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**THE REPUBLIC OF SOUTH AFRICA AS A SUPPLIER
OF STRATEGIC MINERALS: AN ASSESSMENT**

**E W Anderson
and
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GELEENTHEIDSPUBLIKASIE

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PREFACE

Attitudes towards South Africa in the Western World have become more realistic in recent years. On the one hand, the most implacable opponents of apartheid have begun to recognise the extraordinary power of a regime whose geopolitical importance to the West is undeniable. On the other hand, those who saw South Africa simply in terms of geopolitical and strategic mineral procurement have come to realise that South Africa's political future rests much more on internal than on external events, and that policies towards the non-white population matter fundamentally. After visiting South Africa, we concluded that the perceived strategic importance of the country, while very significant, may have been rather exaggerated, particularly in recent years. While the degree of Western dependence upon individual minerals, the Cape Sea Route, etc. might be queried however, we recognise that the coincidence of so many possible pressure points in one country is still formidable. At the same time we also detected an undercurrent of frustration and resentment among the non-white population which has probably been greatly underestimated, notably by some white South Africans. It is thus perhaps time for South Africa watchers of all shades of opinion to stop seeing what they wish to see and to take a sober look at what others have been proclaiming, unheeded. The great paradox is this: strategic interests in South Africa will probably be best served by a continuing programme of reform and economic improvement among the non-whites (particularly the urban black population), while the cause of non-white South Africa may be better served by continuing and developing political and economic ties with the West than by severing them.

During our visit to South Africa in 1982, our South African hosts were anxious to demonstrate that change has occurred already and that more radical change is round the corner. The former point we found convincing, particularly when comparisons are made with life in South Africa nearly 20 years ago when one of us lived there, but seen in the perspective of 20 years and the pace of change elsewhere in the world, progress towards social and political reform has been slow. How soon radical changes will occur is uncertain. We found most white South Africans willing to talk about the need for change, some of them in terms that would have been unthinkable a few years ago. Some of them, however, admitted that talking about reform is easy, but being willing to accept adjustments to a privileged lifestyle is difficult, and will take much more time. Our hope is that it will not be so long that disaster finally overtakes South Africa.

A. ECONOMIC ASPECTS OF SOUTH AFRICA AS A SUPPLIER

1. INTRODUCTION

The term 'strategic' as applied to minerals appears to have a general acceptance, though it is rarely tightly defined. It implies that the mineral is of national importance but that supplies may be at risk. Any of the following elements may therefore be involved:

- (a) Import dependence
- (b) Limited number of significant suppliers
- (c) Use in sensitive technology
- (d) Geological scarcity

Clearly the two key factors are the use to which the mineral is put and the vulnerability of sources. It must be assumed that the technology is in some way vital, is probably connected with an aspect of defence, and that no other equipment or mineral can be effectively substituted. Thus the term subsumes earlier distinctions made between 'strategic', or import-dependent, and 'critical' defined as concerned with defence. A mineral may be crucial for defence and there may be no home production but if there is a wide range of potential suppliers then there is only very limited vulnerability. Furthermore, as now used, 'strategic' includes the added facet of scarcity. Even a definition of strategic including all four elements still requires further clarification. For example, with warfare being potentially total, the variety of equipment which can be classified as of military importance is vast. The number of suppliers is likely to alter according to changing political orientation, new resources discovered and changing costs of extraction. Rather than the total geological absence of a mineral, import dependence may imply only that the costs of domestic recovery are uneconomic. Similarly, geological scarcity can best be described as apparent, since it is basically time-dependent and will alter with the discovery of new resources, sea floor mining, etc.

In considering the vulnerability of strategic mineral supplies, there are clearly two key groups of factors: the economic and the political.¹ In Part A of this Report economic aspects are considered in detail. Part B is devoted to an appraisal of the political situation. In a discussion on strategic problems, Fine² identifies the major economic variables as those being concerned with:

- (a) pre-emptive resource contracts
- (b) ownership of resources
- (c) transaction strategies
- (d) delivery systems
- (e) harbours and loading facilities

Therefore if the importance and vulnerability of South Africa as a supplier of strategic minerals is to be assessed, the complete infrastructure from the mine to the final export route needs to be examined.

Background

While strategists have long been interested in attempting to identify weaknesses in the supply lines of key raw materials, it is only since 1978 and the explosive price rises of cobalt that attention has become sharply focussed upon a small carefully defined group of strategic minerals. In 1978 the Western World became keenly aware of its vulnerability and since then a number of papers have examined the problem.³⁻⁷ A major conclusion from this work was the great importance of South Africa. Evidence for this included not only the dominant position of South Africa as a producer of several key minerals but also the fact that in certain cases South Africa and the Soviet Union virtually monopolised world supplies. Furthermore, South Africa also contained vast reserves and its geographical location astride the Cape Route gave it great geopolitical significance.⁸⁻⁹ More recently, in response to these claims other papers¹⁰ have purported to show that such importance is exaggerated.

In investigating the strategic minerals most at risk for the West, four metals are commonly identified: platinum, cobalt, chromium and manganese. South Africa possesses vast reserves of platinum, chromium and manganese and is a major world producer. While having limited amounts of cobalt, South Africa provides the vital rail network by which the mineral is transported from Zaire. Therefore it is undeniable that South Africa is closely involved with these four key non-fuel strategic minerals. The questions are:

- (a) How accurate is this picture of South Africa's contribution?
- (b) How important is South Africa to the West?
- (c) How vulnerable are South African supplies?

2. STRATEGIC MINERALS

(a) Production and Reserves

Before South Africa's importance as a supplier of strategic minerals can be realistically assessed, the basis for the various statistical tables published must be examined. It has been stated¹¹ that there is a certain in-built exaggeration in South African statistics and that this is shown by various discrepancies in the tables. Certainly its importance is stressed in South African literature¹² but examination tends to show that the statistics do not vary consistently in one direction.

With regard to production as opposed to reserves, more reliable figures would be expected. However, there are still major problems of precision and even the more widely quoted statistics such as those for the US Bureau of Mines can be questioned.¹³ This is hardly surprising when it is realised that in the free world the source from which the tables are constructed must be returns from corporations and even very small companies. The priority they set on reliability will obviously vary and they will be mindful of protecting their own commercial positions. For

example, in the case of platinum, price and production are very closely related and therefore in South Africa, because there are so few producers, the figures are treated as confidential. Furthermore, the basis of any figures must be investigated, particularly the units employed together with such factors as the grade of the ore and the degree of beneficiation. For example, chrome ore and ferro-chrome occur separately in the production figures for South Africa.

Reserves are clearly much more difficult to define¹⁴ and are very dependent upon changing technology, world prices, etc. In this instance South Africa, with its highly developed mining technology and its low cost labour, has a distinct advantage. Nevertheless, statistics must still be, to an extent, speculative, depending upon the assumed depths of the deposits and the consistency of mineral occurrence within the rock. For example, South Africa lists its platinum reserves to a depth of 600 m and its chrome ore to 300 m. Therefore, looking at world reserves all the conditions of measurement need to be taken into account before judgment can be made about the validity of particular figures.

When the reserves are presented as a percentage of the total world reserves, the result must be treated circumspectly. Clearly the world percentage is a gross estimate since large areas of the earth's surface have undergone no mineral exploration. Furthermore, the holdings of multinational corporations are confidential to those companies and only a broad indication of the scale of reserves is likely to be obtained. In contrast, the reserves of South Africa are at least better known although exploration, particularly in the Homelands, is still far from complete.

(b) Platinum Group Metals

Platinum always appears with the other group metals: palladium, rhodium, ruthenium, osmium and iridium, and in South Africa all six are extracted together. Platinum is an important industrial material, while as a precious and noble metal it is in demand for investment and as jewellery. Therefore, in analysing its strategic significance, all three aspects of its use must be borne in mind. There is no doubt that South Africa has the world's greatest known deposits of platinum. Furthermore, unlike the other major world producers, Canada and the USSR, platinum group metals are not produced as by-products of nickel and copper mining. In South Africa platinum is the major ore with nickel and copper as by-products and therefore there is a flexibility to increase production according to world demand, which is not found in the other producing countries. South Africa can therefore be considered the only truly commercially viable platinum producer in the free world.¹⁵

A further vital factor, the ratio of platinum to palladium, also favours South Africa. In the USSR the ratio is approximately 1:3, while the Stillwater deposits of the USA average 5-6:1. In South Africa deposits average 3:1 platinum to palladium.

Typical ores range in content from 4 to 15 grammes per metric ton of platinum group metals with the Marensky reef averaging 7 grammes and the UG 2 Chromite Seam 8 grammes. Within the pure concentrate, the following percentages are found: platinum 60, palladium 27, ruthenium 5, rhodium 2.7, Iridium 0.7 and osmium 0.06, with the remaining 4% comprising gold.¹⁶

To evaluate their importance, the properties and therefore applications of the various metals must be examined. All have the following properties:

- (a) High melting point
- (b) Dimensional integrity in air and high temperatures
- (c) Resistance to corrosion
- (d) Surface free of oxide films and corrosion products
- (e) Electrical conductivity
- (f) Catalytic activity

They therefore have a very wide range of applications, particularly in the chemical and electrical industries. Of vital importance is their use in a large number of catalytic reactions, on which among others, the petroleum refining industry depends. This property is also leading to an increasing demand for use in the purification of motor vehicle exhaust gases. In the electrical and electronic industries major applications include the production of electrodes and relay contacts, while platinum resistance thermometers define the International Temperature Scale from 183° to 630°C. Platinum group metals are also important in the glass, glass fibre, ceramics, chemical and electro-chemical industries.¹⁷ A high proportion of these applications is accounted for by palladium and platinum and indeed the present decreasing order of importance in industrial usage is: palladium, platinum, rhodium, iridium, ruthenium and osmium. Of the four lesser known platinum group metals, rhodium is particularly useful for fabricating items for use at high temperature; iridium is used in crucibles for melting non-metallic substances at very high temperatures; ruthenium, like iridium, is used as a hardener for platinum and palladium and is exceptionally hard; osmium is used as an alloying element to provide other precious metals with extreme hardness and resistance to corrosion. There has also developed a wide variety of alloys between the platinum metals themselves and between them and other metals.

From the range of applications it can be seen that the platinum group metals represent capital requirements for industry.¹⁸ Their specifically strategic importance is more difficult to assess, since the variety of military and support equipment together with the research and development instruments required to produce it, is now so vast. Clearly, however, their use for such items as jet engine glow plugs, special optical glasses, red and infra-red reflecting surfaces, and fuel-cell electrodes suffice to show their strategic potential. Additionally, their corrosion resistance renders them vital for brazing alloys in stainless steel systems which are needed to handle rocket fuels and oxidizers.

Because the price of platinum group metals is so closely geared to the market, production figures are confidential. This is commercially important as there are only a small number of producers. However, the annual South African production can be assumed at present to be about 95,000 kg or approximately 90 tons with a value of about R1 billion. At present the platinum industry is working below capacity,¹⁹ but while the

total amount produced is less, the Western World share at 92% and the world share at 51% remain approximately stable. The strength of platinum as a key strategic is, therefore, somewhat impaired at present. Furthermore, recycling capacity estimated at anything from 50% to 75%²⁰ has tended to make the USA, Europe and more recently, Japan, more independent of original supplies. Platinum is virtually indestructible and even in its use in a cracking tower of the petroleum industry, the recovery rate is something like 99%. Indeed the oil industry has developed substitutes, halving the requirement of platinum, and over the past three or four years leading to actual sales of the metal. Clearly an upturn in the oil industry is required before platinum is again greatly in demand. At the same time the palladium market has largely collapsed, with a price fall from \$200 per ounce in 1980 to \$65 or \$66 today. This has resulted through underpricing by the USSR which controlled the market by volume. A further result has been that the USA electronics industry has begun replacing platinum with palladium thereby placing itself in a position of reliance upon supplies from the USSR. Similarly the price of rhodium fell from a peak of \$800 to \$900 an ounce to the present price of \$340. Historically it has fetched approximately twice the price of platinum, but the expected demand from the USA automobile industry did not come. However, it is considered that since there is no good large-scale source of rhodium and as it is becoming increasingly important in fuel-cell technology, it has acquired a special strategic significance.²¹ Nevertheless it must be concluded that both rhodium and platinum have suffered from the depression in the automobile industry and also from the watering-down of the US Clean Air Act. Both glass and fibreglass industries are in a depressed state, therefore the South African production of rhodium has been cut down, and it has been left in stockpile in an impure state. Ruthenium has also suffered from over supply as its catalytic properties have not been sufficiently in demand. There has been comparatively little research into ruthenium and it tends to have maintained a low price. Osmium has also been oversupplied as a result of the much maligned artificially elevated prices. Substitution is possible for its major uses and at present there is very little demand. Thus it can be seen that the market for platinum group metals is at present in a depressed phase, although examination and some speculation indicate that there could be strategic problems with regard to palladium and possibly rhodium. However, with such a wide and increasing range of properties recognised, the platinum group metals are always likely to retain some strategic significance and to develop further dependency.

South Africa's reserves of platinum group metals to a depth of 600 m are stated as 30,200 metric tons (metal content). This is 89% of Western World reserves and 75% of total world reserves. Since the occurrence of the metal is comparatively consistent there is no reason to doubt this figure, merely to state that it is somewhat notional since when mining at greater depths is necessary, it is very likely that suitable technology will be available. As an example, reserves were increased by 160% virtually overnight when the UG 2 Chromite Seam became available.²² There is indeed no reason to suppose that South Africa will not remain for the foreseeable future the world's dominant source of platinum group metals.

As mentioned earlier, platinum is also an investment metal and some 5% to 10% of the market is controlled by investors. Its price is therefore liable to fluctuate rather like that of gold, though in other respects the two metals are less comparable. Gold can depend upon mutual mistrust of mankind,²³ whereas platinum has no monetary value. The entry of speculators into what is essentially a strategic metal market must give cause for disquiet. The three platinum dealers, based in London, buy and sell each day irrespective of other implications, thereby allowing the USSR to enter the free market. South Africa sells at its own producers' price and is therefore in danger of being undercut and having to vacate the dominant position in favour of the USSR.

One further element affecting prices and production is stockpiles, and as indicated earlier, these are maintained for both pure and impure metals of the platinum group. As a result South Africa tries to retain her stable price but recently the value of platinum has fallen.

The South African platinum trade is under private enterprise and therefore depends upon its competitive ability to provide a reliable supply of quality metal. This means that whatever the changing strategic implications, the industry must depend upon long-term contracts. Therefore, unlike the USSR, it is at the mercy of world prices which, should they become too depressed, would result in the market being left to the Soviet Union. In the Western World both the Sudbury (Canada) and Stillwater (USA) deposits contain platinum group metals as a by-product and therefore lack flexibility. Furthermore, in the case of Stillwater there would be no need to be a guaranteed floor price for development to be economically viable. However, when all the implications, geological, strategic, economic and commercial are considered, it can be seen that the world platinum trade is extremely complex. Though at present the market is not buoyant, platinum group metals cannot be considered to lack strategic importance. Future reliance upon Soviet sources would seem fraught with danger and therefore more consideration must be given to maintaining South African supplies.

(c) Chromium

The only significant source of chromium metal is chromite, commonly referred to as chrome or chrome ore. Chrome ores can be distinguished into those used for refractory purposes and those with a reasonably high chromium content and favourable chromium-iron ratio which form the input into ferro-alloys. However, with the sole exception of the United States, statistics are given for both types combined. Apart from the varieties of ore, ferro-chrome differs in the degree of beneficiation and therefore when both are included in the same table, the assessment of the figures poses problems. In general it is possible to say at the present time that the market is rather depressed and there is a move from the sale of ore to the more lucrative ferro-chrome.

Chromium is an alloy agent used in steel and various nickel-based and cobalt-based super alloys, aluminium-based alloys, electrical resistance alloys, hard facing grains and powders, and for electro-plating.²⁴ Most importantly it is essential in the production of high grade stainless steel

for which there is no substitute. Therefore chromium is perhaps the most classically vulnerable strategic metal since it is vital for the production of a wide range of equipment of military and related importance. Furthermore, there are very few major world suppliers, one being the USSR.

The chrome ore production of South Africa was 3,689,178 metric tons (1979) and there has probably been a slight drop to about 3.5 million tons since then. South Africa, although working at perhaps two-thirds capacity,²⁵ is therefore the leading producer with 56% of the Western World production and 36% of the world total. Production in 1979 was valued at almost R90 million and 38.5% of the ore was exported in the raw state, earning R52 million in foreign exchange. However, South Africa is also a major consumer of chrome ore, which is the basis for its rapidly expanding ferro-chromium industry. In 1980 almost 800,000 tons of ferro-chrome were produced, yielding R300 million in export value. This amounts to some 60% of the ferro-chrome entering world trade and 30% of total world production. Increasingly it is thought that chromium will be used in the South African stainless steel industry, providing an even more lucrative export. Apart from its possession of the mineral, South Africa has also achieved pre-eminence through its high degree of expertise. The argon oxygen decarbonisation process which has been developed, means that lower grade ores can be used to produce stainless steel at very competitive prices. Thus while Zimbabwe has higher grade chromium ore, the thin seams and comparatively inefficient production methods render it increasingly less competitive. Its efficiency is regarded as being approximately one sixth that of the South African industry.²⁶ The generally low grade ores of South Africa require large-scale treatment and a first-class technological back-up. Reserves of South African chrome ore to a depth of 300 m are estimated at over 3 billion tons, comprising 84% of that of the Western World and 81% of the world total. South Africa stockpiles in the form of ferro-chromium since this is more immediately usable and a number of varieties can be retained. It also makes best use of shipping space and of South Africa's abundant power supplies.

For both chrome ore and ferro-chrome the position of South Africa in world trade would appear to be pre-eminent. As more low-priced ferro-chrome is produced, so the beneficiation industries of consumer countries are underpriced. Plants for example in the United States and Japan, have been closed. This leads of course to an increasing reliance upon South Africa which is selling not only ore but also power and technological expertise. It is hoped that the Commodity Centre for chromium might be located in South Africa.²⁷

(d) Manganese

Though produced on a much greater scale, manganese resembles chromium with regard to beneficiation, importance in the steel industry and substantial dependence upon South Africa. However, manganese is not quite so strategically vulnerable as the dispersion of all sources and processing is geographically greater. As with chromium, there is a wide range of manganese ores and a large number of manganese master alloys. The interpretation of statistical tables is thus similarly difficult.

95% of all manganese produced is used in making iron and steel for which it is essential. On average 6.5 kg of manganese (manganese content) is required per tonne of crude steel produced. Manganese is also used in the production of dry cell batteries and as an oxidant in the extraction of uranium. However, as with chromium, quantities of electrolytic manganese, battery grade manganese and chemical grade manganese are not distinguished within the overall figures for manganese ore. As a result of its applications manganese is, in the same way as chromium, important for the defence and related industries. However, supplies are less vulnerable since there are more sources available.

South African production of manganese ore was just under 6 million metric tons in 1980, accounting for 42% of the Western World total and 22% of the world total. The 1979 figure of 5.2 million tons yielded R113.3 million to which was added over R200 million for the sale of ferro-manganese and manganese metal. The depression in the steel industry has of course led to a downturn in the market for both chromium and manganese. In the case of manganese it is expected that recovery will be comparatively slow and full production will not be resumed until the end of 1983.²⁸

South Africa possesses easily the largest known deposits of manganese ore, estimated at over 12 billion tons in situ. This accounts for 93% of Western World reserves and 78% of the world total.

While South Africa is obviously in a very important strategic position with regard to reserves, the pre-eminence does not really match that of chromium. Other leading suppliers such as Brazil, Australia and Gabon are likely for a variety of reasons to continue trading with the Western World. In particular it is thought that Australian production could be increased dramatically if required. Also, sea floor mining should affect the world market although the costs and vulnerability of such an activity can be called into question.²⁹ Furthermore, any possibility of a cartel is remote, and in fact it was specifically stressed in South Africa that competition was encouraged.³⁰ The danger of a cartel or similar restriction in supplies, it is considered, leads to enhanced research into substitutes.

(e) Cobalt

Cobalt, the metal which more than any other set off the scare of a resource war, is witnessing something of a downturn in demand. In 1981 demand was estimated at 21,000 tons and supply at 28,500 tons. Between them Zaire and Zambia produce 20,000 tons and therefore dominate the market. Bearing in mind the political problems in both countries and also the fact that a high proportion of Zairian cobalt passes through Belgium, it is hardly surprising that reliable data are hard to collect. Indeed, partly perhaps through confidentiality and certainly through lack of information, aspects of the movement of cobalt in world trade cannot be stated with certainty.

Cobalt is used as an alloying element in:

- (a) Permanent and soft magnetic materials
- (b) Super alloys
- (c) Hard facing and wear-resistant alloys
- (d) Sintered carbide cutting tools
- (e) Special high speed tool steels
- (f) Cobalt-based tool materials
- (g) Electrical resistant alloys
- (h) High temperature spring and bearing alloys
- (i) Magnetostrictive alloys
- and (j) Special expansion and constant modulus alloys³¹

The recent rapid but erratic growth in world consumption has been specifically related to the manufacture of jet engines, precision electronics and high speed machine tools for the engineering industries.

In South Africa there is a modest production of cobalt as a by-product of the gold and platinum mining. The figures do not appear in the table of mineral production³² but it is assumed that there is enough to satisfy home demand. Any development in world trade will be on a small scale and reserves by metal content are estimated at 70,000 metric tons.

The importance of South Africa in the cobalt trade is through its railway network linking Zaire, Zambia and Zimbabwe. However, it proved impossible to obtain any information about the amount transported. It is possible such reticence results from confidentiality but more likely that, since the cobalt passes through the country in containers in much the same way as copper, which predominates in the rail transit trade, there could just be a lack of knowledge. While in the period of very high prices it was possible to fly cobalt from Kinshasa now, with a decline, it would hardly be viable except for small quantities required for specific purposes. Thus, since the line from Zaire to South Africa is the only reliable and constantly maintained exit, it must be assumed that the bulk of the cobalt leaves from East London.

Therefore, for an entirely different reason South Africa occupies an extremely important position astride the main cobalt land line. If alternative lines such as those through Angola or Mozambique become more reliable, then dependence upon South Africa will diminish, but this does not seem likely in the foreseeable future.

(f) Other Minerals

South Africa is of course a producer of other minerals which might be considered strategic, notably titanium and vanadium. In both cases South Africa is a world leader with regard to production and reserves. The South African viewpoint would be that vanadium should be on the list of key strategic minerals and certainly this would seem to be borne out by its share of Western World production which is 61% and total world production 45%.³³ The reason it has not been rated as highly as the other three minerals is that there are other secure sources, notably Finland and the USA itself.

3. COMMERCIAL ASPECTS

In South Africa, while there are government agencies to help with technological development, etc. the mining corporations are all within the private sector over which there is little government control. Furthermore, as there is no net foreign investment, control of all the companies rests within South Africa. Some are therefore multinationals because they have invested abroad, in for example, the USA, but they are atypical in that they are not controlled from the USA, Europe or Japan. This fact contrasts strongly with the situation in Australia and Canada in which foreign control is very widespread. Therefore it is considered that there is less likely to be disruption in South Africa as a result of government action or decisions taken by multinational corporations based elsewhere than in the other major mining countries. With investment from abroad there is still a very strong mining industry which is able to offer help, financial and technical, to the Third World countries of Africa, notably Zaire, Zambia, Botswana, Lesotho and Swaziland. However, it is fair to say that because of their strength and control these corporations are increasingly a political target, which means that their continued development and indeed the prosperity of the South African mining industry depends upon internal stability.

As the mining industry is almost completely a commercial enterprise and in no way an arm of government, long-term contracts are essential for its continuing prosperity. Thus, foremost in any trade agreement will be the economic rather than the political aspect. An integral part of the system is the Chamber of Mines which governs all dealings, and thereby tends to follow the national interest. All policies with regard to stockpiles, recycling, new technology, etc. are formulated through the Chamber and the idea of the mineral weapon is played down. (The Chamber consists of the six mining finance houses: Anglo-American Corporation, General Mining, Union Corporation, Goldfields of South Africa, JCI, Anglo-Transvaal and Rand Mines). Between them they control something like 85% of all mineral exploitation and therefore their decisions have a great influence on the industry. The executive committee of the Chamber formulates all policy, co-ordinating the voices of government and labour.

Sales could be made to the USSR but in general Soviet selling strategy is entirely different. Rather than watching the market, the Soviet Union tends to sell when there is a requirement for foreign exchange, as a result of which they have been accused on various occasions of artificially depressing the price of a commodity. Undoubtedly, contacts are maintained with the USSR over such commodities as gold, diamonds and platinum and an increasing Soviet market sophistication is being noticed.³⁴ Certainly, Soviet influence on the commodity markets is being more closely monitored and this is clearly vitally important where strategics are concerned. In particular this is seen in their use of stockpiles, which appear to be economic rather than strategic.

Apart from technological support, the other major source of strength of the corporations is the well developed infrastructure of railways and ports. This is not equalled even in developed countries, such as Australia, and would be extraordinarily expensive to provide in developing mineral rich states, such as Brazil.

All these numerous elements of the commercial structure in South Africa are seen as major advantages. Unlike the other developed main producers, control rests entirely within the country. Unlike Third World countries, there is stable government, stable taxation, no risk of nationalisation and a first-class transport infrastructure. However, the advantage of inexpensive labour which still averages 50% of mining costs must be borne in mind.³⁵

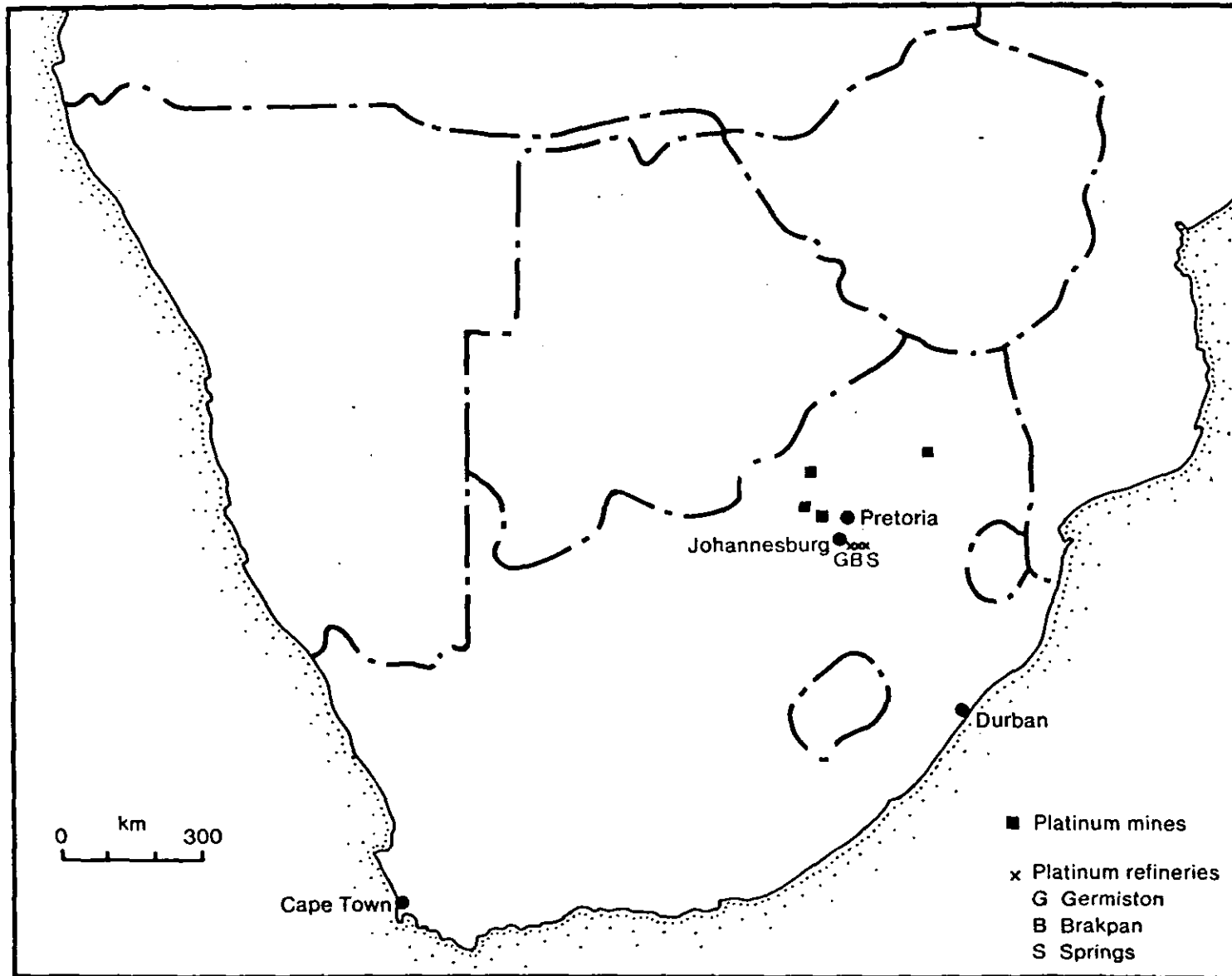
4. MINES AND MINING

The major strength of the South African mining industry is the indigenous mining culture.³⁶ However, despite the large scale investment in research and development, there is still resistance to technology transfer, particularly in the smaller mines many of which are important, for example, in the production of chromium. Among the strategic minerals identified there is a wide variation between the most modern mines and those which are comparatively primitive. It is reasonable to suppose that security also varies in sophistication. Platinum mines are found mainly in the Bushveldt Complex and are therefore vulnerable, being near the front line states. Furthermore, penetration from that sector owing to relief and vegetation, is very much easier than elsewhere. As a result of geology and the Merensky and UG 2 reefs, deep mining is essential and clearly a mineshaft is more vulnerable than an opencast pit. Furthermore, the platinum group metal ore when extracted is moved to a very different locality for refining (Fig. 1). This necessitates special security arrangements along the railways. Labour for platinum mines is partly local and partly migrant, the latter, despite careful screening, being another source of possible disruption.

Chromium mines are also found mainly on the Bushveldt Complex but there are very many more companies involved: (Dilokong Mine, Grasvally Chrome Mine, Grootboom Chrome Mine, Groothoek Chrome Mine, Hendriksplaats Chrome Mine, Henry Gould (Pty) Ltd., Jagdlust Chrome Mine, Kroondal Mine, Marico Chrome Mine, Millseil Chrome Mines (Pty) Ltd., Ntuane Chrome Mine, Ruighoek Chrome Mine, Chrome Chemicals (SA) (Pty) Ltd., Waterkloof Chrome Mine (Pty) Ltd., Winterveld (TCL) Chrome Mines (Pty) Ltd., Zeerust Chrome Mines, Zwartkop Chrome Mine), together with a large number of very small enterprises. Although located in the more vulnerable region of South Africa, the nature of the mining, which is opencast, militates against effective terrorist activity. However there is a possibility for interruption to the trade when the ore is moved for beneficiation.³⁷

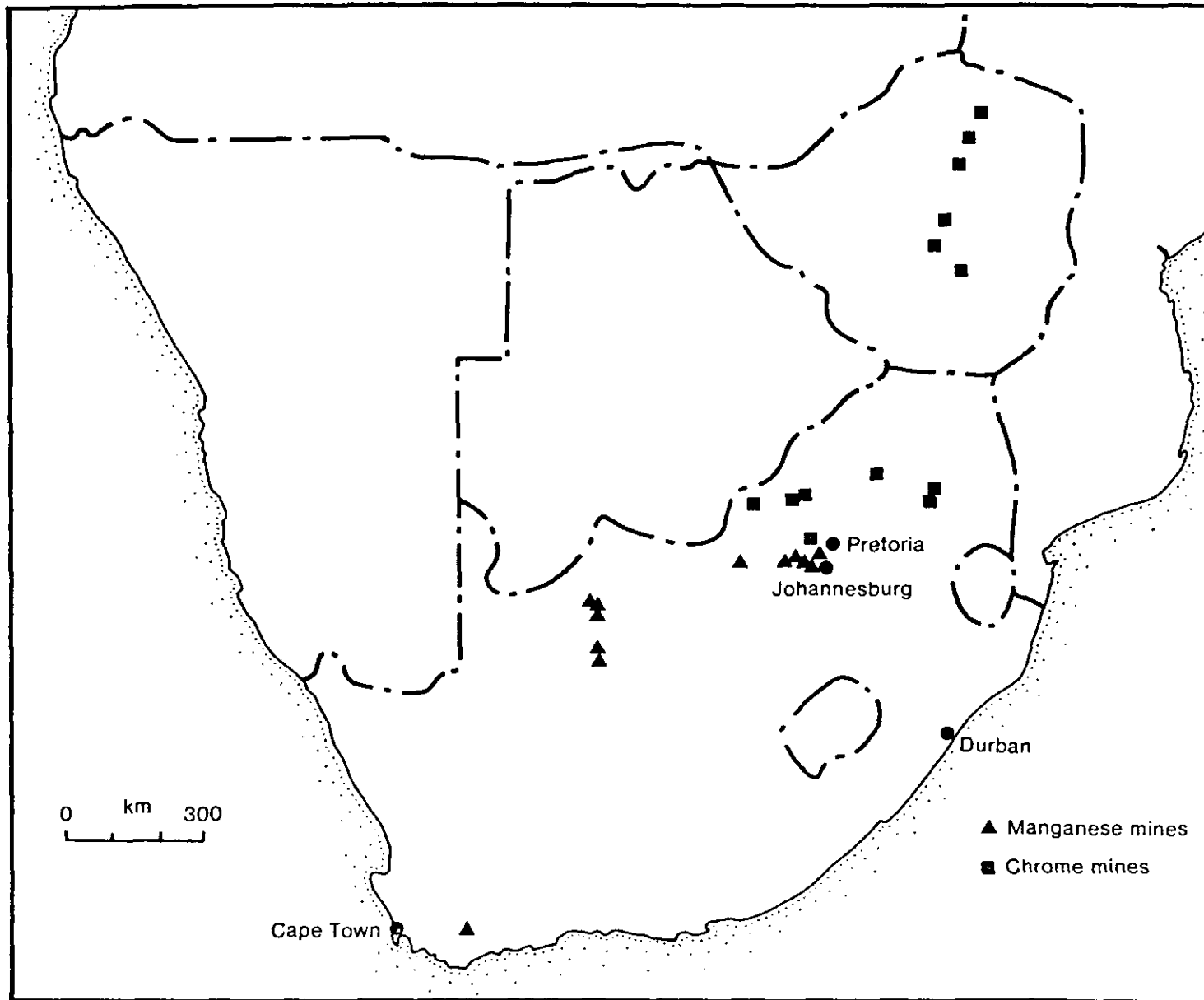
The manganese mines are mainly located in the northern Cape and are almost wholly controlled by a small number of companies: (Associated Manganese Mines of SA Ltd., Consolidated African Mines Ltd., Gopani Manganese Mines (Pty) Ltd., National Manganese Mines (Pty) Ltd., Rand London Manganese Mines (Pty) Ltd., Roodepan Manganese Corp. (Pty) Ltd., South African Manganese Amcor Ltd.). However, they are widely scattered and amorphous in nature. For example, an individual mine may stretch for some 30 km, the ore being brought to a central despatch point from the outlying pits. As in the case of chromium, the mines are virtually all opencast and therefore less vulnerable. Furthermore, the Northern Cape is an arid area and terrorists from neighbouring states would have very little cover when advancing into the region (Fig. 2).

Fig. 1 PLATINUM GROUP METALS: MINES AND REFINERIES



Source : Van Biljon W.J. *A Review of the Geology and Major Economic Mineral Provinces of Southern Africa.*
Proc. Int. Mining and Metallurgical Congress, Johannesburg, (May 1982)

Fig. 2 MANGANESE AND CHROME : MINES



Source : Van Biljon, W.J. A Review of the Geology and Major Economic Mineral Provinces of Southern Africa.
Proc. Int. Mining and Metallurgical Congress, Johannesburg. (May 1982)

5. TRANSPORT

(a) Railways and Air

The importance of the South African infrastructure has already been mentioned and a key element of this is of course the railway network. Its high level of maintenance, efficiency and reliability are in sharp contrast to the other major networks of southern Africa. In fact none of the other lines from central southern Africa have been maintained for more than short periods and all are liable to disruption. To offset this possibility on the main line from Zaire to South Africa there is evidence that South African maintenance and security are employed. However, it must be remembered that it is basically in the interest of the front line states to export their minerals, which in many cases form a major part of their exports (Fig. 3).

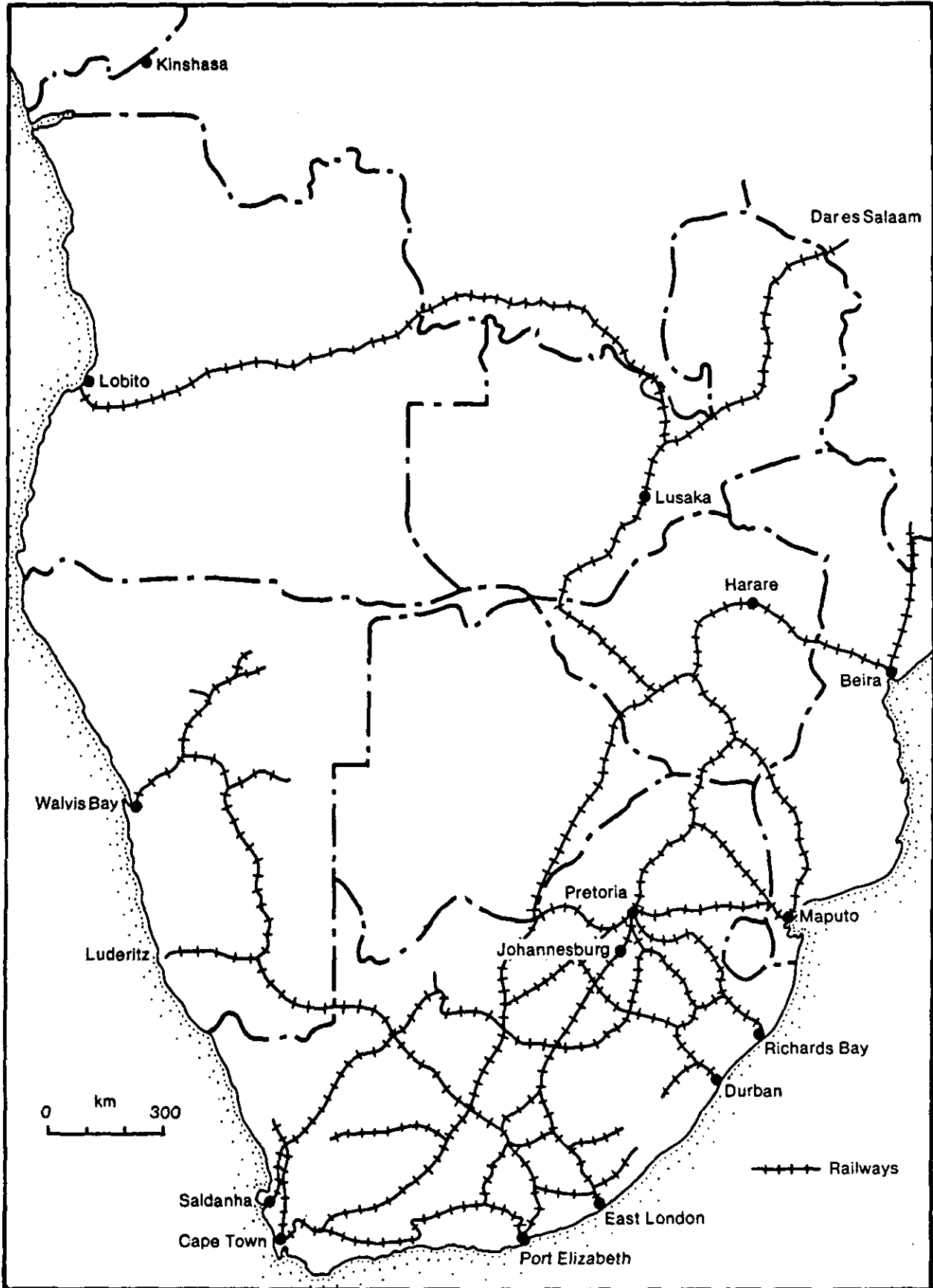
Nonetheless, in lines through such rugged terrain over such great distance, sabotage would be comparatively easy. It is known that there is a sophisticated fail-safe system on the Sishen-Saldanha line and it would seem possible that other similar safeguards are taken along the more vital arteries.

The result of this is that not only does South Africa retain an important and profitable transit trade, but it can also exert a stranglehold on exports from central southern Africa. The transit trade is directed through East London and is largely instrumental in the maintenance of that port's viability. The major export is copper, amounting to 2.5 million tons annually, but as indicated earlier, it is virtually certain that cobalt also leaves by this route. There is also some transit trade from Zimbabwe by this route. Other transit trade from Zimbabwe leaves via the eastern ports and Maputo. This trade is encouraged by a favourable price structure.³⁸

Chrome ore and ferro-chrome are exported from the Bushveldt region by rail to Durban, Richards Bay and Maputo. In fact Durban is now very little used and the loading facility is virtually moribund. Maputo still retains a stockpile of 700,000 tons, but when that has been moved, owing to the general inefficiency and insurance problems, the port will be phased out for use by South Africa. Thus Richards Bay is the major port for chrome ore and ferro-chrome and will be developed further in the future. It must however be noted that Richards Bay is in a comparatively vulnerable position, being only 80 km from the Mozambique border and in the least secure north-eastern sector of the country.

Manganese ore and ferro-manganese are exported from the north Cape mostly via Port Elizabeth. The trains consist of 100 x 58-ton wagons, moving therefore 5,800 tons at a time. Such a train obviously presents a target for would-be terrorists. Towards the east the relief presents much greater problems and trains carrying chrome ore are half as long.

Fig. 3 SOUTHERN AFRICA : RAILWAYS



When considering the importance of South Africa for strategic minerals and also the vulnerability of supply, it can be seen that the railway is a vital element.

The movement of cobalt by air from Kinshasa has already been mentioned and it is probable that this is now either discontinued or on a very small scale. Not only is the price of cobalt too low to withstand the freight charges but also Kinshasa airport would appear incapable of dealing with large quantities of the metal.

Platinum, however, being of very high value can clearly be moved by air and all platinum leaving South Africa is exported from Jan Smuts airport to either Frankfurt or Amsterdam where it is stored. Security is such that it is possible for dealing and broking to be carried on and stocks to be moved appropriately in the strongrooms of these two airports. It is also facilitated, it should be mentioned, by a favourable insurance loading and it is known that the USSR also uses the facility. Thus, from the refineries in the Rand to Western Europe it is possible to move the platinum swiftly and with maximum security in response to changing market demand.

(b) Harbours

In the context of strategic minerals exports and potential or actual Cape Route importance, South Africa has four long-established harbours: Cape Town, Durban, Port Elizabeth and East London and two which are being developed at Saldanha and Richards Bay. Additionally, Walvis Bay in a South African enclave of Namibia, has significance as to a certain extent does Maputo, in Mozambique, which is currently used for some South African exports. In the course of the present research, visits were made to Saldanha, Cape Town, Durban and Richards Bay, and this necessitated flying a large part of the Cape Route as it rounds South Africa.

Since the natural movement of manufactured goods in South Africa is from the Transvaal to Durban, Cape Town tends to lack the basic infrastructure to landward and is rather isolated, with little industrial potential. More recently containerisation has improved its facilities, but Durban has also developed a major container terminal. Bulk traffic will increasingly be confined entirely to Saldanha and Richards Bay. Therefore Cape Town, a magnificent natural harbour, has spare capacity. It offers bunkering facilities but in normal times only 5% of the ships rounding the Cape call for such services. With regard to the Cape Route, Cape Town is less vulnerable than Durban and has of course a very large bay offshore for temporary anchorage. Should wind be unfavourable, False Bay on the other side of the peninsula provides a similar facility. Cape Town also has good dry dock facilities which could take most warships up to cruiser size and first class back-up services. Certainly the port is secure and, whether in war or peace, provides facilities on a far greater scale than are required locally.

Durban is the natural outlet for Transvaal trade and is again a large port but with a restricted and rather vulnerable entry. Its size and capacity are approximately twice those of Cape Town but its draught restriction is

11.6 m as opposed to 14 m. Should the Suez Canal be again closed for any reason, Durban would be extremely valuable. The port has repair facilities for dealing with the largest size of warship and indeed this was demonstrated in the Second World War. The repair back-up is also very good and Durban is a naval base in its own right and also the construction port for the South African navy strike craft. The major development in the port is the container berth, and the ore loading terminal has been virtually abandoned.

Port Elizabeth is relatively small but has very easy access and offers weathering when the wind is from the west. It is the major port for the minerals and particularly manganese from the northern Cape.

East London has a depth of 10.7 m in the channel but navigation is difficult if the weather is from the south-east. It is basically a river port and is mainly sustained by the transit trade from Zaire and Zambia. Nonetheless, there is a dry dock and repair facilities are able to deal with ships to the size of a Country Class cruiser.

Saldanha is by far the largest of the harbours; in fact all other major South African harbours would fit inside it. It has a deep water approach and several deep bays but is uncomfortable if the weather is from the west. Saldanha is being developed as the export point for minerals from the northern Cape, particularly iron ore, and the Sishen-Saldanha railway has been built specifically with this in mind. The port is at present handling 14 million tons of iron ore annually but could comfortably take 20 million. Three ore trains arrive each day and one smaller train bringing copper and lead concentrates comes once a week. The complete Sishen-Saldanha ore enterprise employs 1,600 people, 80% of them at the Saldanha end. The degree of mechanisation and computerised handling is very high.

Richards Bay, well placed for the Transvaal mineral trade, exports primarily chromium, ferro alloys and a range of other minerals including titanium, rutile, etc. It is specifically a bulk handling port and the policy is that there should be no duplication with Durban. Therefore, with improved rail connections it is anticipated that all chromium from South Africa in whatever form will, within the next year or two, be exported from Richards Bay. In this context, the most sophisticated ore sorter and loader has been installed. There are plans for five more berths and a range of other associated industries including fertilizer and aluminium plants. The rail journey from the Reef takes some 20 hours and safeguards similar to those along the Sishen line have been installed. The main hazards would appear to be along the Swaziland border and of course at the port itself, which is only 80 km from the Mozambique border. Like Saldanha, the whole operation of the port is highly automated and a total of 750 people are employed. Richards Bay Minerals deals with a range of local resources including particularly titanium. It is intended to dredge the harbour to 90 m from its present 17.1 m and that will apply to all 350 m of quay, so that vessels of 165,000 tons can be taken in easily and those of up to 250,000 tons without too many problems. There is storage space for some 100,000 tons of ore and as Maputo is phased out over the next eighteen months, so this will be the main storage area for the chromium trade (i.e. from approximately late 1983).

Walvis Bay has a 9.1 m channel and can take ships of 800 ft in length. Otherwise on the west coast, Port Nolloth has somewhat dangerous approach waters and for development Luderitz seems to offer the best potential. Maputo has some 20 miles of approach channel requiring pilotage and a dredged buoyed channel with a depth of 9.8 m allowing the entry of 12,000 to 15,000-ton passenger ships. In general this is a very vulnerable port and its facilities are modest. It is the closest port to the Transvaal but with the lack of a reliable rail service and port organisation it is difficult for South Africa to sustain its trade. Should the USSR consider using Maputo as a naval base, as has been suggested, it would require a greatly developed infrastructure.

From the Soviet point of view, Nacala, a deep water sheltered harbour which has been developed for container traffic from Malawi and Zimbabwe seems to offer better prospects, since it is easier to protect. It has a clear-cut entry point which could easily be defended and potential for at least three large dry docks.

6. THE CAPE SEA ROUTE

This subject has already been considered in previous papers in some detail³⁹ and in this section it is intended to report only on new information obtained in South Africa.

It is conceded that South Africa's international strategic importance rests more now on possession of strategic minerals than on its position with regard to the Cape Sea Route. Furthermore, the expected upsurge in oil prices has not occurred and there has been little evidence of ships changing bunkering from oil to coal, an eventuality which would obviously have benefited South Africa. Oil is very much more flexible since it can be pumped into a ship's double bottom for storage and furthermore its efficiency as a source of energy is very much greater. Four tons of coal are required to equal one ton of oil.⁴⁰

Our estimate is that total Arabian/Persian Gulf region oil exports to the United States and Western Europe in 1981 was 351 million tonnes, of which 33% went via the Suez Canal and the Suez-Mediterranean pipeline and 67% via the Cape. The importance of the Red Sea/Mediterranean routes is increasing.

Nonetheless, the Cape is the mid-point of the major world bulk trade routes and therefore has a great deal of political significance. The official South African Navy estimates for ships passing the Cape in 1980 was 6,450, approximately 6,300 of which were Western. 3,700 were bound in a westerly direction and therefore some 10 major laden ships passed the Cape every day for the Atlantic. Whatever exaggerations may have been previously reported, this is still a very significant figure. The Route retains therefore a great importance for the West, and contingency plans for maintaining its security must be made. The Falklands War of 1982 clearly illustrated the difficulty of projecting power when a hostile state denies air cover. Therefore, apart from any hostilities which the USSR might initiate at sea, the possession of South Africa by a state friendly towards the Soviet Union would pose very great problems particularly with regard to

air power. Significantly, while the West tends to treat the Cape Sea Route separately, there is evidence that the Soviet Union views it and southern Africa as a whole.

However, there is a certain scepticism about a Soviet onslaught at sea since interdiction would be very much easier at source and also the ability of the Soviet fleet to use for example Mozambique ports has not been proven. Furthermore, the Cape is not perhaps the most effective choke point. The Mozambique channel in particular and possibly the sea area off Guinea would seem more appropriate, or even the Strait of Hormuz. While undoubtedly Maputo has been improved by the provision of floating docks it is still rather basic as a port, with insufficient infrastructure for Soviet use. Also, to be effective along the Cape Route there is need for air bases ashore in the southern part of Africa. The island of Socotra is seen by the South Africans as a Soviet contingency in case Aden should be lost. Furthermore, it is possible that the Soviet navy is in some ways becoming obsolescent since the present build-up must have been planned in the late 1950s. Also, with problems elsewhere the power base is at present weakened over all, although perhaps it may be regionally stronger.

In conclusion, the South Africans view their country as fortress terrain and are concerned very much more with protecting its integrity than with guarding the Cape Route for the Western World.

7. THE SOUTH AFRICAN NAVY

The South African navy sees its role as self-building and maintaining, so that it can protect the maritime borders and harbours of South Africa. Indeed it was stated as far back as 1978 by Mr P W Botha that the Republic of South Africa could no longer consider protection of the shipping route round the Cape of Good Hope as part of her responsibility. This statement, together with the earlier British arms embargo of 1964, renewed later, and UN arms embargo of 1977, have had a profound influence upon the development of the navy. Thus, while exercises for the protection of the Cape Sea Route are still carried out, there is no guarantee that in a period of tension the West could rely on support from the South African navy. The other major factor was the gradual abrogation of the Sea Routes Agreement with Britain, until in 1975* it was finally terminated.

As a result the navy has twin roles of protection and deterrence and its changing doctrines have resulted in incompatibility with those of NATO. Therefore, in the event of hostilities there would be in many areas little congruence between the practices.

As a result of hostilities along the land borders, the major share of the Defence Budget does not come to the navy, but still a small balanced fleet has been developed. This is capable in general terms of looking after the 200-mile fishing zone, the 12-mile territorial limit and any development of the exclusive zone, for example, for mining. While there are no direct

* The Simonstown naval base was handed back to South Africa in 1955. It was used by the United Kingdom as a base until 1967.

alliances or treaties with other nations, close relationships have been developed with Israel and Taiwan and to a certain extent, Latin American states. In the latter case this might lead to an alliance in the South African region which would fill a power vacuum. Indeed the countries of the South Atlantic have a general fishing agreement, the only international accord to include South Africa. On the other hand, it is clearly impossible for the South African navy to maintain total surveillance of its enormous sea area even when helped by coastguards and aircraft patrols. Indeed it must be noted that one area of considerable concern is maritime air support.⁴¹ For the deterrent role South Africa turned to Israel and acquired fast strike attack craft armed with the South African missile Skerpioen, a locally developed derivation of the Israeli Gabriel. Subsequently such vessels are being built in Durban from which base the flotilla, now numbering 7, operates. The strike craft can carry 8 missiles and can operate at over 30 knots, but in the very heavy seas off the Cape their seaworthiness must cause some doubt. To overcome this problem and obtain vessels of something like 250 ft in length and able to cope with the large swells, the acquisition of corvettes was announced in 1982. It is envisaged that some 12 of these will be built locally and they will also replace the ageing President class frigates.

Although hostile submarine activity is considered unlikely except perhaps in the Mozambique channel, the sea conditions off the Cape are ideal for submarine operations. Therefore there are plans to replace the increasingly obsolescent Daphne class submarines by new vessels, possibly locally built. However, the greatest threat is probably that of mining, and the South African navy is studying carefully the possible replacement of its coastal minesweepers.

Therefore it can be seen that the four major elements of the fleet: strike craft, minesweepers, submarines and eventually corvettes, will all be built locally and serviced in South Africa. To facilitate this the Simonstown naval base has been developed considerably, with new workshops and repair sheds for minesweepers and submarines, vessel lifts, etc. Furthermore, since 1974 berthing facilities have been increased by the construction of an outer basin which is quite large enough to take a cruiser. Therefore the facilities at Simonstown for naval vessels provide the most modern and, in some cases, the only service possibly open to NATO between Western Europe and the Philippines.

Apart from the lack of maritime air support, the other great problem is manpower in what is becoming a very sophisticated navy. In fact some 25% of South African naval personnel are now non-white and it is the advent of training programmes for them which is tending to answer this problem.

Two other factors affecting the role of the navy must also be mentioned. The Command and Control system at Silver Mine is the most up-to-date in the southern hemisphere and through it the movement of all ships within the hemisphere can be monitored. There has been a good deal of controversy about the degree of NATO support for this facility but it would seem reasonable that there is some sophisticated input. The other aspect, vitally important for a country whose export/import trade is 90% by sea, is the protection of harbours. For this, marines manning fast patrol boats are employed. In conclusion, it can be seen that the South African navy is looking at regional anxieties rather than global concerns,⁴² but it retains

a powerful strike capacity. Furthermore, although it has no overt direct links with the Western Alliance, the spare capacity of its facilities is such that in time of hostilities it would provide vital bases and servicing for NATO ships.

Perhaps it should also be recorded that such a navy, with its local expertise and supporting facilities, would pose serious problems should it ever be turned against the West.

B. ECONOMIC ASPECTS: CONCLUSIONS

For the key minerals discussed: platinum, chromium and manganese, together with several others which might well in the future be classified as strategic, South Africa has immense potential. Despite the current depressed state of the market there is great underlying strength resulting from: (a) the enormous scale of the reserves, (b) the highly developed infrastructure, (c) the abundant power for beneficiation, (d) the political and commercial stability and, above all, (e) the technological expertise. The political stability of the country is vital in this assessment. Although labour costs are clearly an important economic element, there is such a vast labour market in southern Africa that change, if it should occur, will be in the long term. Perhaps it should also be noted that while the pre-eminence of private enterprise provides safeguards against government interference and particularly nationalisation, it can, especially covertly, militate against the strategic interests of the West.

The Cape sea route clearly remains very important for the West and in particular Western Europe. The South African Navy has the capacity to help defend it but has been assigned by the government a more limited local role.

It is important that the West, in evaluating its attitude towards South Africa, examines its continuing reliance upon both strategic minerals and the Cape sea route in the light of possible Soviet activity over the middle to long term.

B. THREATS TO SOUTH AFRICA AS A SUPPLIER

9. INTRODUCTION

Part A has shown that the mining industry in South Africa is one of the most efficient in the world, with an infrastructure and marketing expertise capable of ensuring the continuity of strategic mineral supplies to the West. South African reserves of most key strategic minerals are substantial. The South Africans themselves see no advantage in using their minerals as a political weapon since such action would be damaging to South Africa in the long run.⁴³ Given political stability, therefore, the supply of strategic minerals from South Africa should be assured, subject only to normal economic competition. On the other hand, social and political

unrest internally or military action externally could create conditions in which the normal production and export of minerals became impossible, at least for a period of weeks or months. The following sections examine these possibilities and attempt to reach some tentative conclusions.

It is virtually certain that before the end of the century there will be serious internal convulsions in South Africa and persistent threats from outside. The crucial questions are: (a) will these events be serious enough to delay the production and marketing of minerals long enough to damage the security of the West? And (b) will such interruptions be likely to occur at a time when South African supplies are still of crucial importance to the West? Although opinions differ on both questions, we are assuming for the purposes of the analysis which follows that stoppages in the supply of South African minerals (for whatever reasons) could become damaging to consumers after 3 to 6 months. Bearing in mind alternative sources of minerals (notably in the oceans) and changes in technology, we would regard South Africa as a key supplier at least until the end of the 1980s.

Many of the ideas expressed in Part B of this report are derived from interviews conducted with a wide range of experts in South Africa in March and April 1982. They have not generally had an opportunity to comment on views attributed to them, but we have done our best to report them accurately and fairly. We have not attempted to review the copious literature on South African politics, though reference has been made to a number of key publications.

10. EXTERNAL THREATS

(a) Conventional War

Although it is the official policy of the member states of the OAU to isolate South Africa politically and economically, it is unrealistic to anticipate co-ordinated military action against South Africa in the next decade. Any military attack against South Africa would be left to the 'frontline' states immediately to the north. Assuming that Namibia achieves independence (in accordance with UN Security Council Resolution 435 of 1978) the frontline states would be:⁴⁴

Mozambique	(1983 population 13,100,000)
Zimbabwe	(1983 population 8,400,000)
Botswana	(1983 population 900,000)
Namibia	(1983 population 1,100,000)
Swaziland	(1983 population 600,000)

The total population of these states in 1983 was little more than 24 million, similar to the non-white population of South Africa. In the event of conventional military action, material assistance would probably be offered to Angola, though it is by no means certain that a newly independent Namibia, even under SWAPO control, would welcome a large Angolan presence in the country for guerilla operations.⁴⁵

The South African view is that a conventional attack from the north is highly improbable in the foreseeable future. If attempted, it would be unsuccessful, even 'bizarre' in character.⁴⁶ South Africa is capable of inflicting very serious damage on invading forces and on any neighbouring state from which an attack is launched. South Africa's defence forces are quantitatively and qualitatively far superior to those of neighbouring black African states. Fully mobilised, South African forces number over 400,000 and they are well armed and trained.⁴⁷ Military superiority is not the only reason why South Africa could counter a conventional attack. Black African states are also weakened by:

- (i) Internal political and economic problems;
- (ii) Geographical location; Zimbabwe, Botswana and Swaziland all depend on South Africa to some extent for access to the sea;
- (iii) Economic ties with South Africa, including the supply of grain from South Africa in normal years and valuable remittances from migrant labourers in South Africa;
- (iv) Practical difficulties of achieving a cooperative effort against South Africa for geographical and political reasons.

South Africa's 1,836 miles (2,954 km) of coastline and many ports and harbours have been described as 'a second front' which could be vulnerable to conventional attack. Invasion from the sea organised by black African states is, however, unthinkable.⁴⁸ Other types of threat from the sea (commando raids, naval bombardment, etc.) are also highly improbable except with substantial external assistance. The possibility of a naval blockade is discussed below.

It is worth noting that a Southern African Development Co-ordination Conference was formed by a group of black states (Tanzania, Mozambique, Zimbabwe, Angola, Malawi, Zambia, Lesotho, Botswana and Swaziland) in 1979 to co-ordinate efforts for economic development and to reduce economic dependence on South Africa.

(b) Soviet Intervention

The only circumstances in which a conventional military threat to South Africa could become serious would be if the Soviet Union (using Cuban, Korean or other collaboration) decided to sponsor an invasion with massive support, particularly in the form of air power. There can be little doubt that white South Africans believe the Soviet role in southern Africa to be of crucial importance. They also believe that the West is slow to recognise the reality of Soviet intentions in the region. Concern is felt over the position the Soviets might manage to achieve within a few years, rather than their actual achievements to date. Soviet influence in Africa as a whole has greatly increased since the mid 1970s. In southern Africa, the collapse of Portugal's empire in Angola and Mozambique in 1970 seems to have been the signal for greater Soviet interest in the region. Soviet motives are considered to be:⁴⁹

- (i) to promote radical black governments;
- (ii) to weaken Western economic, political, and strategic interests;
- (iii) to promote general acceptance of Soviet activity in the region (trade, use of ports and airfields, etc.);
- (iv) to curtail Chinese influence.

South Africans have been impressed by the willingness and ability of the Soviet Union to transfer weapons and materials on a massive scale to Angola (1975-76) and Ethiopia (1977-78) and to use Cuban troops to bolster pro-Soviet regimes. Treaties of friendship and co-operation with Angola and Mozambique recognise the role of the parties in the struggle against apartheid.⁵⁰ The methods used need not involve direct military action, though at least one interpretation of Soviet arms sales in southern Africa has been linked with the intention to build up rapid deployment stockpiles which Soviet personnel might eventually utilise.⁵¹ A feature of recent arms sales is the willingness of the Soviets to supply advanced weapons and sophisticated technology to non-Arab Africa.⁵² Nevertheless, direct Soviet intervention in southern Africa is regarded as highly unlikely in the period which concerns us here. The logistical problems would be almost insurmountable and available Soviet airborne and naval units may in any case be insufficient to guarantee success.⁵³ The Soviet leadership probably has other priorities, such as the Horn of Africa and the Middle East at the present time. Nevertheless, it would be a mistake for the West to become complacent about the potential for direct Soviet involvement in the more distant future, particularly if military success against a weakened South Africa looked a realistic option.⁵⁴ Meanwhile the Soviets have an interest in maintaining political tension and uncertainty in southern Africa, or 'manageable instability'.⁵⁵

(c) Infiltration

South Africa has long land frontiers with five black African states totalling 2,418 miles as follows:

	<u>miles</u>
Mozambique	305
Zimbabwe	140
Swaziland	267
Namibia	601
Botswana	1,105

Since the mid 1960s infiltration has occurred across the borders, and it must be assumed that an unknown quantity of weapons and trained saboteurs have entered South Africa illegally. Probably the most favourable border for infiltration lies to the east of Gaborone in Botswana, only about 150 miles from the heart of the Rand conurbation. Here there are no natural obstacles as are found along certain stretches of the border elsewhere, and a dense black population is reached within a few miles of the border, thus facilitating the concealment of infiltration. The South African security forces have been very successful in catching infiltrators, probably as a result of a good network of informers. Nevertheless, their success rate may have dropped somewhat since 1970.⁵⁶ There are estimated to be

approximately half a million illegal African immigrant labourers in South Africa which may be some indication of the scale of the problem. Indeed, influx control from the homelands may have broken down.⁵⁷

Arms smuggling has probably been a more common activity than border crossings by saboteurs, etc. since it depends upon good luck as much as technical skills. The existence of even limited quantities of weapons among the urban black population is a common cause for concern among white South Africans. As yet, there is no likelihood that an armed uprising could be staged without external assistance on a large scale. Similarly, sabotage conducted by groups from outside South Africa could hardly achieve more than localised and short-term disruption.⁵⁸ Distances are considerable in South Africa and the infrastructure associated with mining, energy production, and industry is widely dispersed and large-scale, as discussed in Part I. In order to threaten the extraction and export of strategic minerals for a period of three months or more, sabotage would have to be persistent, and skillfully organised and carried out. In spite of recent demonstrations of the ability of the exiled ANC and SACP to conduct bomb attacks in South Africa⁵⁹ it is doubtful whether a really effective campaign could be sustained. Since 1961 with the Sabotage Act, sabotage has been punishable by death in South Africa, where an act of violence is intended or committed.

(d) Sanctions

The possibility of forcing political change on South Africa by various sanctions has been advocated by opponents of apartheid for many years. Some sanctions have been applied, but action has never been unanimous and their effectiveness has been limited. Sanctions are still on the agenda of various organisations and countries, and their use could conceivably disrupt mineral exports. In the following paragraphs the likely effects of various sanctions are briefly examined, without reference to their desirability or otherwise.

(1) Trade boycott

International agreement to cease trading with South Africa would mean the end of mineral exports, though some gold, diamonds, and platinum would doubtless be smuggled out in small quantities. Even Rhodesian chrome reached world markets during the Rhodesian boycott. A unanimous boycott is thought to be highly improbable.⁶⁰ The United Kingdom, for example, would not be willing to lose large numbers of jobs and over £600 million per annum in export earnings.⁶¹ Many EEC countries take the same view. In addition, certain South African minerals cannot easily be substituted, and a boycott could result in opening world markets to Soviet supplies, notably of chrome and platinum. Some black African states would find it difficult to survive without food from South Africa, though the Southern African Development Co-ordination Conference (SADCC) has resolved to attempt to reduce this dependence.⁶² As long as the South African government seems to be moving in the direction of reform, calls for an international trade boycott will go largely unheeded. In certain circumstances however, South Africa might even

be prepared to face sanctions.⁶³

A partial boycott of South African goods would be damaging; it has been calculated that a 50 per cent boycott would create 1.1 million unemployed in South Africa, the majority black.⁶⁴ The effect of a trade boycott on the black population is a common argument against its use. A partial boycott could occur, which might lead to white emigration and a weakening of the South African economy to resist other forms of attack.

(ii) Oil embargo

The UN Special Committee on Apartheid called for a total embargo on oil exports to South Africa in 1978. Such action is often thought to be a potentially effective way of influencing South Africa. In practice it has not worked yet and is unlikely to do so. Even if the practical problems of implementation could be overcome, the black population of South Africa, and of landlocked Botswana, Swaziland, Lesotho and Zimbabwe would inevitably suffer from an oil embargo. The real objection however is that an oil embargo would achieve little, and its potential effect is decreasing with time.⁶⁵ South Africa is thought to have accumulated about two and a half years' peacetime supply of oil in disused mines, so that an oil embargo would have no immediate effect.⁶⁶ South Africa has also embarked on a costly programme to ensure self-sufficiency in energy, based largely on coal and nuclear power. By 1995 South Africa could be 70 per cent self-sufficient in liquid fuels, though one more SASOL* coal conversion plant has yet to be built.⁶⁷ Much preparation has been made to counter a possible oil embargo; oil exploration is under way and unknown quantities of oil and natural gas have been found in Mossel Bay. According to one authority, sunflower oil could be used to fuel most of South Africa's agricultural machinery.⁶⁸ Nevertheless, an oil embargo could prevent South African grain from reaching black African countries.

(iii) Arms embargo

Introduced by United Nations Resolution in November 1977, the embargo on the supply of most kinds of military arms and equipment to South Africa has been largely respected. However, certain important sources, such as Israel, remained available and South Africa has developed a successful indigenous arms manufacturing industry. The arms embargo has not significantly weakened South Africa's defence capability, though it has brought about a change of policy with regard to protection of the Cape Route for which South Africa no longer accepts responsibility.

(iv) Disinvestment

About £13,000 million is invested directly and indirectly in South Africa, about half of it by British companies and individuals.⁶⁹ Though disinvestment is regarded by many as a desirable moral gesture, its effect on South Africa would be rather less than a trade embargo. The possibility of wholesale disinvestment is

remote, largely because of the strength of self-interest in the West.

- * SASOL 1 began production in 1955
- SASOL 2 began production in 1980
- SASOL 3 began production in 1982 and should be fully operational by 1983/84

Construction of SASOL 4 is being planned (* see previous page).

(e) Naval Blockade

'Conceivably, the UN may, at some future date, call upon the Soviet Union and its allies to blockade South African ports until South Africa agreed to dismantle its political system'.⁷⁰ While this is not a scenario commonly presented, it is an altogether different type of threat to South Africa from the four discussed above. The right political climate for such action, assisted possibly even by the US navy, has clearly not arrived, but it is not wholly inconceivable. Although over 11,000 ships left South African ports in 1979,⁷¹ the logistical problems of blockade are not as great as may be imagined, since nuclear submarines willing to sink merchant ships leaving South African ports might go a long way towards imposing an effective naval blockade. The scenario becomes more credible when coupled with the outbreak of major civil disorder in South Africa, and a decision by the international community to try to bring matters to an end as quickly as possible. However, we do not regard a naval blockade as a serious threat to South African mineral exports in the foreseeable future. Few states could realistically contribute to it and the cost would be considerable.

It is worth noting that South Africa's long term naval strategy has to take into account both the possibility of attacks upon South Africa's major ports, and threats to South Africa's trade routes. In both, the retention of Walvis Bay in any future settlement with Namibia would be important to South Africa if only to deny its use to a blockading force.⁷² Thus South Africa is likely to give up Walvis Bay only when the shape of a future Namibia is clear.⁷³

11. EXTERNAL THREATS: CONCLUSIONS

We do not foresee serious difficulties in the procurement of strategic minerals from South Africa as a result of external threats, at least during the 1980s. International disunity and national self-interest have hitherto prevented fully co-ordinated action against South Africa, and this is likely to continue. It should be remembered, however, that events in South Africa could yet provoke the international community to adopt a co-ordinated effort against South Africa which could be very damaging, even if it was not fully implemented. For the time being, however, most experts seem to be agreed that external threats are likely to be less important than internal threats.

12. INTERNAL THREATS

(a) Introduction

Widespread civil unrest among South Africa's non-white population has been predicted for over 30 years, and some white South Africans tend to be sceptical about predictions of unrest in the next decade. Most South Africans we met, however, were convinced of the reality of the internal threats to South Africa, and almost all were certain that change will have to occur if a crisis is to be averted. It is worth remembering that the next few years in South Africa cannot be compared with the recent past, because so much has changed in South Africa's political environment:

- (a) White rule has ended in Angola, Mozambique and Rhodesia, and is likely to end in South West Africa (Namibia).
- (b) The expectations of the non-white population have risen considerably. The opportunities for more skilled jobs have opened up, while television (introduced in 1976) has played a part in raising expectations.
- (c) The non-white population continues to grow rapidly by natural increase, particularly the blacks. The proportion of whites is being inexorably eroded (Table 1). At the same time, raising the living standards of the non-whites means the creation of jobs at an impossible rate.
- (d) International opinion against South Africa has intensified in the past decade.

Table 1 Racial composition of South Africa (%)

	<u>Total popn.</u>	<u>Asians</u>	<u>Blacks</u>	<u>Coloureds</u>	<u>Whites</u>
1904	5.2	2.4	67.5	8.6	21.6
1951	12.7	2.9	67.6	8.7	20.9
1970	21.8	2.9	70.4	9.4	17.3
2000	47.6	2.7	73.5	9.8	13.8
2020	72.7	2.3	75.6	10.1	12.0

Source: Yearbook of the Republic of South Africa 1980-81, Johannesburg, 1981, 25-27.

The literature on South Africa's internal political affairs is prolific, and it would serve no useful purpose to attempt a review of it here. We wish to concentrate upon two questions relevant to the specific purpose of this report:

- (1) What is the likelihood of civil disorder in South Africa during at least the next decade, which we regard as crucial for strategic mineral supplies?
- (2) If it does occur, would it be sufficiently severe to disrupt mineral exports to the West? We take civil disorder to include the following possible actions:

- (a) Strikes and industrial sabotage;
- (b) Riots and demonstrations;
- (c) Armed insurrection;
- (d) Sabotage and guerilla activities;
- (e) Any combination of the above.

It became abundantly clear to us from our numerous discussions in South Africa and from what appears in the press and in many authoritative publications that the internal threat to South Africa is from the urban black populations living in designated white areas. While it would be foolish to claim that the coloured population (2,554,000 in 1980) and the Asian population (795,000 in 1980) have no grievances, they probably have sufficient stake in the economic life of the country to be very reluctant to risk serious disruption. They are also relatively small in number, and both communities genuinely fear the advent of black rule. Moreover, their involvement in the President's Council, established in 1981 with white, coloured, and Asian membership to advise on policy and reform, holds out some hope of a greater say in government than hitherto. The President's Council produced constitutional recommendations in May 1982 for potential limited power-sharing with the Asians and coloureds, and a continuation of 'official policy' for the black population. This was approved by Referendum.*

It is equally true that the future of the black homelands is not directly relevant to our theme. The literature on the homelands is vast,⁷⁴ and many questions can be raised about their economic and political viability. Land consolidation is unlikely to turn any of the independent black homeland states into compact and manageable political units. They are unlikely to gain international recognition as independent states. Their relationship with white South Africa is the subject of much debate. The possibility of radical changes were proposed by the Buthelezi Commission in 1981, which suggested the integration of Natal with neighbouring Kwazulu, to form a single multiracial, democratically elected regional administration.⁷⁵ More recently, South Africa has revealed the possibility of ceding 3,000 square miles of Zulu territory (and some 850,000 Zulus) to Swaziland.⁷⁶ Both proposals have met with powerful objections from different interest groups. On the economic front, there are imaginative plans to decentralise industrial development to benefit the black homelands,⁷⁷ but the prospects for large scale industrial redeployment seem dubious in view of past experience and the innate geographical and economic forces at work.⁷⁸ None of these proposals, whatever their outcome, is likely to destabilise the black homelands to a point when they could seriously threaten mineral production at national level and affect exportation. A decade or so from now, however, under more radical leadership, better organised and politicised, the homelands could constitute a dangerous element in confrontation with white South Africa. Over the next few years they are unlikely to greatly affect the centres of South Africa's industrial and commercial power except through the activities of their absent black citizens, resident near the major urban centres in white areas.

* November 1983

(b) The Urban Black Population

The prospects for political stability in South Africa rest above all with the urban black population. At the last census for which details are available (1980) there were 4,940,699 blacks living in urban areas in white South Africa, two thirds of them concentrated in the five largest metropolitan areas (Table 2). Allowing for population growth and some half million migrant workers, the 1982 population of urban blacks could be around five million. The population of Soweto township near Johannesburg was 864,000 in 1980 and a high proportion of the urban black population is concentrated in relatively few locations. With the rate of natural increase around 2.7 per cent,⁷⁹ and likely to rise to three per cent, the urban black population will grow considerably, apart from migration from the homelands.⁸⁰ For comparison, the 1980 white population increase was 1.7 per cent, and the coloured 2.2 per cent.⁸¹

Table 2 Black population of major urban areas in 1980

Johannesburg	1,026,247
Cape Peninsula	171,902
Durban	116,598
East Rand	549,823
Pretoria	322,324
Port Elizabeth/Uitenhage	278,976
West Rand	309,102
Vanderbijlpark/Vereeniging/Sasolburg	297,994

Source: South African Yearbook 1982, Johannesburg, 1982, p.32

Until 1979 urban Africans were regarded as 'temporary sojourners' in white cities, but the Rieckert Commission recommended changes which recognised the need for a stable black urban population, with some freedom of movement and residence. Few of the Rieckert Commission proposals have been carried out,⁸² but the principle that the urban black population is permanent is an important one, with clear implications for their social and political expectations.

The grievances of the black urban population can be grouped into three main categories: social, economic, and political. While it is true that very many South African blacks are materially far better off than they would be elsewhere in Africa, this is not very relevant since their benchmark is the living standard of South African white population. When it comes to evaluating the living standards of the urban black population, conflicting evidence is encountered. While large numbers of black urban dwellers are far better off than most critics of South Africa sometimes imagine, we believe that a considerable reservoir of underprivileged people exist who might easily be mobilised one day to take to the streets. What was reported a decade ago in Johannesburg undoubtedly applies today in certain areas of black townships:

'two thirds of African families in Johannesburg live in poverty, enjoy inadequate educational, health and recreational facilities, are subjected to a high rate of violent crime, and long journeys to work, suffer high rates of alcoholism, low ownership of household appliances, together with social pressures, anxiety and instability, which are in large part generated by the family disruption which compliance with official regulations promotes'.⁸³

It is not surprising, therefore, that in the view of many, the priority of the urban blacks is to improve their standard of living, rather than achieve political power.⁸⁴ Unfortunately there is unlikely to be sufficient progress in this direction either to satisfy those in severe poverty or those whose expectations of increasing prosperity are rising rapidly. One serious limitation in the achievement of desirable rates of economic growth nationally, is the impossibility of filling all the necessary posts at managerial and skilled levels, while creating at the same time large numbers of job opportunities for the unskilled black worker.⁸⁵ Between 1980 and 2000 it is estimated that the black labour force will increase by 5.7 million out of a total increase of 7.0 million.⁸⁶ This represents a theoretical demand by blacks alone of 788 new jobs every day. Since 1979 when the Wiehahn Commission recommended the legal registration of black trade unions, such unions have begun to participate in urging improved conditions and political reform. Their full impact on South African industrial life has yet to be felt.

A second group of grievances is political. Urban blacks have no vote except in one of the homelands from which they (or their forebears) originated. Control over their own affairs, even in the large townships is incomplete, while certain political organisations such as the African National Congress (ANC) and the Pan African Congress (PAC) are outlawed organisations. In the view of some South Africans, realistic progress towards 'one man one vote' is high on the priorities of many urban blacks. The fact is that political disadvantage compounded by economic deprivation and frequently exacerbated by the humiliations still inflicted by petty apartheid (in spite of the progress of recent years) affects a very high proportion of the urban black community. In other words, to avert serious civil unrest it will be necessary to implement both social and economic reform in parallel, and at a reasonable rate of progress.⁸⁷ How fast such reform will have to be achieved is a matter of conjecture, but the shortest timescale suggested to us was less than one year.⁸⁸ In many discussions it was stressed that the most urgent need is for changes which will underpin the credibility of the moderates in the black community.

(c) Prospects for Change

There can be little doubt that remarkable changes have already taken place in South Africa in recent years, and there is currently much discussion which could lead to further changes which white South Africans might have considered unthinkable a few years ago. Soon after taking office in September, 1978, Mr P. W. Botha challenged his white fellow countrymen to 'adapt or die' and the present government has clearly demonstrated its willingness to bring about reforms. Whether this has been made easier or more difficult by the split in the National party which occurred in

February 1982, remains to be seen. Most white South Africans see these changes as 'meaningful efforts to dismantle racial discrimination' and feel that continued international criticism ('too little too late' and 'cosmetic') as unfair and unjustified.⁸⁹ The urban black community tends to regard all the changes achieved so far as lagging far behind their expectations for progress on the economic, political, and social fronts at the same time. They feel particularly angry that the prospects for political and constitutional reform concern the Asians and coloureds but not the blacks.

Some examples of changing policies in South Africa are as follows:

- (a) The Rieckert Commission (1979) was an inquiry into legislation affecting the use of manpower. Although it is not difficult to find many flaws in the proposals of the Commission⁹⁰ they represent a considerable advance in thinking. While influx control from homelands to urban areas would stay, random pass arrests would end. It recommended that discriminatory measures should be avoided 'as far as possible' and geographic mobility of labourers should be encouraged. There would be wider opportunities for black traders in white areas, and the possibility of mixed trading areas in white towns. The Rieckert proposals thus officially recognise the permanence of the urban black community and are important for this reason, though few of the specific proposals have been implemented.⁹¹
- (b) The Wiehahn Commission (1979) was an inquiry into labour legislation, which recommended the registration of black trade unions, including migrant workers, and the abolition of the principle of statutory job reservation. The latter has apparently met with general approval and has been widely implemented. In the next few years large numbers of well qualified black workers will become indispensable to South African industry. Black trade unions had existed before 1979 and the Wiehahn Commission simply allowed them to become legal. Some have argued that the intention of the government was to facilitate control of a movement that was bound to grow in strength.⁹² Recent reports seem to confirm this; an expanded Internal Security Act (1982) defines subversion or sabotage as including any act which 'cripples, prejudices, or interrupts' industrial production, to 'bring about or promote any constitutional, political, industrial, social or economic aim or change'. As a result, harassment of black trade unions has been intensified in spite of their legalisation.⁹³ The government, however, would argue that 1980 was the worst ever recorded for man days lost in industry through labour unrest, following the registration of unions in 1979,⁹⁴ and that some control is essential.

These two examples of reform illustrate the problem facing South Africa in seeking to head off internal unrest. Either, the proposals do not go far enough in the view of the urban black population, or they increase the opportunities for political activism and unrest. Discussion of change in itself raises expectations which are often disappointed. Thus the formation of the President's Council in 1981 was to formulate a new constitutional dispensation for Asians, coloureds and whites. Its recommendations in May, 1982, excluded the blacks for whom 'a fair and negotiated partition' based on the existing homelands would be worked out. Urban blacks 'would eventually have to be taken into account',⁹⁵ though in

what way remains unclear. A possible way forward being discussed is the granting of municipal status to black urban communities, though how far this would be practicable is uncertain, and it would not meet the political aspirations of the more radical urban blacks. It is difficult to avoid the conclusion that the frustration of the urban blacks is growing.

'There is little in the pipeline for the blacks. Everything points in one direction; the kinds of reform that could prevent black discontent from erupting will not be forthcoming in the next two or three years'.⁹⁶

One reform which will not be forthcoming concerns the Group Areas Act of 1966 which segregates ethnic groups by law. The Act has given rise to much tension and conflict between racial groups in South Africa⁹⁷ and its repeal is regarded as one of the acid tests of reform. In April, 1982, it was decided not to repeal the Act as it stands.⁹⁸ Similarly, in spite of suggestions that changes were about to be implemented, much of the 'personal apartheid' legislation remains on the statute books, such as the Immorality Act (1950) and the Prohibition of Mixed Marriages Act (1949). There has been considerable progress in abolishing certain features of 'petty apartheid' in South African society (eg. in hotels and restaurants, and in sport) and there are some examples of integration taking place, particularly in certain units of the armed services. But there are so many anomalies still powerfully discriminating against the non-whites that the urban blacks in particular continue to feel alienated and humiliated.

13. INTERNAL THREATS: CONCLUSIONS

The resentment and frustration of the urban blacks is likely to result in serious disturbances in the next few years. This might be in the form of industrial unrest, especially as unions become stronger. A general strike, however, seems unlikely. South Africa's security apparatus should be able to contain black urban unrest, though it could involve methods resulting in renewed international criticism of South Africa. It is doubtful whether internal unrest would be sufficiently serious or prolonged to affect the delivery of South African strategic minerals in a physical sense. Importers could, however, be deterred from trading with South Africa in the face of public opinion strongly opposed to efforts to deal with unrest in South Africa. If events contrived to bring about concerted action against South Africa from the black states to the north and from internal disturbances, the security forces could find themselves overstretched. A prolonged confrontation of this kind could be a serious threat to mineral exports. In our view, however, internal unrest is likely to occur rather sooner than any serious external attack. Over a longer time span than we regard as critical for our purpose here (well into the 1990s) such combined action could bring about the end of white rule in South Africa. During this period ecological problems beyond the scope of this report could become more critical, notably water shortages and the spread of the desert.⁹⁹

The United Kingdom government might be well advised to recognise that the signs of change in South Africa are very real indeed to the whites, and such change should be encouraged. 'We have our racial problems too ... we are not holier than Mr Botha; we are merely luckier'.¹⁰⁰

14. STRATEGIC CONCLUSIONS

1. Despite the present depression in the strategic metals market, South Africa is still vital to the Western World for supplies, especially of chromium.
2. Given present conditions, the mining potential of South Africa is vast.
3. The commercial basis of mining in South Africa is very favourable and free from restrictive practices.
4. The transport infrastructure is first class and could not be easily disrupted for long periods of time.
5. The South African Navy is well adapted to its stated limited role and would pose serious problems for any adversary.
6. The Cape Route remains important for the West, though its importance as an oil route is being eroded.
7. It is in South Africa's interests to stress the above points and although weaknesses can be detected in each individual argument, overall Western dependence is still great.
8. Politically, the major threats to stability would appear to be internal.

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