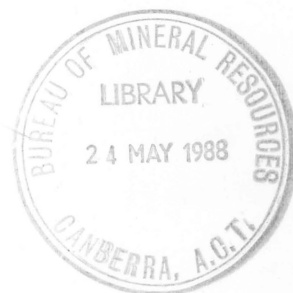


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16 - 17 MARCH 1988

NICKEL --- INTO THE NINETIES

SPEAKING NOTES AND FIGURES

BY

PAUL A. COKER

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NICKEL -- INTO THE NINETIES

P. Coker, BMR

Nickel prices have increased markedly in recent months. The LME price is currently (mid March 1988) almost US \$6.00/lb -- just fourteen months ago it was languishing at below US \$1.60/lb!

Volatile prices such as these make life difficult for producer and consumer alike.

This short paper provides a brief historical perspective to the recent turnaround in nickel's fortunes and then suggests likely scenarios for nickel in the short-term and into the next decade.

The graphs shown in figure 1 are composites of three different nickel prices which have been selected to be most representative of the market price in any one year. The broken lined graph is in current Australian dollars and the solid lined graph is its equivalent in constant 1980 dollars. After peaking in 1970 the real nickel price has generally been decreasing, most particularly since 1980.

Figures 2 and 3 go a long way to explaining why the nickel price performed as it did in the seventies and eighties. Figure 2 gives a breakdown of

world mine production by country over the last four decades, and figure 3 shows world nickel consumption since 1950 and is broken up into three time intervals with each interval's consumption growth rate.

Up until the latter part of the sixties Canada was responsible for the lion's share of world mine production, with USSR, New Caledonia, and Cuba accounting for most of the remainder. Producer prices prevailed in the market and, to instill consumer confidence, suppliers kept prices relatively stable in real terms by keeping production closely in line with demand.

The annual rate of growth of nickel consumption, which had averaged 3% from 1950 to 1958, increased markedly in the sixties and early seventies (a period of rapid world economic growth), to average 8% in the 16 years to 1974. Stable prices coupled with strong demand encouraged nickel exploration and mine development, and a number of countries emerged as important nickel producers -- notably Australia, Philippines, and Indonesia. As a consequence Canada's share of world mine production fell.

The pattern of nickel consumption changed abruptly in the early seventies, as it did with a number of other metals. A move towards a lower intensity of nickel use occurred and annual consumption growth fell to 1% and has remained at this rate, on average, ever since.

The upper graph in figure 4 is an estimation of Western world mine/smelter capacity since 1976, and the diagram beneath shows how much of that capacity was utilised. (When measuring capacity some operations are more conveniently measured at the smelter stage rather than the mine stage -- the use of the term "mine/smelter capacity" does not involve any double counting).

Mine/smelter capacity increased at a greater rate than did consumption in the latter part of the seventies and early eighties, so that capacity utilisation decreased, and real nickel prices fell as a consequence.

Western world mine/smelter capacity utilisation bottomed-out in the early eighties at little more than 50%. Since then it has increased, but real nickel prices did not reach their low point until January 1987.

The reversal in the nickel price since then was brought about by increased demand, shortfalls in supply, and low levels of commercial stocks.

Demand increased markedly in 1987, particularly by the stainless steel sector (which accounts for more than 50% of the market), and supply shortfalls occurred because USSR's nickel exports to the Western world were lower than anticipated (exports in 1986 were historically high) and because of production disruptions at Jin Chuan in China, at INCO's

Creighton mine in Canada, and Outokumpu's Harjavalta refinery in Finland. In addition there was concern over an embargo on Chinese nickel exports after January 1988 and the imposition by Dominican Republic of a high tariff on its nickel exports. Demand was well in excess of supply in 1987, putting considerable pressure on stocks.

Figure 5 illustrates this point and shows that commercial stocks have more than halved since 1981. Stocks are currently at historically low levels. Incidentally, the trough in 1979 was due to strikes in the Canadian industry which effectively halved mine output in 1978/79.

It seems likely that, for the next two or three years, commercial stocks will remain low and nickel prices will continue to be very volatile in response to short-term changes in supply and demand.

However, for nickel producers and consumers (and potential producers and consumers) it is the longer-term view of the nickel market which is of prime importance.

The performance of the world economy is the major factor determining demand. The outlook for the world economy can best be described as uncertain (there are certainly a number of differing opinions on the subject) and because of this a conservative estimate of consumption growth

should be adopted. The 1% annual growth rate experienced since 1974 is perhaps a useful benchmark for any longer-term projection.

Long-term nickel supply will very largely be dependent on future levels of nickel exports from the USSR, and the rate of increase in mine and refinery capacity and production in such countries as Cuba and China, both countries having plans for greatly increasing nickel output.

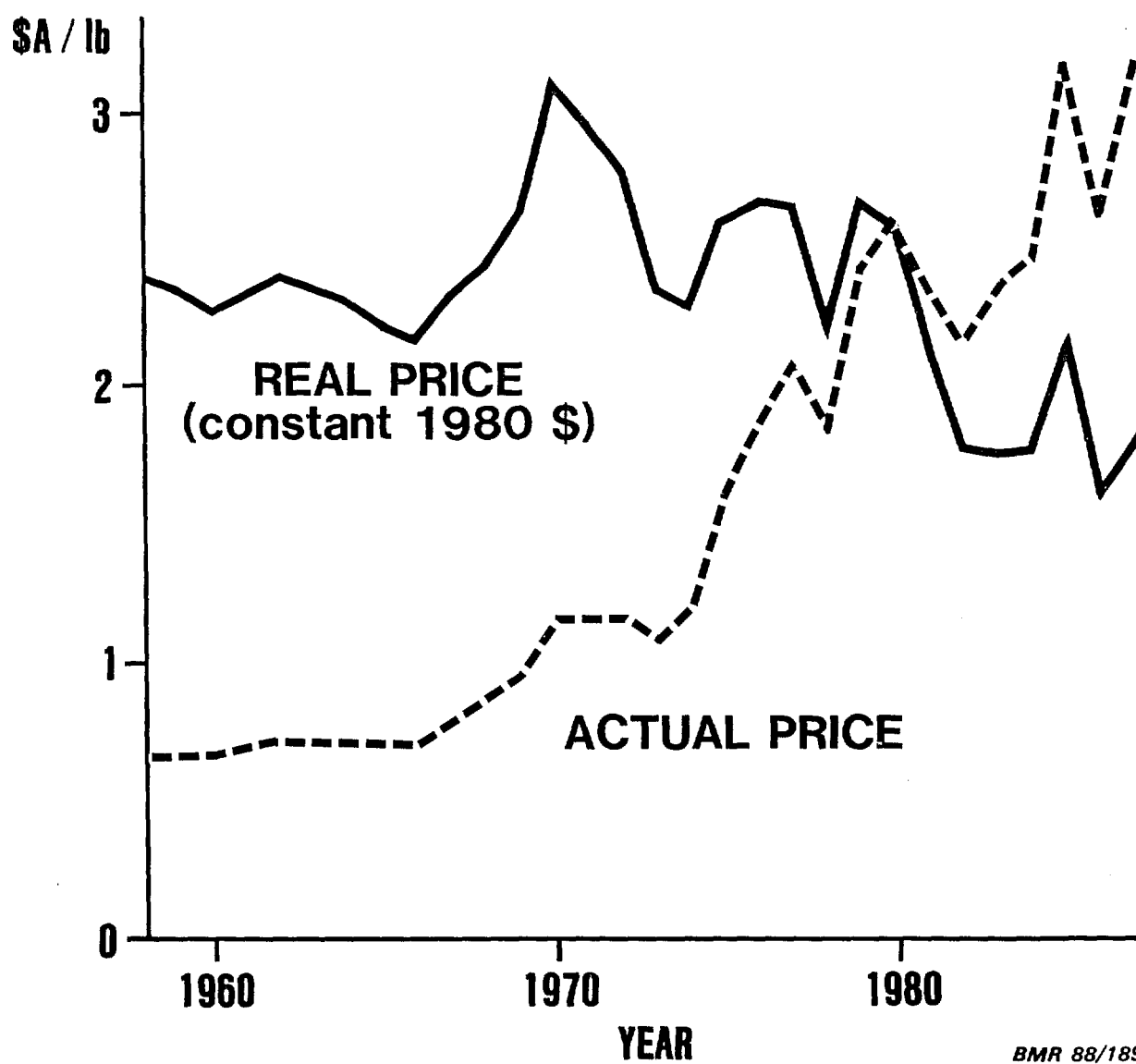
Figure 6 gives a break-up of world demonstrated nickel resources, by country. Cuba is well endowed with nickel resources and is very likely to be able to increase its nickel output now that technical problems at the Punta Gorda plant appear to be near resolution. Another plant, Las Camariocas, is under construction. Cuba may very well treble its nickel output by the year 2000, to 100 000 tonnes/year.

China is not shown on the pie chart but it does boast the largest single nickel-copper sulphide deposit in the world, the No. 2 mine at Jin Chuan. The deposit contains over 4 million tonnes of nickel which is five times as great as reserves in the Kambalda field in Australia. Refined nickel capacity at the Jin Chuan complex is planned to almost quadruple, to 80 000 tonnes/year by 1995.

Future supply from the USSR, Cuba, and China will to some extent be conditioned by each countries need to earn foreign exchange.

Perhaps the most likely scenario for the longer term is that nickel demand will be weak and that USSR, Cuba, and China could well increase their share of the nickel market. If this is so then countries such as Australia and Canada will do well to maintain their current market share. In such a scenario the prices seen in the last few months are probably not sustainable.

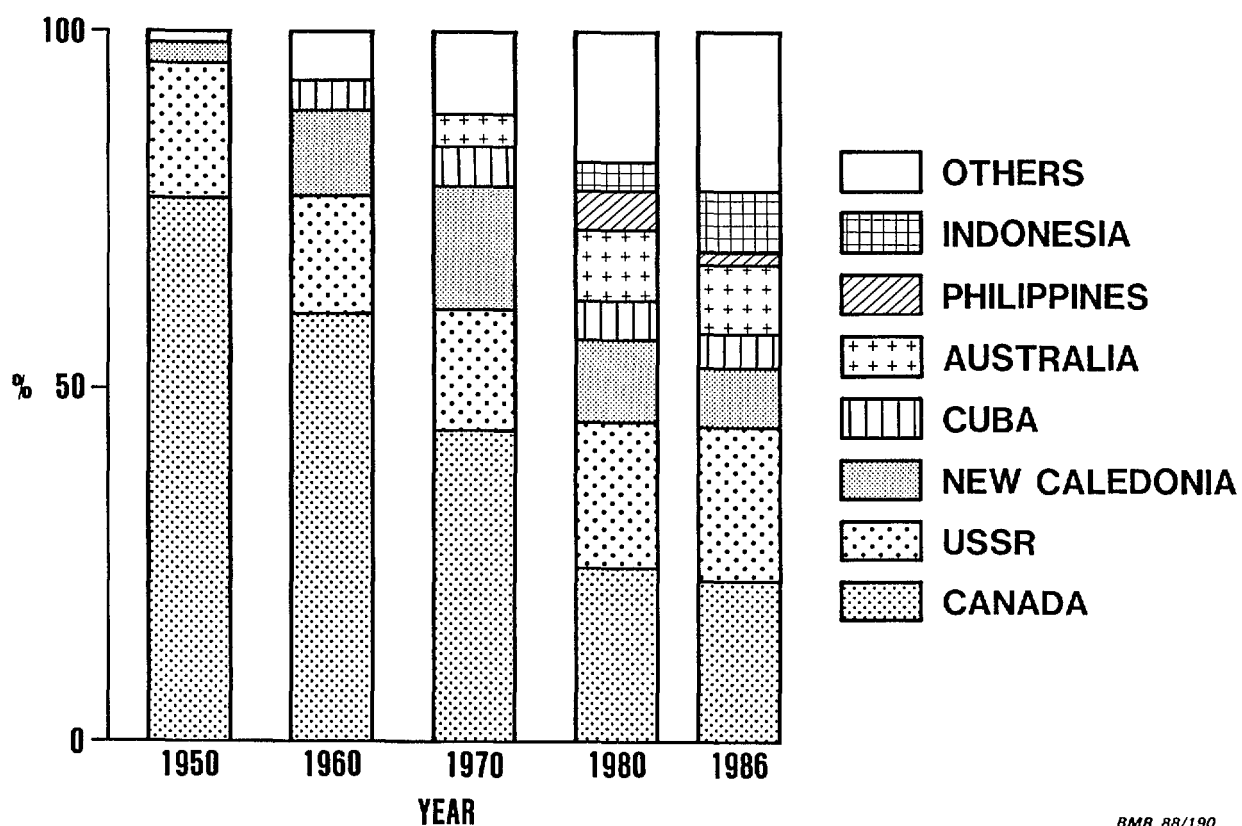
COMPOSITE NICKEL PRICE



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FIGURE 1

PROPORTION OF WORLD NICKEL MINE PRODUCTION, BY COUNTRY



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FIGURE 2

WORLD NICKEL CONSUMPTION

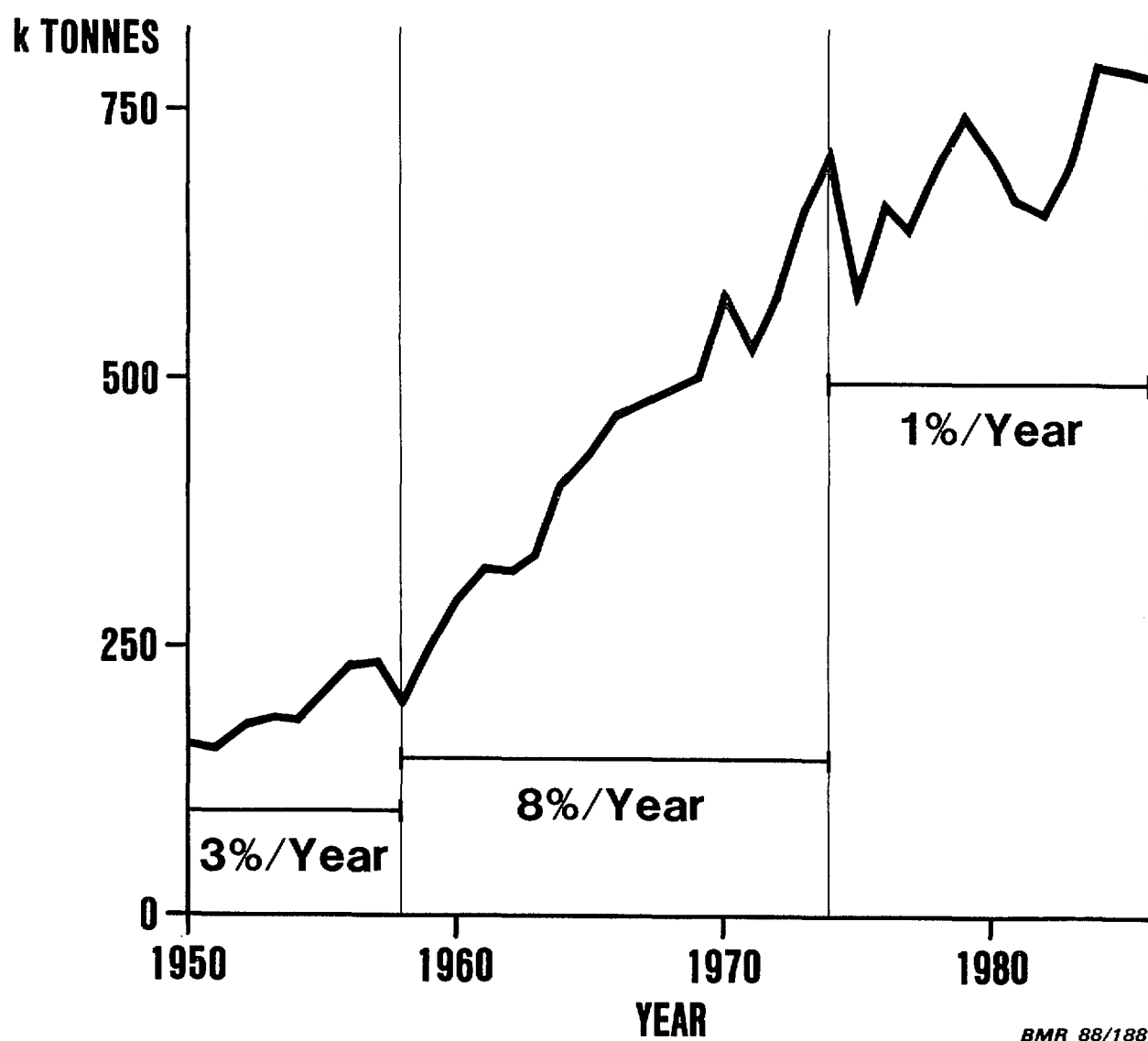


FIGURE 3

WESTERN WORLD NICKEL MINE - SMELTER CAPACITY AND CAPACITY UTILISATION

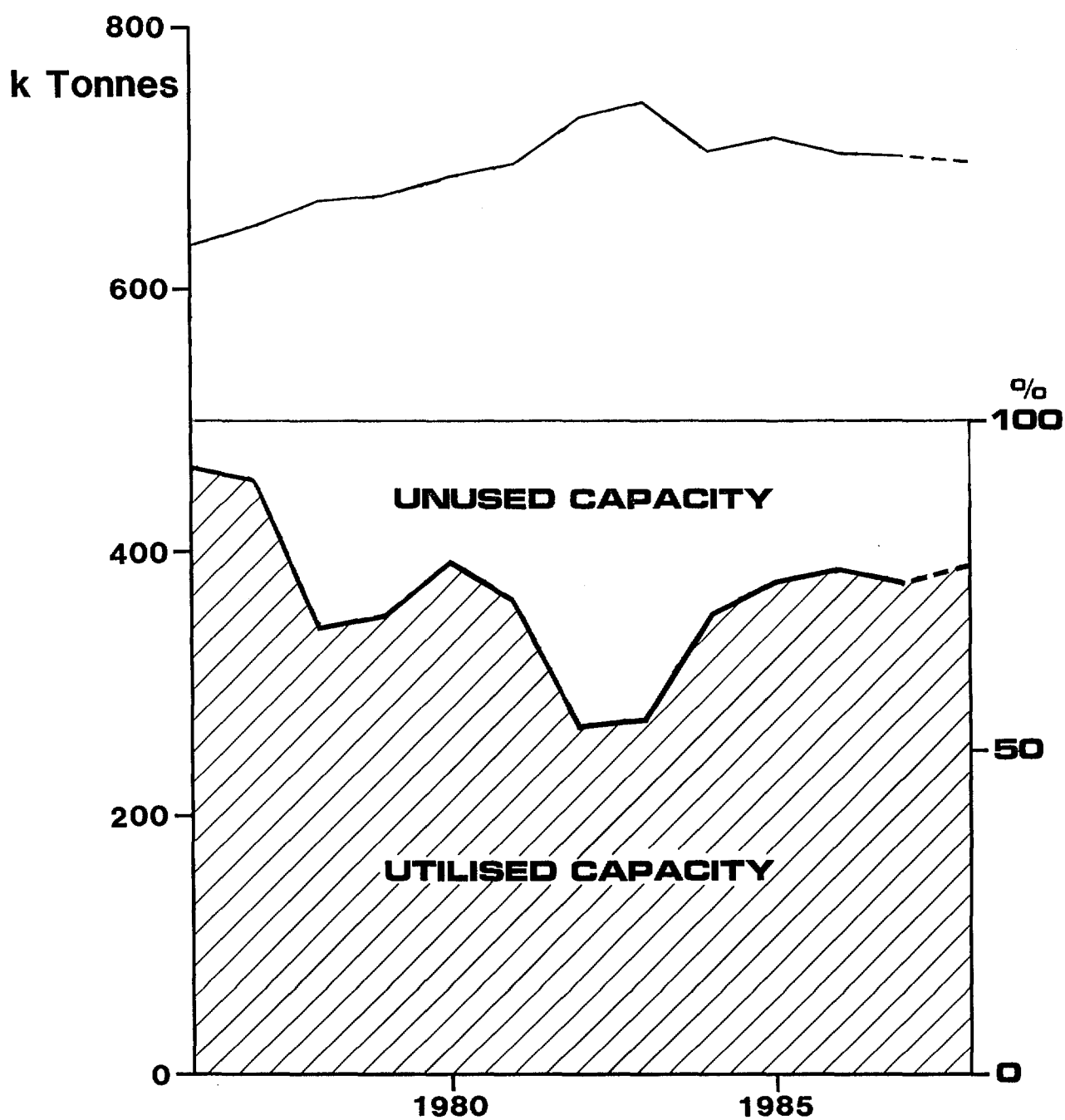


FIGURE 4

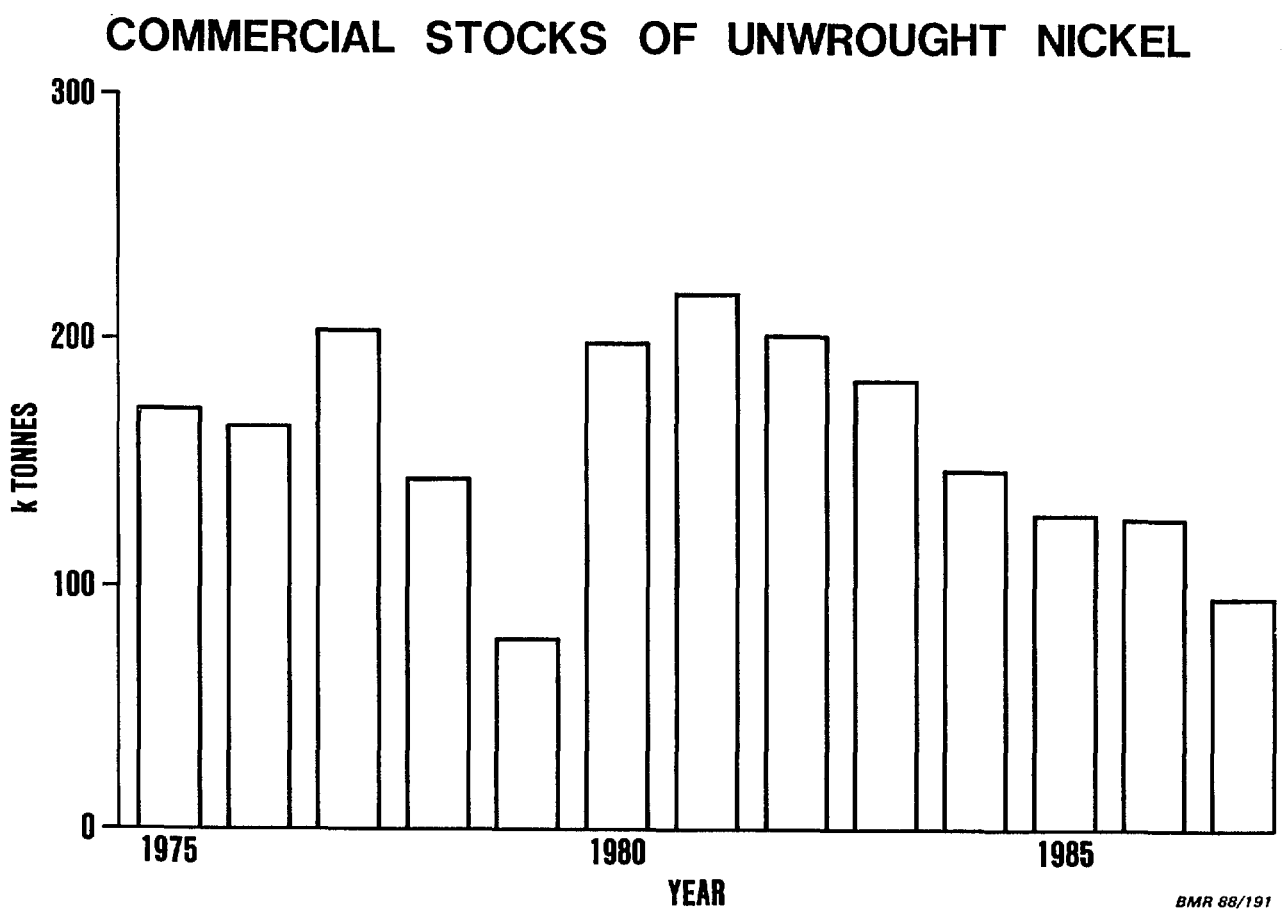
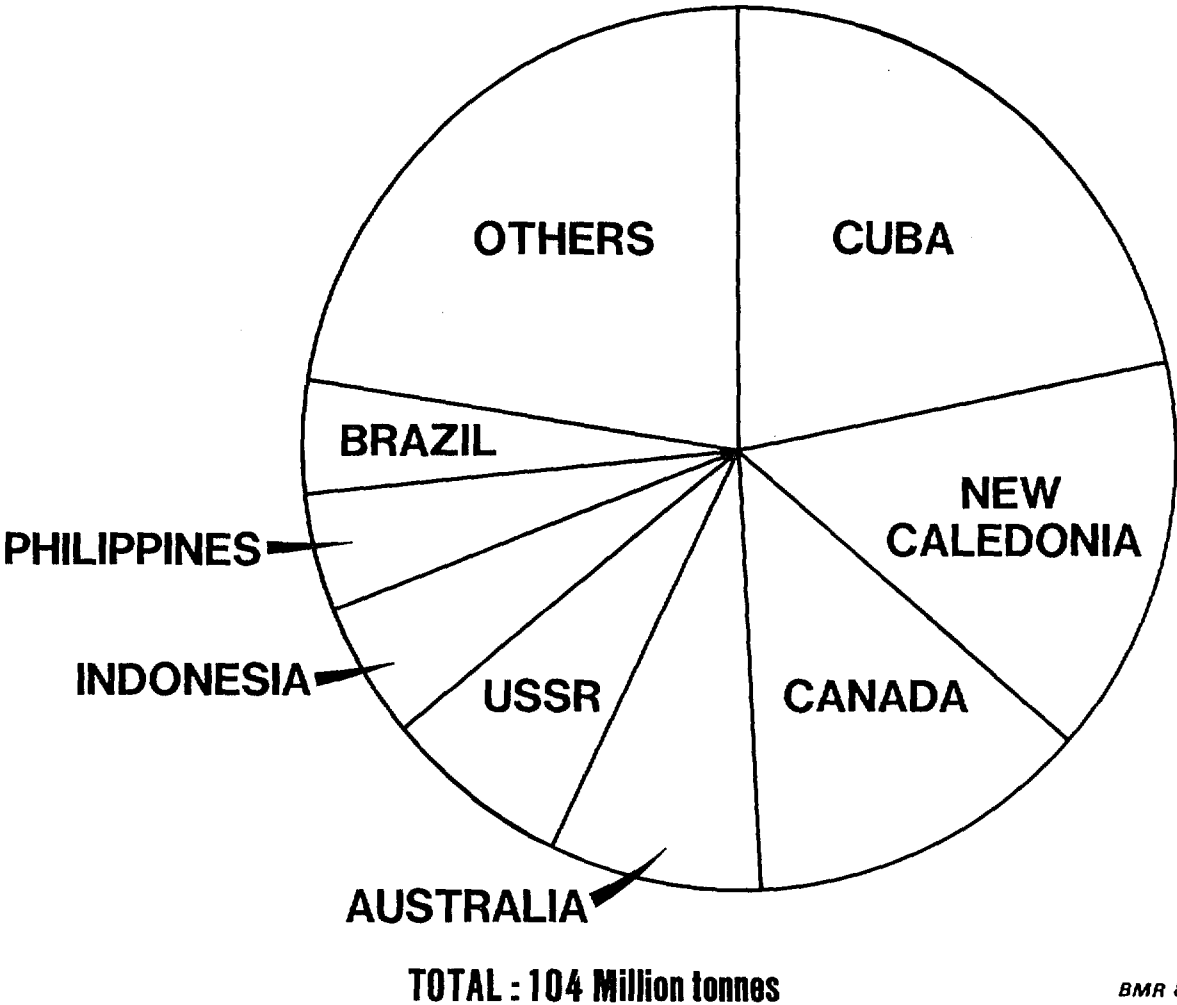


FIGURE 5

WORLD DEMONSTRATED NICKEL RESOURCES



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FIGURE 6