0	9	
<1900	1900	0	0.0
1901-1910	1910	0	0.4
1911-1920	1920	2	0.0
1921-1930	1930	0	1.3
1931-1940	1940	6	4.7
1941-1950	1950	21	12.0
1951-1960	1960	54	32.7
1961-1970	1970	147	37.6
1971-1980	1980	169	11.3
1981-1990	1990	51	0.0
TOTAL		450	100

USAGE	USAGE	NUMBER	%
MISSING	0	23	
AGRIC.	199	5	1.1
MINING	299	0	0.0
MANUF.	399	268	61.5
ELECT.	499	7	1.6
CONSTR.	599	0	0.0
W/SALE	699	13	3.0
XPORT	799	1	0.2
BUSINESS	899	0	0.0
COMMUNITY	999	142	32.6
TOTAL		436	100

CAPACITY	CAPACITY	NUMBER	%
MISSING	0	67	
<1000	1000	130	33.2
1001-2000	2000	75	19.1
2001-3000	3000	55	14.0
3001-4000	4000	24	6.1
4001-5000	5000	31	7.9
5001-6000	6000	13	3.3
6001-7000	7000	6	1.5
7001-8000	8000	9	2.3
8001-9000	9000	1	0.3
9001-10000	10000	20	5.1
10001-1100	11000	0	0.0
11001-1200	12000	12	3.1
12001-1300	13000	6	1.5
13001-1400	14000	0	0.0
14001-1500	15000	2	0.5
15001-1600	16000	5	1.3
16001-1700	17000	0	0.0
17001-1800	18000	0	0.0
18001-1900	19000	2	0.5
19001-2000	20000	1	0.3
>20000		0	0.0
TOTAL		392.0	100.0

PRESSURE	PRESSURE	NUMBER	%
MISSING	0	1	
<200	200	2	0.4
201-400	400	0	0.0
401-600	600	0	0.0
601-800	800	101	22.1
801-1000	1000	96	21.0
1001-1200	1200	232	50.7
1201-1400	1400	11	2.4
1401-1600	1600	3	0.7
1601-1800	1800	8	1.7
1801-2000	2000	5	1.1
>2000		0	0.0
TOTAL		458.0	100.0

EASTERN CAPE BOILER STOCK
BOILERS CATEGORISED BY BOILER TYPE

ELECTRICAL BOILER DISTRIBUTION BY:

	YEAR	NUMBER	%
MISSING	0	0	
<1900	1900	0	0.0
1901-1910	1910	0	0.0
1911-1920	1920	0	0.0
1921-1930	1930	0	0.0
1931-1940	1940	0	0.0
1941-1950	1950	0	0.0
1951-1960	1960	1	4.5
1961-1970	1970	1	4.5
1971-1980	1980	3	13.6
1981-1990	1990	17	77.3
TOTAL		22	100

PRESSURE	PRESS	NUMBER	%
MISSING	0	1	
<200	200	0	0.0
201-400	400	1	4.8
401-600	600	1	4.8
601-800	800	2	9.5
801-1000	1000	8	38.1
1001-1200	1200	9	42.9
1201-1400	1400	0	0.0
1401-1600	1600	0	0.0
1601-1800	1800	0	0.0
1801-2000	2000	0	0.0
>2000		0	0.0
TOTAL		21.0	100.0

CAPACITY	CAPACITY	NUMBER	%
MISSING	0	3	
<1000	1000	14	73.7
1001-2000	2000	5	26.3
2001-3000	3000	0	0.0
3001-4000	4000	0	0.0
4001-5000	5000	0	0.0
5001-6000	6000	0	0.0
6001-7000	7000	0	0.0
7001-8000	8000	0	0.0
8001-9000	9000	0	0.0
9001-10000	10000	0	0.0
10001-1100	11000	0	0.0
11001-1200	12000	0	0.0
12001-1300	13000	0	0.0
13001-1400	14000	0	0.0
14001-1500	15000	0	0.0
15001-1600	16000	0	0.0
16001-1700	17000	0	0.0
17001-1800	18000	0	0.0
18001-1900	19000	0	0.0
19001-2000	20000	0	0.0
>20000		0	0.0
TOTAL		19.0	100.0

USAGE	USAGE	NUMBER	%
MISSING	0	4	
AGRIC.	199	0	0.0
MINING	299	0	0.0
MANUF.	399	7	38.9
ELECT.	499	0	0.0
CONSTR.	599	0	0.0
W/SALE	699	0	0.0
XPORT	799	0	0.0
BUSINESS	899	0	0.0
COMMUNITY	999	11	61.1
TOTAL		18	100

EASTERN CAPE BOILER STOCK
BOILERS CATEGORISED BY FUEL TYPE

COAL BOILER DISTRIBUTION BY:

YEAR	YEAR	NUMBER	%
	0	4	
<1900	1900	0	0.0
1901-1910	1910	1	0.3
1911-1920	1920	1	0.3
1921-1930	1930	6	1.7
1931-1940	1940	24	6.9
1941-1950	1950	34	9.7
1951-1960	1960	107	30.7
1961-1970	1970	66	18.9
1971-1980	1980	70	20.1
1981-1990	1990	40	11.5
TOTAL		349	100.0

PRESSURE	PRESS	NUMBER	%
MISSING	0	2	
<200	200	0	0.0
201-400	400	0	0.0
401-600	600	2	0.6
601-800	800	122	34.8
801-1000	1000	47	13.4
1001-1200	1200	99	28.2
1201-1400	1400	26	7.4
1401-1600	1600	14	4.0
1601-1800	1800	7	2.0
1801-2000	2000	4	1.1
>2000		30	8.5
TOTAL		351	100.0

CAPACITY	CAPACITY	NUMBER	%
MISSING	0	142	
<1000	1000	38	18.0
1001-2000	2000	31	14.7
2001-3000	3000	26	12.3
3001-4000	4000	18	8.5
4001-5000	5000	19	9.0
5001-6000	6000	12	5.7
6001-7000	7000	6	2.8
7001-8000	8000	9	4.3
8001-9000	9000	3	1.4
9001-10000	10000	14	6.6
10001-1100	11000	0	0.0
11001-1200	12000	9	4.3
12001-1300	13000	5	2.4
13001-1400	14000	0	0.0
14001-1500	15000	0	0.0
15001-1600	16000	5	2.4
16001-1700	17000	4	1.9
17001-1800	18000	0	0.0
18001-1900	19000	2	0.9
19001-2000	20000	1	0.5
>20000		9	4.3
TOTAL		211	100.0

USAGE	USAGE	NUMBER	%
MISSING	0	17	
AGRIC.	199	1	0.3
MINING	299	0	0.0
MANUF.	399	186	55.4
ELECT.	499	32	9.5
CONSTR.	599	0	0.0
W/SALE	699	2	0.6
XPORT	799	1	0.3
BUSINESS	899	0	0.0
COMMUNITY	999	114	33.9
TOTAL		336	100

EASTERN CAPE BOILER STOCK
BOILERS CATEGORISED BY FUEL TYPE

OIL BOILER DISTRIBUTION BY:

	YEAR	NUMBER	%
MISSING	0	7	
<1900	1900	0	0.0
1901-1910	1910	1	0.4
1911-1920	1920	1	0.4
1921-1930	1930	0	0.0
1931-1940	1940	1	0.4
1941-1950	1950	6	2.5
1951-1960	1960	13	5.5
1961-1970	1970	101	42.4
1971-1980	1980	104	43.7
1981-1990	1990	11	4.6
TOTAL		238.0	100.0

PRESSURE	PRESS	NUMBER	%
MISSING	0	1	
<200	200	2	0.8
201-400	400	0	0.0
401-600	600	0	0.0
601-800	800	24	9.8
801-1000	1000	59	24.2
1001-1200	1200	139	57.0
1201-1400	1400	4	1.6
1401-1600	1600	1	0.4
1601-1800	1800	10	4.1
1801-2000	2000	2	0.8
>2000		3	1.2
TOTAL		244.0	100.0

CAPACITY	CAPACITY	NUMBER	%
MISSING	0	28	
<1000	1000	96	44.2
1001-2000	2000	47	21.7
2001-3000	3000	30	13.8
3001-4000	4000	9	4.1
4001-5000	5000	12	5.5
5001-6000	6000	3	1.4
6001-7000	7000	0	0.0
7001-8000	8000	3	1.4
8001-9000	9000	0	0.0
9001-10000	10000	6	2.8
10001-1100	11000	0	0.0
11001-1200	12000	5	2.3
12001-1300	13000	1	0.5
13001-1400	14000	0	0.0
14001-1500	15000	3	1.4
15001-1600	16000	0	0.0
16001-1700	17000	0	0.0
17001-1800	18000	0	0.0
18001-1900	19000	1	0.5
19001-2000	20000	0	0.0
>20000		1	0.5
TOTAL		217.0	100.0

USAGE	USAGE	NUMBER	%
MISSING	0	10	
AGRIC.	199	4	1.7
MINING	299	0	0.0
MANUF.	399	147	62.6
ELECT.	499	3	1.3
CONST.	599	0	0.0
W/SALE	699	12	5.1
XPORT	799	0	0.0
BUSINESS	899	0	0.0
COMMUNITY	999	69	29.4
TOTAL		235	100

WESTERN CAPE BOILER STOCK
BOILER DISTRIBUTION BY:

TYPE	TYPE	NUMBER	%
MISSING	0	7	
W/TUBE	1	89	9.5
SHELL	2	717	76.8
VERTICAL (SHELL)	3	96	10.3
ELECTRICAL	4	31	3.3
TOTAL		933	100

FUEL	FUEL	NUMBER	%
MISSING	0	12	
COAL	1	393	42.3
OIL	2	481	51.8
GAS	3	7	0.8
ELECTRICAL	4	31	3.3
OTHER	5	16	1.7
TOTAL		928	100

YEAR	YEAR	NUMBER	%
MISSING	0	4	
<1900	1900	0	0.0
1901-1910	1910	6	0.6
1911-1920	1920	1	0.1
1921-1930	1930	13	1.4
1931-1940	1940	14	1.5
1941-1950	1950	56	6.0
1951-1960	1960	113	12.1
1961-1970	1970	333	35.6
1971-1980	1980	292	31.2
1981-1990	1990	108	11.5
TOTAL		936	100

USAGE	USAGE	NUMBER	%
MISSING	0	34	
AGRIC.	199	16	1.8
MINING	299	0	0.0
MANUF.	399	646	71.3
ELECT.	499	6	0.7
CONSTR	599	1	0.1
W/SALE	699	22	2.4
XPORT	799	5	0.6
BUSINESS	899	2	0.2
COMMUNITY	999	208	23.0
TOTAL		906	100

CAPACITY	CAPACITY	NUMBER	%
MISSING	0	199	
<1000	1000	195	26.3
1001-2000	2000	159	21.5
2001-3000	3000	67	9.0
3001-4000	4000	52	7.0
4001-5000	5000	42	5.7
5001-6000	6000	15	2.0
6001-7000	7000	17	2.3
7001-8000	8000	39	5.3
8001-9000	9000	21	2.8
9001-10000	10000	51	6.9
10001-1100	11000	6	0.8
11001-1200	12000	20	2.7
12001-1300	13000	9	1.2
13001-1400	14000	0	0.0
14001-1500	15000	12	1.6
15001-1600	16000	11	1.5
16001-1700	17000	0	0.0
17001-1800	18000	6	0.8
18001-1900	19000	0	0.0
19001-2000	20000	13	1.8
>20000		6	0.8
TOTAL		741	100

PRESSURE	PRESSURE	NUMBER	%
MISSING	0	8	
<200	200	5	0.5
201-400	400	7	0.8
401-600	600	15	1.6
601-800	800	156	16.7
801-1000	1000	241	25.9
1001-1200	1200	398	42.7
1201-1400	1400	38	4.1
1401-1600	1600	9	1.0
1601-1800	1800	24	2.6
1801-2000	2000	10	1.1
>2000		29	3.1
TOTAL		932	100

WESTERN CAPE BOILER STOCK
BOILERS CATEGORISED BY BOILER TYPE

WATER-TUBE BOILER DISTRIBUTION BY:

FUEL	FUEL	NUMBER	%
MISSING	0	3	
COAL	1	57	66.3
OIL	2	20	23.3
GAS	3	4	4.7
OTHER	5	5	5.8
TOTAL		86.0	100.0

YEAR	YEAR	NUMBER	%
MISSING	0	1	
<1900	1900	0	0.0
1901-1910	1910	3	3.4
1911-1920	1920	0	0.0
1921-1930	1930	8	9.1
1931-1940	1940	11	12.5
1941-1950	1950	3	3.4
1951-1960	1960	29	33.0
1961-1970	1970	18	20.5
1971-1980	1980	11	12.5
1981-1990	1990	5	5.7
TOTAL		88	100

USAGE	USAGE	NUMBER	%
MISSING	0	2	
AGRIC.	199	3	3.4
MINING	299	0	0.0
MANUF	399	47	54.0
ELECTRICITY	499	3	3.4
CONST	599	0	0.0
W/SALE	699	4	4.6
XPORT	799	0	0.0
BUSINESS	899	1	1.1
COMMUNITY	999	29	33.3
TOTAL		87	100

CAPACITY	CAPACITY	NUMBER	%
MISSING	0	58	
<1000	1000	14	45.2
1001-2000	2000	4	12.9
2001-3000	3000	0	0.0
3001-4000	4000	0	0.0
4001-5000	5000	1	3.2
5001-6000	6000	0	0.0
6001-7000	7000	0	0.0
7001-8000	8000	0	0.0
8001-9000	9000	3	9.7
9001-10000	10000	1	3.2
10001-1100	11000	0	0.0
11001-1200	12000	0	0.0
12001-1300	13000	0	0.0
13001-1400	14000	0	0.0
14001-1500	15000	0	0.0
15001-1600	16000	0	0.0
16001-1700	17000	0	0.0
17001-1800	18000	0	0.0
18001-1900	19000	0	0.0
19001-2000	20000	2	6.5
>20000		6	19.4
TOTAL		31.0	100.0

PRESSURE	PRESSURE	NUMBER	%
MISSING	0	2	
<200	200	0	0.0
201-400	400	1	1.1
401-600	600	2	2.3
601-800	800	33	37.9
801-1000	1000	11	12.6
1001-1200	1200	13	14.9
1201-1400	1400	9	10.3
1401-1600	1600	0	0.0
1601-1800	1800	1	1.1
1801-2000	2000	0	0.0
>2000		17	19.5
TOTAL		87.0	100.0

WESTERN CAPE BOILER STOCK
BOILERS CATEGORISED BY BOILER TYPE

SHELL AND VERTICAL BOILER DISTRIBUTION BY:

FUEL	FUEL	NUMBER	%
MISSING	0	6	
COAL	1	333	41.3
OIL	2	461	57.1
OTHER	3	10	1.2
GAS	5	3	0.4
TOTAL		807.0	100.0

YEAR	YEAR	NUMBER	%
MISSING	0	1	
<1900	1900	0	0.4
1901-1910	1910	3	0.1
1911-1920	1920	1	0.6
1921-1930	1930	5	0.4
1931-1940	1940	3	6.5
1941-1950	1950	53	10.3
1951-1960	1960	84	38.2
1961-1970	1970	310	33.1
1971-1980	1980	269	10.3
1981-1990	1990	84	0.0
TOTAL		812	100

USAGE	USAGE	NUMBER	%
MISSING	0	24	
AGRIC.	199	13	1.6
MINING	299	0	0.0
MANUF	399	581	73.6
ELECTRICITY	499	2	0.3
CONST	599	1	0.1
W/SALE	699	18	2.3
XPORT	799	3	0.4
BUSINESS	899	1	0.1
COMMUNITY	999	170	21.5
TOTAL		789	100

CAPACITY	CAPACITY	NUMBER	%
MISSING	0	127	
<1000	1000	164	23.9
1001-2000	2000	151	22.0
2001-3000	3000	66	9.6
3001-4000	4000	52	7.6
4001-5000	5000	41	6.0
5001-6000	6000	15	2.2
6001-7000	7000	17	2.5
7001-8000	8000	38	5.5
8001-9000	9000	18	2.6
9001-10000	10000	50	7.3
10001-1100	11000	6	0.9
11001-1200	12000	20	2.9
12001-1300	13000	9	1.3
13001-1400	14000	0	0.0
14001-1500	15000	12	1.7
15001-1600	16000	10	1.5
16001-1700	17000	0	0.0
17001-1800	18000	6	0.9
18001-1900	19000	0	0.0
19001-2000	20000	11	1.6
>20000		0	0.0
TOTAL		686.0	100.0

PRESSURE	PRESSURE	NUMBER	%
MISSING	0	3	
<200	200	5	0.6
201-400	400	3	0.4
401-600	600	1	0.1
601-800	800	123	15.2
801-1000	1000	228	28.1
1001-1200	1200	374	46.2
1201-1400	1400	29	3.6
1401-1600	1600	8	1.0
1601-1800	1800	23	2.8
1801-2000	2000	9	1.1
>2000		7	0.9
TOTAL		810.0	100.0

WESTERN CAPE BOILER STOCK
BOILERS CATEGORISED BY BOILER TYPE

ELECTRICAL BOILER DISTRIBUTION BY:

YEAR	YEAR	NUMBER	%
MISSING	0	0	
<1900	1900	0	0.0
1901-1910	1910	0	0.0
1911-1920	1920	0	0.0
1921-1930	1930	0	0.0
1931-1940	1940	0	0.0
1941-1950	1950	0	0.0
1951-1960	1960	0	0.0
1961-1970	1970	4	12.9
1971-1980	1980	11	35.5
1981-1990	1990	16	51.6
TOTAL		31	100

PRESSURE	PRESS	NUMBER	%
MISSING	0	0	
<200	200	0	0.0
201-400	400	3	9.7
401-600	600	11	35.5
601-800	800	0	0.0
801-1000	1000	1	3.2
1001-1200	1200	11	35.5
1201-1400	1400	0	0.0
1401-1600	1600	0	0.0
1601-1800	1800	0	0.0
1801-2000	2000	0	0.0
>2000		5	16.1
TOTAL		31.0	100.0

CAPACITY	CAPACITY	NUMBER	%
MISSING	0	11	
<1000	1000	16	80.0
1001-2000	2000	4	20.0
2001-3000	3000	0	0.0
3001-4000	4000	0	0.0
4001-5000	5000	0	0.0
5001-6000	6000	0	0.0
6001-7000	7000	0	0.0
7001-8000	8000	0	0.0
8001-9000	9000	0	0.0
9001-10000	10000	0	0.0
10001-1100	11000	0	0.0
11001-1200	12000	0	0.0
12001-1300	13000	0	0.0
13001-1400	14000	0	0.0
14001-1500	15000	0	0.0
15001-1600	16000	0	0.0
16001-1700	17000	0	0.0
17001-1800	18000	0	0.0
18001-1900	19000	0	0.0
19001-2000	20000	0	0.0
>20000		0	0.0
TOTAL		20.0	100.0

USAGE	USAGE	NUMBER	%
MISSING	0	6	
AGRIC.	199	0	0.0
MINING	299	0	0.0
MANUF	399	15	60.0
ELECTRICIT	499	0	0.0
CONST	599	0	0.0
W/SALE	699	0	0.0
XPORT	799	2	8.0
BUSINESS	899	0	0.0
COMMUNITY	999	8	32.0
TOTAL		25	100

WESTERN CAPE BOILER STOCK
BOILERS CATEGORISED BY FUEL TYPE

COAL BOILER DISTRIBUTION BY:

YEAR	YEAR	NUMBER	%
MISSING	0	1	
<1900	1900	0	0.0
1901-1910	1910	6	1.5
1911-1920	1920	1	0.3
1921-1930	1930	11	2.8
1931-1940	1940	12	3.1
1941-1950	1950	44	11.2
1951-1960	1960	99	25.3
1961-1970	1970	68	17.3
1971-1980	1980	98	25.0
1981-1990	1990	53	13.5
TOTAL		392.0	100.0

PRESSURE	PRESS	NUMBER	%
MISSING	0	2	
<200	200	2	0.5
201-400	400	2	0.5
401-600	600	1	0.3
601-800	800	104	26.6
801-1000	1000	86	22.0
1001-1200	1200	151	38.6
1201-1400	1400	26	6.6
1401-1600	1600	5	1.3
1601-1800	1800	4	1.0
1801-2000	2000	9	2.3
>2000		1	0.3
TOTAL		391.0	100.0

CAPACITY	CAPACITY	NUMBER	%
MISSING	0	134	
<1000	1000	28	10.8
1001-2000	2000	34	13.1
2001-3000	3000	18	6.9
3001-4000	4000	18	6.9
4001-5000	5000	27	10.4
5001-6000	6000	7	2.7
6001-7000	7000	15	5.8
7001-8000	8000	27	10.4
8001-9000	9000	11	4.2
9001-10000	10000	38	14.7
10001-1100	11000	3	1.2
11001-1200	12000	3	1.2
12001-1300	13000	8	3.1
13001-1400	14000	0	0.0
14001-1500	15000	2	0.8
15001-1600	16000	10	3.9
16001-1700	17000	0	0.0
17001-1800	18000	1	0.4
18001-1900	19000	0	0.0
19001-2000	20000	9	3.5
>20000		0	0.0
TOTAL		259.0	100.0

USAGE	USAGE	NUMBER	%
MISSING	0	11	
AGRIC.	199	10	2.6
MINING	299	0	0.0
MANUF.	399	283	74.1
ELECT.	499	1	0.3
CONSTR.	599	0	0.0
W/SALE	699	6	1.6
XPORT	799	0	0.0
BUSINESS \	899	0	0.0
COMMUNITY	999	82	21.5
TOTAL		382	100

WESTERN CAPE BOILER STOCK
BOILERS CATEGORISED BY FUEL TYPE

OIL BOILER DISTRIBUTION BY:

YEAR	YEAR	NUMBER	%
MISSING	0	1	
<1900	1900	0	0.0
1901-1910	1910	0	0.0
1911-1920	1920	0	0.0
1921-1930	1930	1	0.2
1931-1940	1940	0	0.0
1941-1950	1950	10	2.1
1951-1960	1960	14	2.9
1961-1970	1970	244	50.8
1971-1980	1980	175	36.5
1981-1990	1990	36	7.5
TOTAL		480.0	100.0

PRESSURE	PRESS	NUMBER	%
MISSING	0	3	
<200	200	3	0.6
201-400	400	2	0.4
401-600	600	1	0.2
601-800	800	48	10.0
801-1000	1000	151	31.6
1001-1200	1200	227	47.5
1201-1400	1400	8	1.7
1401-1600	1600	4	0.8
1601-1800	1800	20	4.2
1801-2000	2000	1	0.2
>2000		13	2.7
TOTAL		478.0	100.0

CAPACITY	CAPACITY	NUMBER	%
MISSING	0	42	
<1000	1000	148	33.7
1001-2000	2000	118	26.9
2001-3000	3000	45	10.3
3001-4000	4000	32	7.3
4001-5000	5000	15	3.4
5001-6000	6000	8	1.8
6001-7000	7000	2	0.5
7001-8000	8000	12	2.7
8001-9000	9000	5	1.1
9001-10000	10000	10	2.3
10001-1100	11000	3	0.7
11001-1200	12000	16	3.6
12001-1300	13000	1	0.2
13001-1400	14000	0	0.0
14001-1500	15000	10	2.3
15001-1600	16000	1	0.2
16001-1700	17000	0	0.0
17001-1800	18000	5	1.1
18001-1900	19000	0	0.0
19001-2000	20000	4	0.9
>20000		4	0.9
TOTAL		439.0	100.0

USAGE	USAGE	NUMBER	%
MISSING	0	15	
AGRIC.	199	5	1.1
MINING	299	0	0.0
MANUF.	399	321	68.9
ELECT.	499	4	0.9
CONSTR.	599	1	0.2
W/SALE	699	16	3.4
XPORT	799	2	0.4
BUSINESS	899	2	0.4
COMMUNITY	999	115	24.7
TOTAL		466	100

WESTERN CAPE BOILER STOCK
BOILERS CATEGORISED BY FUEL TYPE

OTHER FUELS BOILER DISTRIBUTION BY:

YEAR	YEAR	NUMBER	%
MISSING	0	0	
<1900	1900	0	0.0
1901-1910	1910	0	0.0
1911-1920	1920	0	0.0
1921-1930	1930	0	0.0
1931-1940	1940	0	0.0
1941-1950	1950	0	0.0
1951-1960	1960	0	0.0
1961-1970	1970	10	62.5
1971-1980	1980	5	31.3
1981-1990	1990	1	6.3
TOTAL		16.0	100.0

PRESSURE	PRESS	NUMBER	%
MISSING	0	1	
<200	200	0	0.0
201-400	400	0	0.0
401-600	600	1	6.7
601-800	800	0	0.0
801-1000	1000	0	0.0
1001-1200	1200	5	33.3
1201-1400	1400	2	13.3
1401-1600	1600	0	0.0
1601-1800	1800	0	0.0
1801-2000	2000	0	0.0
>2000		7	46.7
TOTAL		15.0	100.0

CAPACITY	CAPACITY	NUMBER	%
MISSING	0	2	
<1000	1000	1	7.1
1001-2000	2000	1	7.1
2001-3000	3000	4	28.6
3001-4000	4000	0	0.0
4001-5000	5000	0	0.0
5001-6000	6000	0	0.0
6001-7000	7000	0	0.0
7001-8000	8000	0	0.0
8001-9000	9000	2	14.3
9001-10000	10000	3	21.4
10001-1100	11000	0	0.0
11001-1200	12000	1	7.1
12001-1300	13000	0	0.0
13001-1400	14000	0	0.0
14001-1500	15000	0	0.0
15001-1600	16000	0	0.0
16001-1700	17000	0	0.0
17001-1800	18000	0	0.0
18001-1900	19000	0	0.0
19001-2000	20000	0	0.0
>20000		2	14.3
TOTAL		14.0	100.0

USAGE	USAGE	NUMBER	%
MISSING	0	0	
AGRIC.	199	0	0.0
MINING	299	0	0.0
MANUF.	399	15	93.8
ELECT.	499	1	6.3
CONSTR.	599	0	0.0
W/SALE	699	0	0.0
XPORT	799	0	0.0
BUSINESS	899	0	0.0
COMMUNITY	999	0	0.0
TOTAL		16	100

APPENDIX B

A copy of the Department of Manpower Application Form

Man. 139
Annexure F 14

REPUBLIC OF SOUTH AFRICA DEPARTMENT OF MANPOWER

Factories, Machinery and Building Work Act, 1941

APPLICATION FOR PERMISSION TO ERECT AND USE A BOILER

(Regulation C92)

THE DIVISIONAL INSPECTOR
DEPARTMENT OF MANPOWER

.....

.....

I/We,.....
(Here insert official name of company, firm or person in whose name boiler is to be registered.)

Postal Address..... Telephone No.....

hereby, in terms of Regulation C92 apply for permission to erect and use a boiler of which the particulars are as detailed below:

TO BE FILLED IN BY APPLICANT

Place of erection.....

Type of boiler..... Code of const.....

Maker's name.....

Works number.....

Year of construction.....

Makers max. working pressure..... KPa

Test pressure prescribed by code.....KPa

Grate area.....m^2

Heating surface.....m^2

Evaporation from and at 100 °C..... kg/hr.

Is boiler new?.....

If not state:

Government number (if any).....

Place where boiler was previously used.....

.....

Date..... 19.....

Is boiler provided with the following regulation fittings?

Water gauges (numbers and type) .....

Feed apparatus (number) .....

Feed check valve .....

Feed stop cock or valve .....

Low water alarm (type) .....

Lowest water level indicator .....

Safety valves (number, type and discharge capacity of each) .....

.....

Steam stop valve .....

Blow-off apparatus .....

Pressure gauge .....

Test pressure gauge connection .....

Manhole .....

Copper number plate .....

Means for automatically isolating fuel or power supply .....

.....

Signature of applicant.....

For Departmental use only

Date application received.....

New official number allotted
Old official number confirmed .....

Date of permission to erect boiler.....

Date of external inspection.....

Date of internal inspection.....

Date of hydraulic test.....

Authorised working gauge pressure.....KPa

Date provisional permit issued.....

Date certificate of registration issued.....

Remarks.....

.....

.....

.....

.....

Date.....19.....

.....
Inspector

.....
Office

REPORT NO. GEN 145

TECHNICAL AND ECONOMIC CHANGE IN THE SOUTH AFRICAN STEAM BOILER STOCK

FINAL REPORT

P C BOTHA
R K DUTKIEWICZ

NOVEMBER 1991

ENERGY RESEARCH INSTITUTE