

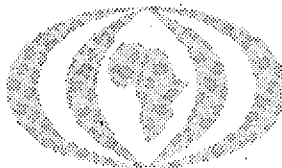
# **NO CRISIS: THE IMPLICATIONS OF U.S. DEPENDENCE ON SOUTHERN AFRICAN STRATEGIC MINERALS**

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It should be noted that any opinions expressed in this article are the responsibility of the author and not of the Institute.

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I would like to attack two common, and I think fallacious notions :

- that the United States is dependent upon strategic minerals produced in South Africa; and
- that this dependence offers the Republic important leverage when dealing with the United States.

I probably do not need to detail these claims. Explicitly, or by innuendo, they are made daily in the South African press and government statements. They also figure very prominently in South African Foreign Ministry materials aimed at Americans. Not long ago, for example, I received a poster in the mail. It's pretty blunt.

It asserts that an impending "minerals crisis" will be even more devastating than the "energy crisis" of the 70s. It declares that "ready or not, we are in a resource war ... with the Soviet Union" and it concludes that to cope with the situation the United States must "in particular ... stop treating South Africa as a moral leper and look on her as a necessary ally". It is not necessary to look for similar statements. At home I receive weekly pamphlets from the South African Embassy with such titles as "The Cape Route : Passage Way to Survival" and "South Africa : Persian Gulf of Minerals". These are very sophisticated efforts. For credibility they draw wherever possible upon American sources - and the rhetoric of a besieged, endangered America abounds today :

- a member of Congress warns that American weapons systems may soon be "endangered species" because of dependence upon foreign sources of strategic minerals
- a government report asserts that "without adequate and dependable mineral supplies ... society's very life support systems would change, and the security of the free world would be jeopardised". It concludes that if something is not done soon, "the nation will be forced into compromising positions by foreign governments who control the flow of minerals over our borders".

This presumed American vulnerability, of course, is precisely what interests South Africans. As an editorial in a leading South African paper put it : "South Africa must hammer loud and long upon the strategic importance of South Africa in military terms and with regard to raw materials that are essential for military and industrial uses ...".

Here we are, then, on the one hand, with South Africa at least in public arguing like good geopoliticians that the possession of resources essential to the US should and does confer important leverage over the US. On the other, we find a growing number of Americans arguing in good realist fashion that irrespective of ethical objections to apartheid, the more fundamental concerns of national security dictate closer relations.

I disagree strongly with both positions. Before I go on to explain why in detail, let me first give you a quick outline sketch.

The United States does have reason for concern about minerals security, this I think there is no contesting. But - and it is an all important but

- the current discussion greatly exaggerates the seriousness of the problem;
- it distorts and misrepresents much of the evidence;

- it focuses on the least credible threats to American mineral security while ignoring the most likely; and
- it ignores the wide range of policy responses available to the United States for coping with the problem.
- No less important, from a foreign policy perspective, the current discussion of mineral dependence generally fails to take into account other, equally critical, American policy concerns. Yet it is, of course, naïve to believe that an American interest in a steady supply of strategic minerals from South Africa can be isolated from our broader interests in the internal and regional stability of this part of the world. And such stability is clearly incompatible with an embrace of the status quo here - however important the minerals. Indeed, I think it fair to say that not only is the South African status quo incompatible with fundamental American values, but in the long run it is also incompatible with American national security interests, minerals included.

And so for Americans the challenge is to develop a forward-looking foreign and domestic minerals security policy to meet the problem without compromising either American values or other, related American security interests.

For South Africans, it is important to realise the severe limits on the leverage minerals resources offer. The promise of mineral power is a false promise and a policy built upon it will come to nought. Moreover, even if there is no thought of actually using minerals for leverage - indeed, even if, as several people have suggested to me in the past few days, the government does not believe such leverage exists - flogging the strategic minerals issue will rapidly prove counter-productive. The United States and its NATO allies can and will respond with mineral security policies which will quickly marginalise South Africa's strategic importance.

Let me begin by defining a few terms : what exactly do we mean by security or insecurity when talking about minerals?

- Insecurity results from high import dependence upon foreign suppliers who control a high concentration of the reserves and production of certain materials that are without substitutes in industrially and militarily critical processes and products.
- Conversely, mineral security requires ready stable access to adequate supplies of these materials at reasonable and stable prices and the policy instruments to assure this.

By these definitions, many argue that today the United States is dangerously insecure and that the problem lies in southern, particularly South Africa. Before going on to offer my own counter to these claims, let me give you the worst picture, here concentrating on South Africa's three, key strategic minerals : chromium, manganese, and the platinum metals group. Let's look at each in turn - remembering that the statistics are more suggestive than definitive.

#### Chromium

Chromium does far more than put the shine on your car's trim. It is the essential ingredient in stainless steel and the high temperature ferro-alloys used in jet and rocket engines. The Republic accounts for in the order of 30% of current total world chromite production and possibly as

much as 58% of total world chromite reserves. The Soviet Union is the other primary site of chromite reserves. The United States, however, has not produced chrome since 1962. South Africa provides the United States with 35% of its total chrome ore needs and 76% of its ferrochrome needs. No less important, America's NATO allies - Canada excepted - also produce no chromite and depend upon South African supplies even more heavily than the United States.

### Manganese

Manganese is essential to the production of steel; there are no known substitutes : no manganese, no steel. South Africa currently produces about 20% of the world's manganese ore. South Africa possesses more than 90% of free world manganese reserves and 75% of total world reserves. The Soviet Union is the world's largest producer today and possesses most non-South African reserves. The United States and its allies do not produce manganese and currently meet approximately 40% of their manganese needs with imports from South Africa and this figure may well grow.

### Platinum

The platinum group metals - including platinum, palladium, rhodium, iridium, and so on - play an important role in super-fast micro-electronics and as catalytic agents in petroleum refining and other chemical processes. Because they are so very expensive, these metals are generally used only when no other material will suffice. South Africa today produces about 45% of total world platinum and possesses in excess of 70% of world platinum reserves. Again, the Soviet Union is the other primary producer of platinum group metals and possesses most of the non-South African reserves. South Africa currently supplies approximately 50% of American platinum requirements and a roughly equal portion of our major allies' needs.

In short, we have what seems the perfect recipe for mineral insecurity.

Not surprisingly, both American and South African analysts of this situation identify the Soviet Union as the likely source of trouble and the certain beneficiary of it. The scenarios vary. Some imagine a Soviet grab for control of Southern African production and a subsequent strategy of what Michael Hough at University of Pretoria calls "strategic denial" - that is, the refusal to sell strategic minerals to the world at any price. Others imagine a variety of price manipulation strategies whereby the Soviets could bankrupt the West while, à la OPEC, earning vast quantities of essential hard currency - "mineral dollars" instead of "petro dollars".

And certainly, if the Soviet Union - or anyone else for that matter - were able to substantially reduce Western imports of these strategic minerals, the short term results could be quite important.

- A Charles River Associates Study suggests that a 25% reduction in chrome supplies would raise prices to \$1000/ton.
- A West German Study indicates that in the absence of any response measures, a 30% reduction in German chrome imports for a year would reduce industrial production 25% and put 6 to 8 million people out of work.

Given such a grim picture, how is it possible not to be an alarmist? It is possible, I would like to argue, because as presented :

- the evidence is misleading;

- the assumptions are faulty; and
- the arguments are false.

Let me begin by simply dismissing two common, but baseless notions; that cut-offs of strategic minerals pose an immediate threat to American defence forces; and that the current mineral security dilemma results from a post-Vietnam, post-Angola, post-Afghanistan loss of American will.

First, claims that even abrupt strategic mineral supply cut-offs will quickly render American weapons systems "endangered species" are simply poppycock. The American military's readiness posture is determined by the requirements for fighting a one year NATO war in Europe with just 30 days warning. In calculating the supplies necessary to meet these requirements only materials currently available in North America are counted against direct and indirect Department of Defence needs. In fact, however, supplies of chromium, manganese and platinum group metals in the United States today are the equivalent of approximately 3 years worth of normal - that is unrationed - consumption. Moreover, most war planning scenarios currently being debated assume all out confrontations lasting no more than a month because of the exhaustion of munitions supplies. Replacement of these supplies is not, however, contingent upon strategic mineral reserves, which, as I have indicated, are available. Rather, replacement is contingent upon defence industry capacity. It is here that the problem lies since the production lead times for many of the critical parts incorporating strategic minerals may be 18 months or longer.

The notion that an American refusal to take a tough, aggressively anti-Soviet minerals security policy is evidence of a post-Vietnam American lack of will is also poppycock. Concern over strategic minerals is by no means unique to our day and age. Each generation of American leaders since Teddy Roosevelt has discovered - and successfully coped with - a strategic minerals crisis of its own. Indeed, so successful have been past response policies that the management of glut - not scarcity - has been the most common minerals related problem. And, as I will argue in a moment, similar policies are available to today's leaders and promise an equally favourable resolution to today's difficulties - without knuckling under, forcing a confrontation with the Soviets, or compromising fundamental American values.

#### Evidence

What of the evidence itself? As I believe Mark Twain observed, "There are lies, damn lies, and statistics." The current strategic minerals debate bears him out with a vengeance.

The statistics of current production and world reserves are foreboding only until one asks what they really mean. They are not absolutes as the alarmists would have us believe. Rather, they are merely the reflection of such obviously mutable things as demand, price, technology, level of geological knowledge, and legal arrangements. Indeed, the technical definition of "total world reserves" is that amount of a mineral it is economically feasible to mine at today's prices, with today's technology given existing legal restrictions. They are, in short, floating figures that rise with prices, technical innovation, etc. For example, despite consumption, world chromite reserves have increased 675% in the last 30 years, while world manganese reserves have increased more than 1100%. Thus, South Africa's pre-eminence in chromium, manganese and platinum group metals production and reserves reflects not only South Africa's extraordinary mineralization, but a very simple business logic : supplies of these materials at the low

prices made possible by South Africa's high grade ores and low production costs have made costly exploration for alternative sources and the costly development of mining technologies for exploiting lower quality ores economically unattractive.

The implication of this more accurate understanding of production and reserve statistics are critical in the mineral security debate.

As for price changes - sustained price increases - whether as a result of rising demand, supply cut-offs or government subsidisation measures - will immediately increase world reserves and alternative production. In the case of cobalt, another important strategic mineral, a sustained price increase would result in domestic American production of 20-30% of total US cobalt consumption within 1-2 years.

As for technology - the United States Bureau of Mines has developed means of extracting chrome concentrate from low-grade American ores that would be economically viable at higher prices. They are currently developing sophisticated recycling technologies as well.

As for geological knowledge - the United States government - which owns and manages approximately one third of total American territories has never done a complete geological survey of federal lands although South African minerals expert WCJ van Rensburg estimates that they contain sufficient chromium and platinum to meet 20-30% of total US demand. In fact, the US Bureau of Mines asserts that the federally owned lands contain major potential resources of all the critical strategic minerals.

Finally, as for legal access, under current environmental and wildlife protection legislation fully 58% of federally owned land in the United States has been closed on hard rock mining. Included among these closed lands is the heavily mineralised Stillwater, Montana Complex, believed to be the richest platinum group metals deposit in the world. Removal of legal restrictions barring mining at Stillwater could result in domestic US production of 25-30% of total US platinum consumption within a few years.

And of course, there remains the potential of deep sea resources which with a solution to the Law of the Sea imbroglio could entirely eliminate American import dependence in manganese, and other strategic minerals.

#### Assumptions

So much for the evidence; what of the assumptions? The fundamental - and fallacious - assumption underlying the alarmist position is that strategic mineral demand is inelastic. That is to say that demand cannot be curtailed in response to price rises or supply shortfalls without serious damage, without, in essence, foregoing production. This assumption is simply false.

In part the problem is definitional. Because the strategic minerals are critical and irreplaceable in certain strategic uses, it is incorrectly assumed that they are irreplaceable in all uses. Not true. Consider, for example, that in 1948 when the Soviet Union imposed the Berlin Blockade and embargoed trade with the West, the United States depended upon the Russians for 47% of total US chromium consumption, 31% of manganese consumption and 57% of platinum consumption. Not only did the supply cut-off not cause serious short-term disruption, but also did not hamper rapid mobilisation for the Korean War two years later.



Things are no different today. In the case of chromium, for example, the United States National Materials Advisory Board estimates that 31% of current consumption could be immediately replaced with available functional substitutes and that with 5 to 10 years fully 64% of total consumption could be replaced with currently available substitutes. Indeed, as little as 20% of chromium consumption may be currently classified as "irreplaceable".

Similarly, catalytic converters for automobiles - nobody's notion of a strategically significant item - account for fully 40 to 50% of total US platinum consumption, equivalent of total US platinum imports from the RSA.

The problem goes deeper than simple definitions, however, for the alarmists assume little or no room for technological innovation. Yet, here there is overwhelming evidence that design modification and technological advance can drastically alter mineral supply patterns and reduce mineral requirements.

Improved detection, extraction and processing technologies give promise of altogether new supplies and exploitation of previously submerged ore bodies. Recycling technologies promise new sources of supply from hitherto waste products. And rapid advances in use technologies promise great reductions in demand. In the immediate future, for example, lies large-scale commercial introduction of super-strong, ultra-hard, heat-resistant ceramics which may well replace specialty steels in many of their most strategic uses (jet engines etc).

Such possibilities do not, of course, eliminate the prospect for very sharp price fluctuations in response to supply cut-offs. While such wild price gyrations will undoubtedly age many business executives before their time, the overall effect on the American economy will likely be very small. Indeed, a special study undertaken by the US Department of Commerce indicates that a 100% increase of chromium, manganese and nickel prices would increase costs in the manufacturing sector by just 0,0008%.

Is this all too magical? Does it depend too much on an Adam Smithian "invisible hand" to put things right? I think yes. In the long run, the market and strategic mineral demand etc will self-correct. But then, in the long run, we're all dead. National security requires somewhat more alacrity. here we come to policy - to mineral security policy - the means available to the United States government to manage getting through to the long-term, if you will.

This is the heart of the matter. For it is incorrect to identify import dependence per se as vulnerability. The real issue is how fast, how effectively and at what cost can the United States respond to import interruptions? Vulnerability is the residual damage incurred after you have done your damndest.

What is our damndest? A well-conceived, broad-gauge, forward looking mineral security policy must have the following characteristics :

- it must be time phased - that is contain measures for meeting both short-term disruptions and providing long-term solutions;
- it must serve both deterrent and defensive functions;
- it must address the whole range of threats and consequences;
- it must integrate both domestic and foreign policy initiatives;

and finally

- it must reinforce, not cross-cut, the broad thrust of American national policy.

What, then, would such a policy look like?

### Stockpiles

The first requirement of mineral security policy is an effective stockpile system flexible enough to meet major supply interruptions or price surges regardless of their origins. At the same time, of course, existence of such a stockpile system will also serve to deter a wide variety of threats.

At present, the United States' national stockpile system contains supplies of 93 minerals, including the equivalent of 26 months' consumption of chromium, 39 months' consumption of manganese and 10 months' consumption of platinum.

There are, however, problems with the system and remedial measures are required.

- Stocks of certain minerals, including platinum, must be brought up to required levels;
- improved and more flexible management of the system must be implemented; and
- means of regulating and coordinating private industry's stockpiles must be found in order to gain full advantage of them in crisis.

In a related concern, the national government must devise demand restraint regulations acceptable to business that can be implemented in case of supply cut-offs.

None of these required measures, however, present insurmountable problems. The same applies to meeting the requirements of domestic policy initiative to assure medium and long-term mineral security. Here there are two essential challenges to be met :

- over-coming constraints upon our knowledge of alternative supplies; and
- over-coming constraints upon rapid technological innovation and investment in supply diversification.

In each case the issues are money and lead-times. The money aspect means government involvement; the lead-time aspect means that tomorrow's security requires action today.

The United States government has three important roles to play in the identification of alternative supplies. First, it must undertake a systematic geological survey of federally owned lands - not necessarily with the intent to exploit them immediately, but to identify and quantify America's long-term stockpiles. Second, through either direct or indirect means, the United States government should stimulate, possibly subsidise the expensive process of developing new more sensitive computer and satellite techniques for identifying new ore bodies. And third, through tax incentives, soft loans and other such means, the US government should

encourage private industry to step up and broaden its own exploration efforts. These efforts are necessary now - right now - as it may take as much as 10 to 15 years to get from identification of an ore body to first production. Crash programmes after the crisis will be too late; with forethought they will not be necessary.

Money and lead-time problems also hamper technological innovation and investment in the mining industry.

Mining and processing equipment is expensive and built to last. A company with a huge sunk investment in existing technology is not free to adopt new, more efficient technologies rapidly, even if price and supply change dramatically. (Hence the notoriously cyclical nature of the minerals industry.) Moreover, so long as there exist sufficient supplies of a mineral from existing mines, companies lack the incentive to spend huge sums in order to develop technologies for mining and processing alternative, lower grade ores. Since such developments take considerable time to perfect, however, there is an obvious national security interest in encouraging them now.

These problems are also surmountable. Indeed, each has been successfully overcome in the past and similar policies promise no less today. First and foremost, of course, is expansion of the US Bureau of Mines and Geological Survey. These offices could supply invaluable surveys of American mineral resources and already possess major research labs capable of expanded research in exploration, extraction, processing, use of recycling technologies. Similarly, the government can provide greatly expanded research monies to American universities such as the Colorado School of Mines - monies specifically targetted at critical strategic minerals. And by means of tax breaks, investment credits, and so on, the government can encourage private industry's own exploration and research efforts.

Turning finally to the foreign policy portion of mineral security policy - and so to southern Africa - an equally broad variety of possibilities exist.

In the very short run, of course, the first imperative is to defend the flow of supplies, to win the breathing space in which it will be possible to take other defensive steps. I must stress, however, that this is, and should be, at most a very short term course of action. For clearly any longer term embrace of South Africa will be counter-productive. Not only will it ultimately jeopardise American supplies of other materials from other sources but will vitiate the basic American commitment to moderate, evolutionary and necessary change.

Thus, with an eye to the longer term, there are two critical elements to the foreign policy portion of a minerals security policy :

- the development and defence of alternative supplies to South Africa's strategic minerals; and
- the improvement of our allies mineral postures.

Each of these is, of course, both defensive and deterrent; on the one hand, reducing the damage done by possible cut-offs, whatever their cause, and, on the other, reducing the utility of mineral supplies as a weapon against us and reducing the value of southern Africa as a target for Soviet meddling.

As for alternative sources of supply, there are two important areas of concern; the guaranteeing of access to existing alternatives and the development of new ones. As for the first, this means here in southern Africa active support of efforts to improve non-South African producers' transport systems. In particular, this means aiding efforts to develop alternatives to continued export via South Africa for it is this more than anything else that ties southern African production together and makes it such a large portion of free world supply.

As for the second, active efforts must be undertaken to promote production in other areas. In the past, this was achieved by such means as the Truman Point 4 program, responsible, for example, for the development of Turkish, Indian and Philippine chrome production, and the Defence Production Act. Similar programs are available today. They would consist, on the one hand, of loan, or subsidy packages for either Third World governments or American companies interested in expanding existing strategic mineral production or actually developing new mines. On the other, they would contain a variety of investment risk reduction measures - for example, government under-written insurance against expropriation and diplomatic negotiations for bilateral treaties with investment protection clauses.

No less important, an all too forgotten element of American mineral security is our allies mineral security. Indeed, here we are currently particularly vulnerable, as our allies are both import dependent and less well prepared for cut-offs than the United States. Thus, a critical element of the foreign policy portion of efforts to achieve mineral security must be diplomatic attempts to encourage greater stockpiles, research and development programs and supply diversification efforts by our OECD partners. And here there has clearly been some movement in recent years. A number of European states have begun stockpile programs and the Japanese have pursued an aggressive - highly successful - supply diversification policy. In each case, the desire to reduce vulnerability to southern African problems played an important part.

And so finally we come to the hot topic here in South Africa, the Soviet threat, specifically the Soviet threat to Western mineral supplies. It may seem odd to have left it so late, but the logic is simple: seen in the context of our modified picture of the minerals situation, the Soviet threat seems far less frightening.

In the short run, the prospects for major Soviet advances in the area seem rather remote. Moreover, if the current, rather pathetic spectacle of Angola's and Mozambique's effort to attract Western investments is any guide, it seems unlikely that the Soviet Union will find many southern African clients willing to forego mineral sales to the West in order to aid Soviet attempts to strangle it.

Conversely, in the longer run, there is reason to worry about Soviet advances if political conditions in the area continue to deteriorate. Continued South African destabilisation efforts in Angola and Mozambique, intransigence on Namibia and failure to show any real movement toward political rights for the Black majority will raise the market value of violence in the area and, in the absence of American counter-action, offer the Soviets an ever more fertile field to sow. This state of affairs does not call for an American nose-to-nose confrontation with the Soviets in support of anti-Communist South Africa. To the contrary, it calls, first, for the implementation of the sort of forward-looking mineral security policy I have outlined in order to insulate the United States from the effects of the all but inevitable disruptions of production that lie ahead. Second, it requires not reactive, but positive United States policies to

pre-empt violence, to pre-empt the Soviet Union through concerted efforts to find peaceful, negotiated solutions to southern Africa's problems. This means, of course, redoubled efforts to bring the Contact Group Namibian negotiations to fruition and continued, firm pressure upon South Africa to end its covert operations against neighbouring countries. The United States and its Western allies alone can hope to bring peaceful change to this region. If we balk at the task, or chose retrenchment, not reformation, we abandon the field to the Soviets. And that is not in our national security interest, minerals and all.

There is a challenge here for Americans. They must recognise that strategic mineral self-sufficiency is impossible and hence that a policy for managing important dependence is necessary. They must recognise the political challenge this poses, the challenge of designing and finding the funds for a policy for tomorrow in the absence of a crisis today. They must resist the alarmists and chicken-littles who clamour for short-term and short-sighted policies.

We have a political problem; not a resource problem. But it is manageable. There is no reason to sacrifice American values to minerals dependence nor even to allow mineral dependence to reduce our freedom of action. What long-term American national security requires is the political foresight and commitment to see through the policy initiatives needed to assure mineral security. I believe Americans can and will meet the challenge.

This being the case, I think it is essential for you and the South African government to recognise the mineral supplies offer no real leverage - and that if leverage is attempted, the lever will bend. By the same token, I would like to suggest that despite the obvious, short-term propaganda benefits of hammering upon South Africa's strategic mineral importance, there are not insignificant negative consequences. A successful propaganda can only persuade the West to take defensive measures that will substantially reduce the centrality of South African minerals in Western economies. Either way, South Africa, too, must look forward to new, positive solutions to its national security needs, not back to strategies for protecting the status quo.