Uranium market on downhill

By Eric Frankowski
The Daily Record News Group

CAÑON CITY -- When the U.S. Atomic Energy Commission licensed the Cotter Corp. mill to begin processing south of Cañon City in 1958, the federal government agreed to pay the company $8 per pound for processed uranium oxide, or yellowcake, the raw material used to make enriched fuel for nuclear weapons and reactors.

It was one of the only economically stable periods the mill, and the uranium industry, ever knew. For more than four decades, the uranium market has been significantly influenced by government manipulation and outside economic forces.

The marketplace is currently on a steep decline that shows no immediate promise of ending.

From a high in the 1970s of $50 a pound, last year, according to the U.S. Department of Energy, prices averaged only $10.15 a pound and were as low as $7.92 on the spot market for non-contract sales. That's 8 cents less than it was nearly a half-century ago. Meanwhile labor, processing costs and other expenses have continued to rise since 1958.

"The U.S. uranium mining industry has been hurt by factors that all mining operations must contend with," James Graham, the chairman of the Cotter board of directors, wrote in the March 2002 issue of the journal Mining Engineering. "These include more stringent environmental and labor laws, and new higher-grade, lower-cost deposits being developed outside the U.S. More significantly, uranium mining has always been subject to political whims. And the story is the same today."

According to Michael Amundson, a history professor at Northern Arizona University and author of "Yellowcake Towns," which chronicles the rise and fall of four uranium mining areas, the industry has undergone two boom-and-bust cycles.

"Basically, there have been two periods of massive demand, followed by massive build-up of stockpiles and then large oversupply," said Amundson.

The first coincided with the Manhattan Project and the development of the atomic bomb. Under the auspices of national security, the federal government funded a massive search for and development of uranium resources.

"The government totally subsidized the industry," Amundson said, "mining, milling, processing, even hauling."

Prices began to decline in the late 1950s and early 1960s as

the U.S. and its allies leveled off their weapons production.

According to Amundson, government-instituted programs such as the stretch-out program, which guaranteed government purchases of uranium over lengthened contract periods, provided some assistance to the struggling uranium industry.

"Basically, (the government) was trying to wean them along until atomic energy took off and demand recovered," he said.

But in 1964, the oversupply problem was exacerbated when Congress passed the Private Ownership of Special Nuclear Materials Act. The new law, which allowed industry, rather than the government, to own nuclear fuel, essentially ended the subsidies and turned uranium mining and milling over to the free market. Soon after, suppliers had saturated the market and prices dropped.

The recovery began in the next decade as more nuclear reactors came on line and orders for additional ones accumulated. Demand began to rise. When Arab countries instituted an oil embargo in 1973, the ensuing energy crisis forced prices for energy to skyrocket.

"That made nuclear power much more attractive," said Amundson. "There was a huge demand for uranium"

According to the federal Energy Information Administration, in that year alone, U.S. utilities turned in orders for construction of a record 41 nuclear power plants.

The uranium market hit its peak in the mid-1970s, when the price for yellowcake soared to nearly $50 a pound on the spot market -- the equivalent of $90 a pound in 2000 dollars.

But the momentum could not maintain itself.

When a reactor at the Three Mile Island nuclear power plant in Pennsylvania partially melted down in March 1979, the nation woke up to environmentalism and the risks of nuclear power. By the time a reactor at the Chernobyl plant in the Ukraine failed in April 1986, releasing tons of radioactive material into the atmosphere, utilities had already cancelled orders for nearly 100 new reactors that had been planned a decade earlier.

The exact opposite was occurring on the supply side. From 1959 through 1974, the U.S. government upheld an embargo on foreign uranium imports. By law, all the fuel for nuclear reactors had to be mined, milled and fabricated domestically.

In October 1974, the U.S. government announced that it would lift the embargo and begin allowing imports in 1997, and as a result, U.S. energy companies increasingly began to look outside the country for cheaper sources of uranium.

"After the 1970s, utilities realized that it was cheaper to

import uranium," Amundson said, "because there were no environmental laws overseas and the labor was cheaper."

In fact, the state of the U.S. uranium market today, according to a report presented to Congress in 2001 by the federal Office of Nuclear Energy, Science and Technology, "is primarily the result of competition from low-cost producers with access to high-grade uranium deposits, especially in Australia and Canada."

Oversupply worsened when the Soviet Union collapsed in 1991, flooding the market with millions of pounds of stockpiled uranium, which drove down the price for domestically milled yellowcake even further.

Two years later, to help dismantle Russia's aging arsenal of nuclear weapons -- and to keep material for building bombs out of the wrong hands -- the U.S. government signed an agreement to turn weapons-grade uranium from 4,500 warheads into a less-enriched form suitable for nuclear power reactors. Signed in February 1993, the so-called Megatons to Megawatts program calls for the United States to buy a total of 500 metric tons of highly-enriched uranium -- equivalent to about 400 million pounds of yellowcake -- through 2013.

And finally, according to Graham, "the privatization of the United States Enrichment Corp. was the straw that broke the back of the U.S. uranium industry."

Congress authorized USEC's creation through the Energy Policy Act of 1992. Its mission, with the strategic defense needs of uranium decreasing, was to make the enrichment end of the nuclear fuel cycle more cost-efficient and profitable than the federal government could. When USEC was finally privatized in July 1998, it took over government stockpiles of uranium and saturated the market even further.

As of the end of 2001, there were currently 103 nuclear reactors operating in the United States -- 435 worldwide -- collectively generating about 20 percent of the nation's electricity needs. Although 10 U.S. reactors have been decommissioned since 1991, the amount of electricity they produce has increased 26 percent, from 612.6 billion kilowatt hours to 768.8 billion hours.

The U.S. nuclear industry purchased a total of 55.4 million pounds of uranium oxide in 2001, according to a federal Energy Information Administration report, although 76 percent of it came from foreign sources.

And over the next decade, meeting the as-yet unfulfilled fuel needs of those nuclear reactors will require an additional 354.4 million pounds of uranium.

Still, there is little good news in that for Cotter and the few other licensed domestic uranium mills.

According to the Energy Department's updated 2001 Uranium Industry Annual report, there were only four uranium mills and plants operating in the United States by

the end of June 2002, down from 11 just five years earlier. Three of those ran in situ processes that leach uranium directly from the ground, making traditional milling obsolete.

Production fell significantly in that five-year span, from 6.32 million pounds of uranium oxide in 1996 to only 2.64 million pounds last year, a 58 percent decline and the lowest level of production since 1953. More to the point, only 184,000 pounds came from conventional mills -- 82 percent below the level processed in 2000, and all of that was from reprocessing waste and mine water for uranium.

In other words, not 1 ounce of uranium produced in the United States last year came from the conventional milling of ore. Consequently, at the beginning of this year, all six facilities licensed to mill uranium conventionally in the United States were technically inactive.

"Looking 15 years into the future -- assuming market conditions remain similar to today's -- the situation is one that cannot be sustained," Graham wrote.

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