

Features

Could benefit future space program

China offers U.S. strategic metals

United Press International
HONG KONG — The United States is looking to China for strategic and rare metals vital to President Reagan's defense build-up plans and the long-term future of the space program.

China is thought to be rich in many metals needed by the United States and has been moving boldly to expand exports to the West, Western analysts in Hong Kong and in the United States said.

The Chinese have a double objective: to earn foreign exchange and to draw a closer strategic relationship with Western nations, said one Hong Kong-based analyst, a leading expert on China's economic development.

China signed contracts worth

close to \$300 million in the first half of this year alone for strategic and rare metal deliveries to the United States and western Europe, said the analyst, an estimate U.S. industry sources confirmed.

"They're in the market," Elliot J. Smith, president of Bache Halsey Stuart Metal Co., said in New York. "From time to time we do business directly with the Chinese government."

Smith said Bache has purchased quantities of titanium and indium from China for cash or forward contracts for industrial companies. Titanium is used in the manufacture of aircraft and satellites. Indium in the manufacture of electrical components and aircraft bearings.

The United States traditionally has filled most of its strategic metal import requirements from the Soviet Union and politically unstable nations in southern Africa.

U.S. purchases from China are expected to double this year compared with 1980, one estimate said.

China offers a desirable diversification of supply sources, analysts said, but possibly most important for President Reagan is that purchases of Chinese metals like titanium could brighten a tight supply picture for his defense program.

Although analysts express optimism about China becoming a "major" metals supplier, they caution over too heavy a reliance because of the always looming possi-

bility of political change. Further there is question over China's ability to develop transportation systems and processing industries to meet the demand for raw materials and ores.

The Hong Kong analyst said the Chinese "have yet to demonstrate to the U.S. government that they have the kind of supply we need."

"China has great long-term potential in strategic minerals, but it takes a hell of a lot of capital to exploit them," said Robert Kilmarx, a Washington-based mining industry expert and senior vice president of Fraser Associates, an international public affairs firm.

"It may be a question of decades if not centuries," said Kilmarx, a minerals consultant to Georgetown University's Center for Strategic International Studies, said.

Building a single major open pit mine, he said, takes eight years and \$1 billion to \$2 billion dollars.

Another U.S. analyst wonders whether China will have sufficient supplies in the future to export as well as meet its own growing domestic requirements as China's industrial capacity develops.

Metals which the United States must import and which Chinese are moving quickly to develop include bauxite, used to make toughened aluminum; titanium sponge, essential for alloys used in airplanes, spaceships and submarines; vanadium in the form of vanadium pentoxide, used in various nuclear applications to strengthen steel; chromium for making metal alloys and essential for the manufacture of steel, and germanium, an ingredient in sophisticated military electronics.

Jupiter's gravity will help satellite see poles of sun

United Press International
CHICAGO — The scientists have nicknamed it "Solar Polar" but a better tag might be the "Wrong-Way Satellite."

When a 1,100-pound solar research satellite is launched from a space shuttle in 1986, it will head — not for the sun — but for Jupiter, more than 390 million miles in the wrong direction.

Scientists gathered at the University of Chicago recently to test equipment for the mission.

They said the indirect approach is necessary to get the spacecraft out of "plane of the ecliptic" — the disc-shaped volume of space in which all the planets travel — and lift it above the sun.

"The reason there has never been a mission out of the plane of the ecliptic is that you have to have a spacecraft more powerful than has ever been designed or built or will be built," said University of Chicago physicist John Simpson, the head of the six-nation research team. "You have to supply enough push to get up there."

So the International Solar Polar

Satellite will take a two-year detour to Jupiter, where it will swing around the southern hemisphere, use the planet's gravity to pick up momentum, and race back above the sun.

By 1989, the satellite will be in orbit about as far out from the sun as the Earth, but circling from North Pole to South Pole, rather than around the equator.

That will give scientists a chance to make some unprecedented observations, Simpson said.

"With this probe you can look down at the sun and see all its phenomena going on simultaneously, whereas from earth you can only see one side at a time," Simpson said. "Things like solar flares) could be going on on the backside which eventually could affect the earth."

An observation post above the sun's magnetic poles will allow "a whole new range of interstellar observation," Simpson said. The sun's strong magnetic field attracts cosmic rays, charged particles and even interstellar dust. Analysis of all this will give scientists a better

understanding of the solar systems from which it originated, perhaps millions of years ago.

"It's a funnel to interstellar space," Simpson said.

The Solar Polar, a European Space Agency project, was to have been accompanied by a U.S. probe.

But, Simpson said, the Reagan administration has eliminated the American satellite from the National Aeronautics and Space Administration budget.

"Some of us have been fighting to get it back in the budget," Simpson said. "The Europeans are rightfully furious, because there were European experiments on the American satellite just as there are American experiments on the European craft. Certain Europeans are defining NASA as an unreliable partner."



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