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## **The American uranium renaissance - back from the brink**

The uranium industry in the United States has experienced quite a rollercoaster, having led the world in output through the 1970s only to decline to near-death status in the early part of this decade.

The dramatic global nuclear renaissance coupled with twenty years of neglect and underinvestment in the front-end fuel cycle has sparked a long-awaited parallel renaissance of the uranium industry worldwide.

With higher prices and a stable outlook providing the necessary support for new investment, how is the US uranium industry responding to this opportunity and what challenges remain?

This paper will briefly provide some historic perspective, but will focus on the current state of domestic US uranium supply and its potential for growth. Emphasis will be placed on the strengths and weaknesses of US production and a high level look at developments in the various producing states or those with uranium potential (Wyoming, Utah, Colorado, Nebraska, Texas, New Mexico, Arizona, South Dakota).

### **Origins/emergence of the US uranium industry**

The history of US uranium production parallels that of the broader global industry in that it has gone through four major periods:

1. Pre-1950: uranium for strategic military needs - government incentives to locate and produce uranium.
2. 1950-1980: the birth of commercial nuclear power - transition from nuclear weapons to electricity generation - "Atoms for Peace".
3. 1981-2003: the "Middle Ages" - stagnation of nuclear power and growth of the anti-nuclear movement - reactor cancellations and no new orders.
4. 2004-present: nuclear renaissance - global realization of the benefits of nuclear power to meet energy needs in an environmentally responsible manner.

### **1. PRE-1950: URANIUM FOR STRATEGIC MILITARY NEEDS**

This period was characterized by a military urgency to find and secure reliable uranium supplies which could support the development and deployment of nuclear weapons. In the US, the effort for uranium procurement was accelerated in 1941 in support of the Manhattan Project. The Army Corps of Engineers were tasked with this responsibility and concentrated on the carnotite deposits of the Colorado Plateau (the region of the Western United States which encompasses large parts of Colorado, Utah, New Mexico and Arizona). Further extensive examination of this area was conducted through drilling and airborne geophysics by the Atomic Energy Commission (AEC). The 1946 Energy Act provided AEC incentives for high grade uranium production and triggered a great prospecting boom that resulted in hundreds of small underground mine start-ups. A Colorado Raw Materials office was established by the AEC in Grand Junction, along with an Exploration Branch. With the beginning of the arms race with the Soviet Union in 1948, the AEC decided to guarantee a market for 0.10% uranium ore. To help facilitate this boom, the US government provided a mill at Monticello, Utah and through the US Geological Survey, drilled some 130,000 feet (39,600 m) of exploration hole footage. By 1949, total exploration drilling amounted to 413,000 feet (125,900 m) and three conventional mills were in operation.

### **2. 1950-1980: THE BIRTH OF COMMERCIAL NUCLEAR POWER**

This period, which was immortalized by President Dwight D. Eisenhower's "Atoms for Peace" speech to the United Nations in 1953, saw the exciting expansion of the US uranium industry to the position of global leader.

This was the "romantic period" of US uranium production where many colorful stories come to mind. For example:

- New Mexico's uranium rush caught fire in 1950 when Navajo Native American Paddy Martinez crawled under a limestone ledge for a nap during a rainstorm at Haystack Butte near Grants, New Mexico. Awakening he headed into town to grab a drink in a local tavern, which just happened to be occupied by some uranium prospectors comparing Geiger counters. Brushing the yellow dust off his Levi jeans, Paddy made instant friends who badly wanted to know where he came in from.

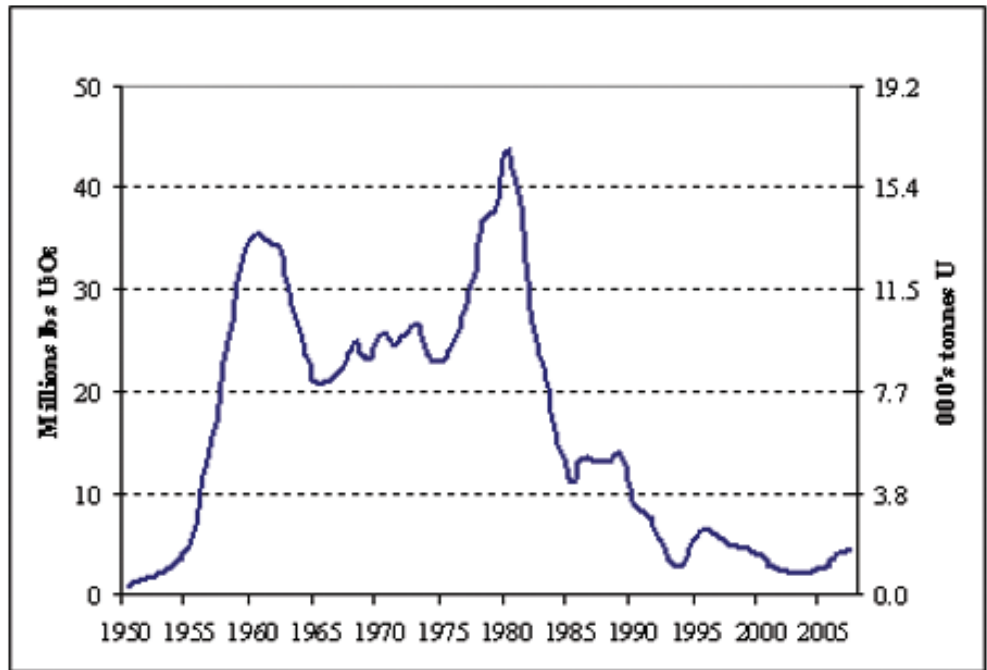


Figure 1. Historical production of uranium in the US

- Colorful “down and out” prospector Charlie Steen became an overnight millionaire with his discovery and development of the Mi Vida mine south of Moab, Utah in 1952.
- In 1953, Neil McNeice and his wife were interrupted by a Geiger counter gone crazy during an antelope hunting trip, discovering the LuckyMc deposit in the Gas Hills of Wyoming. Western Nuclear followed up with the first operating mill in that state in 1957.
- Significant high grade production commenced at the Schwartzwalder mine near my home town of Golden, Colorado.
- Texas discoveries were made in 1954 when widespread use of gamma logs were used in oil and gas wells and other radioactive anomalies were discovered by airborne surveys.

While the 1950s uranium rush was triggered by the strategic military requirements for domestic supplies, this cooled with the government's phased decisions to back away from its buying programs as sufficient weapons uranium inventories had been accumulated.

However, the commercial uranium heyday was expanding as the peaceful uses of nuclear energy (primarily power generation) began to be realized. In the United States, for example, there was hardly an electric utility company that had not ordered, or at least speculated on adding nuclear generation to their

grid (this was the “too cheap to meter” nuclear boom). In fact, a 1972 Atomic Energy Commission forecast estimated that between 825 and 1,500 gigawatts of nuclear capacity in the US was expected to be in place by 2000 (about 100 gigawatts exist today). The corresponding projections of uranium prices exceeded \$100 per pound as supplies of uranium were secured even before the ink had dried on the nuclear plant orders (many of which never materialized). You see this represented in the production curve exceeding the demand curve based on that ultimately unfounded optimism.

To put this into perspective, the year 1980 saw record US uranium production exceeding 44 million pounds (16,920 tonnes U) (Figure 1). Employment in the uranium industry peaked at over 21,500 people in 1979 and expenditures on exploration and development drilling topped out at \$170 million in 1978.

Nuclear power did grow dramatically worldwide over this period, but much less than the predictions, which caused the industry to produce far more than would be ultimately needed by the world's nuclear reactors. It is this profound development, and that of the huge military build up of inventories that preceded it, that would set the stage for twenty years of inventory drawdown which has only now begun to move back towards equilibrium.

### 3. 1981-2003: "MIDDLE AGES"

As the 1970s came to a close, the uranium rush was beginning to lose some of its lustre. Confidence in the nuclear industry was shaken by the partial core meltdown at Three Mile Island in Pennsylvania. Despite there being no injuries, illness or loss of life, the resulting re-engineering of existing plant designs and increased regulatory oversight would cause many reactor projects to fall into prolonged construction delays. Public opposition mounted as the anti-nuclear movement took hold. The high interest rate environment of the early 1980s and these construction delays combined to cause the costs of new reactors to skyrocket to unacceptable levels. As we all know, a number of projects were abandoned at various stages of partial completion and additional previously ordered plants were cancelled outright.

The secondary, or spot market, emerged as brokers sought out utilities with excess, or unneeded, uranium and wheeled it in to willing buyers at deeply discounted prices. The result was a prolonged period of inventory-driven depressed prices which bore no relation to the production economics of uranium mining. During this period, the production industry was severely contracted, having peaked worldwide at 177 million pounds  $U_3O_8$  (68,080 tonnes U) in 1982 and falling to a low of 81 million pounds  $U_3O_8$  (31,160 tonnes U) in 1999. With the outlook for nuclear looking meager at best and uranium prices languishing below \$10 per pound, operating mines simply shut down and worldwide exploration expenditures dropped dramatically.

Nowhere was this downturn felt more dramatically than in the US, where uranium production fell to a low of 2.0 million pounds  $U_3O_8$  (769 tonnes U) in 2003 (a 95% drop from the 1980 peak). This surviving output was largely attributable to the production from the Cameco operations in Wyoming and Nebraska. The situation was so pathetic in 2003 that the US Department of Energy's Energy Information Administration (DOE EIA) was unable to publish a number of industry data points in their annual survey as they would simply be reporting confidential, company-specific, figures. While these operations benefited from the financial strength and long-term strategic view of Cameco, many other producers were not as fortunate. Conventional mines were especially hard hit as this higher cost production could not compete with the

secondary market (including US government inventories) and the new supplies emerging from Canada and Australia. Interestingly, the impact was not immediately felt. Exploration expenditures dropped off precipitously in the face of falling prices, but US production fell more steadily over the course of the 1980s. This was due to the fact that the capital costs of these mining and milling facilities were sunk and a number of producers simply hung in there, albeit marginally pricing themselves out of business, once higher priced legacy contracts began to expire. Other producers continued to operate at reduced levels rather than embark on costly reclamation efforts.

Those who were able to survive this period were temporarily rewarded in the mini-boom of 1995/96 when production spiked up to 4.8 million pounds  $U_3O_8$  (1,846 tonnes U) in 1998. Consumers should take note that even with the meager positive price signals sent during this period (\$16.55 in June 1996) a meaningful production response occurred, just as is happening in a most robust manner today.

### 4. 2004-PRESENT: NUCLEAR RENAISSANCE

That brings us to the present and begs the question of how the American uranium industry has responded so far to the nuclear renaissance. A review of the DOE EIA 2007 production statistics (*Table 1*) would indicate that it is doing quite well and again responding to the price signals.

- Surface drilling - 5.1 million feet (1.6 million m) drilled - up 325% from 2004;
- Drilling expenditures - \$67.5 million spent - up 535% over that period;
- Uranium production - 4.5 million pounds  $U_3O_8$  (1,731 tonnes U) - a 100% increase in three years;
- Employment - 1,231 person years - up from 420 in 2004.

Year to date numbers for 2008 (1st half) indicate a sluggish start for the year (17% shortfall to the comparable period in 2007), but production was reported from:

- One conventional mill:
  - Denison's White Mesa Mill in Utah
- Five in-situ recovery operations:

Table 1. Summary of production statistics of the US uranium industry

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003(E)	2004	2005	2006	2007
Surface Drilling (M feet)	1.1	0.7	1.3	3.0	4.9	4.6	2.5	1.0	0.7	W	W	1.2	1.7	2.7	5.1
Drilling Expenditures (\$ M)	5.7	1.1	2.6	7.2	20.0	18.1	7.9	5.6	2.7	W	W	10.6	18.1	40.1	67.5
Uranium Mine Production (Mlbs U <sub>3</sub> O <sub>8</sub> )	2.1	2.5	3.5	4.7	4.7	4.8	4.5	3.1	2.6	2.4	2.2	2.5	3.0	4.7	4.5
Employment (person - years)	871	980	1107	1118	1097	1120	848	627	423	426	321	420	648	755	1231
Industry Average Spot Price (\$/lbs U <sub>3</sub> O <sub>8</sub> )	10.05	9.33	11.46	15.59	12.03	10.26	10.23	8.18	8.82	9.88	11.55	18.60	28.67	49.60	99.29

Expenditures are in nominal US dollars  
E = Estimated data

W = Data withheld to avoid disclosure of individual company data  
Source: Energy Information Administration

Table 2. US forward-cost uranium reserves by state, 31 December 2003

	US \$30/lb U <sub>3</sub> O <sub>8</sub>		US \$50/lb U <sub>3</sub> O <sub>8</sub>	
	Grade <sup>a</sup> (%U <sub>3</sub> O <sub>8</sub> )	U <sub>3</sub> O <sub>8</sub> (M lbs)	Grade a (%U <sub>3</sub> O <sub>8</sub> )	U <sub>3</sub> O <sub>8</sub> (M lbs)
Wyoming	0.129	106	0.076	363
New Mexico	0.280	84	0.167	341
Arizona, Colorado, Utah	0.281	45	0.138	123
Texas	0.077	6	0.063	23
Other <sup>b</sup>	0.199	24	0.094	40
Total	0.178	265	0.105	890

<sup>a</sup> Weighted average % U<sub>3</sub>O<sub>8</sub> per ton of ore

<sup>b</sup> Includes California, Idaho, Nebraska, Nevada, North Dakota, Oregon,

South Dakota and Washington

Source: Energy Information Administration

- Cameco's Smith Ranch/Highland in Wyoming
- Cameco's Crow Butte in Nebraska
- Mestena's Alta Mesa in Texas
- URI's Vasquez and Kingsville Dome in Texas.

contributing a growing share of world supplies. Specifically, the NRC expects to receive some 22 proposals to expand, restart, or launch new in-situ recovery (ISR) uranium mines across the Western US in the coming years, 19 of them in Wyoming.

## Prospects for growth

Given the historic prominence of the American uranium industry, what can we expect from the US going forward? If the licensing expectations of the US Nuclear Regulatory Commission (NRC) are a good indication, then we should see the US industry

This is not surprising as the DOE reports that US uranium resources of 890 million pounds U<sub>3</sub>O<sub>8</sub> (342,300 tonnes U) rank it 4th globally behind Australia, Canada and Kazakhstan. Wyoming leads the way at 363 million pounds (139,600 tonnes U) (assuming a \$50 per pound cost threshold or lower). New Mexico, having led US production for many years, follows in second place, but is lacking any current uranium production. The Colorado Plateau (Colorado/Arizona/Utah) follows in third with 123 million pounds (47,310 tonnes U) of resources (Figure 2 and Table 2).

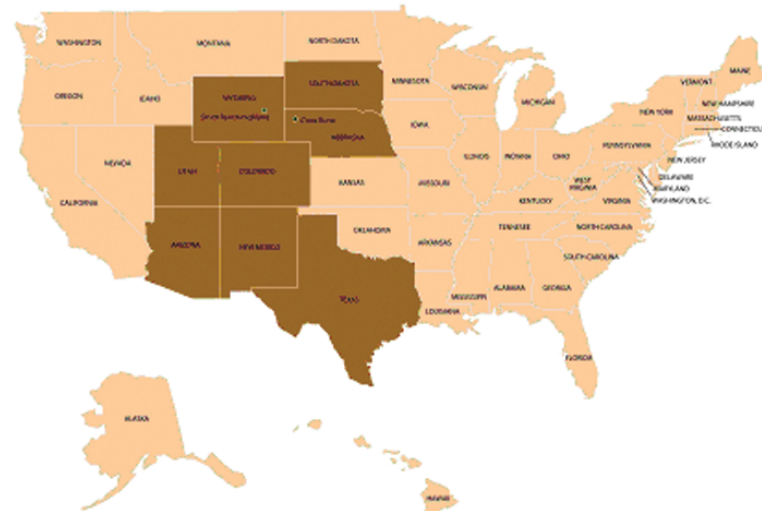


Figure 2. Map of the United States illustrating states with current or future uranium production (dark shading)

## Regional highlights

Time will not permit a detailed presentation of each of these potential and existing operations, but thumbnail sketches will provide an overview of companies and their projects by state. I encourage you to follow up with companies themselves for more detailed information. I also want to make clear that

inclusion or omission of specific projects in this presentation should not be seen as an endorsement (or otherwise) by Cameco. Rather, I have simply tried to capture the most prominent and/or advanced projects based on publicly available data.

## WYOMING

This ruggedly independent state has a long history with, and appreciation for, the natural resource industries. Very strong public and political support exists for present and expanded uranium operations. It is an "Agreement State", but only with regards to the Federal Environmental Protection Agency (EPA) which allows Wyoming to regulate those EPA standards (through the Wyoming Department of Environmental Quality). NRC has jurisdiction for other regulatory requirements such as the Radioactive Materials License.

- Cameco - Smith Ranch/Highland: The largest uranium operation in the United States. Highland has achieved continuous ISR operations since 1987, and consolidated with Smith Ranch in 2002 (acquired from Rio Algom). Production is currently about 2 million pounds  $U_3O_8$  (769 tonnes U) annually, but we are in the process of expanding output by moving into a newly permitted satellite area and have submitted a plan to increase permit boundaries by 8,700 acres. As of 31 December 2007, the Smith Ranch/Highland operation had reserves of 12 million pounds  $U_3O_8$  (4,620 tonnes U) and resources of 6.9 million pounds  $U_3O_8$  (2,650 tonnes U).
- AREVA - Christensen Ranch/Irigary: Idling on standby and coming very close to being sold in 2001, AREVA has now notified the NRC of its intent to restart production at a 730,000 pounds  $U_3O_8$  (281 tonnes U) annual capacity.
- UraniumOne - Moore Ranch: Has begun permitting properties in the Powder River Basin for possible production by 2013.
- Uranerz Energy - Nichols Ranch/Hank: Uranerz estimates about 4.4 million pounds (1,690 tonnes U) of combined reserves and expected production of 750,000 pounds (290 tonnes U) per year beginning in late 2010/early 2011.
- Ur Energy - Lost Creek/Lost Soldier: These two operations are estimated to produce 1 million pounds  $U_3O_8$  (385 tonnes U) each with startup anticipated in the 4th quarter of 2009.

- Strathmore Minerals - Pine Tree/Reno Creek: The company expects to launch in-situ operations in the Powder River Basin and the Gas Hills of Wyoming in 2010.
- Rio Tinto - Sweetwater Mill: The only conventional, NRC licensed, mill remaining in Wyoming (maintained on stand-by while looking for buyers).

## NEBRASKA

A largely agricultural (corn producing) state which went through a significant learning curve when uranium was discovered and developed in the rural far western part of the state in the early 1980s (requisite regulatory bodies did not even exist at that time). These deposits and those of South Dakota represent an extension of the greater Wyoming uranium district.

- Cameco - Crow Butte: Steady operations since start up in 1986. Currently producing at just less than 900,000 pound (350 tonnes U) annual capacity and looking to expand permit boundaries to the North Trend Property. As of December 31, 2007, the Crow Butte operation had reserves of 5.9 million pounds  $U_3O_8$  (2,270 tonnes U) and resources of 8.5 million pounds  $U_3O_8$  (3,270 tonnes U).

## TEXAS

This is another state with an appreciation of natural resources and the extractive industries. It is considered a generally favorable jurisdiction in which to license, and operate, in-situ uranium facilities. Texas is a full Agreement State with regards to NRC and EPA licensing which means that the Texas regulator can issue nearly all required permits and licenses.

- Mestena - Alta Mesa: This South Texas ISR facility is steadily producing at the annual rate of 1 million pounds (385 tonnes U) having commenced operations in 2005.
- Uranium Resources - Vasquez, Kingsville Dome and Rosita: URI has produced over 7 million pounds (2,690 tonnes U) in Texas since 1977. Multiple satellites feed a central Kingsville Dome processing plant at a rate of 400,000 pounds (154 tonnes U) per year (targeting between 1 and 2 million pounds (385-770 tonnes U) annually).

- Uranium Energy - Goliad/Nichols: UEC has received its draft mine permit which will allow wellfield testing with an eye toward commercial production of 1 million pounds  $U_3O_8$  (385 tonnes U) starting up in 2010.
- UraniumOne - Hobson/Palangana: Hobson plant is currently undergoing major renovations to resume operations as a central processing plant (1 million pound capacity).

## NEW MEXICO

The historic leader in US uranium production with over 340 million pounds  $U_3O_8$  (130,800 tonnes U) produced from the Grants District of Northwestern New Mexico. No current production, but enormous reserves and potential. Permitting challenges exist despite status as an NRC/EPA Agreement State (water rights and native land issues dominate).

- Uranium Resources - Church Rock/Crown Point/Roca Honda/Nose Rock: URI recently backed away from a purchase of the old Rio Algom/ BHP Billiton licensed mill site due to financing challenges. The plan would be (and still is) to build a regional mill which could process ore from a number of nearby deposits.
- Strathmore Minerals - Church Rock/Roca Honda/Dalton Pass/Nose Rock: Strathmore controls a number of well-known historical deposits which were discovered in the 1970s and 1980s by prominent companies such as Kerr McGee, Phillips 66, Pathfinder, and Rio Algom. Some are currently in the permitting stage.
- Uranium Energy: Significant land holdings in Cibola and McKinley Counties.
- Laramide Resources - La Jara Mesa: Mine permit application submitted and will undergo Environmental Impact Statement.
- Rio Grande Resources (GA) - Mt Taylor: Large known reserves in excess of 125 million pounds (48,080 tonnes U). Previously permitted and developed mine/mill complex. Seeking discharge permit to reopen the mine.
- Neutron Energy - Cebolleta/Juan Tafoya/Ambrosia Lake: Land holdings with potential for further exploration. Evaluating construction of conventional mill.

## COLORADO

Despite historical roots as a state founded upon mining, a strong environmental, anti-mining bias exists (perhaps anti-development in general). Legislative steps have been taken to block uranium development and legal challenges have been raised with regards to the recent auctioning of US government uranium leases. Permitting may prove to be a challenge.

- Powertech - Centennial: Environmental baseline studies and permitting activities are currently being performed with the goal of constructing a 1 million pound  $U_3O_8$  (385 tonnes U) capacity operation with start up by the 4th quarter of 2010. Belgian utility Synatom has taken an 11% equity interest in Powertech.
- Energy Fuels - Pinon Ridge: Energy Fuels plans to license and construct a new uranium/vanadium mill on a greenfield site in Montrose County (western Colorado) with a planned capacity of 2.6 million pounds  $U_3O_8$  (1,000 tonnes U) annually. Extensive land holdings on the Colorado plateau are being assembled to provide mill feed.
- Cotter Corp - Canon City: 1 million pound  $U_3O_8$  (385 tonnes U) annual capacity mill maintained on standby.

## UTAH/ARIZONA

Historically prominent uranium producing region whose largely conventionally mined reserves were hard hit by the period of prolonged depressed prices.

- Denison Mines - White Mesa/Henry Mts/Arizona Strip: The White Mesa Mill has produced over 30 million pounds  $U_3O_8$  (11,540 tonnes U) and 33 million pounds of vanadium since start up in 1980. The mill is fully operational and licensed to 8 million pounds  $U_3O_8$ /yr (3,080 tonnes U). Roughly 1.2 million pounds (462 tonnes U) is expected in 2008. Mill feed is supplied from Denison operations on the Colorado Plateau and ore is purchased from independent miners (also alternate feed). Denison is seeking its final permits to commence production from the Arizona I deposit later this year.
- UraniumOne - Shootaring Canyon Mill: Standby and maintenance. Last conventional mill to be built in the US having been commissioned and operated for only four months in 1982.

## SOUTH DAKOTA

Western edge of the state is an extension of the Wyoming uranium district.

- Powertech - Dewey Burdock: Environmental baseline studies and permit preparation is underway with goal of constructing a 1 million pound  $U_3O_8$  (385 tonnes U) ISR operation with start up in late 2010 or early 2011. Inferred resource of 7.6 million pounds  $U_3O_8$  (2,920 tonnes U).

## OTHER STATES

- Virginia - Coles Hill: Potentially the largest undeveloped uranium deposit in the United States at 110 million pounds  $U_3O_8$  (42,310 tonnes U). Owners are eager to develop, but Commonwealth of Virginia has had a mining ban in place since 1982.
- Florida/Louisiana: Entities have been in discussion with phosphate producers to reinstate uranium extraction circuits which were a major source of US uranium in the 1980s. This could be a very significant resource, but costs of production may be prohibitive with existing technology and required capital investment.

## FACTORS DETERMINING SUCCESS OR FAILURE

The US miners, of course, face a number of advantages and challenges. In assessing these, one needs to be cautious when generalizing about such a large and diverse country as the United States. Each individual state enjoys a great degree of autonomy and certainly possesses its own geography, geology, population, social and economic issues. For example, individual states may vary as to their approach to royalties, taxes or regulatory requirements (what could be an advantage in one state could very well be a disadvantage in another). Having said that, the US industry can generally claim the following advantages:

- Abundance of identified (“historic”) reserves and resources - This is significant given the 20 year downturn in uranium exploration investment that has failed to replenish the new project pipeline worldwide.
  1. US uranium production did not drop off over this

period because we ran out of uranium. Rather the price of uranium simply made it uneconomic to exploit a number of identified deposits.

2. The huge uranium frenzy of the 1950s, 60s and 70s saw not only an enormous amount of production, but also provided an extensive exploration portfolio of thoroughly delineated deposits that today’s uranium companies have cleverly seized upon. For example, much of the drilling data which forms the basis of a number of these companies was either publicly available, or acquired at minimal cost, on leases that had simply been allowed to expire by their previous owners.
3. This has allowed a number of these prospective junior companies to fast track past the grassroots exploration stage to a point where they can now face permitting and development stages on known deposits with the reasonable potential of nearer term production.

- Predominance of sandstone hosted deposits amenable to in-situ recovery - The ability to exploit the majority of identified US deposits by in-situ methods presents a number of advantages.

1. Economically competitive method of extracting lower grade deposits.
2. Low capital and operating costs.
3. Small workforce.
4. Environmental advantages - no mill tailings, waste rock.
5. Dispersed satellite wellfields able to feed central processing plants.

- Political and regulatory environment - This does not mean that local opposition may present challenges for permitting in certain areas, however the rules, regulatory framework, and ownership rights are well entrenched in a free market economy with an established legal system. A case in point is the current initiative by the US NRC to establish a Generic Environmental Impact Statement which attempts to streamline the processing of permit applications which are being submitted to the regulator. I would like to think that this is the mining industry’s equivalent to the COL application process on the new reactor side. The US industry’s message to the NRC on this initiative is to implement it as quickly as possible so as not to delay applications which are in process, and resist the temptation to change the rules once the process is put in place.

## Challenges:

The US industry will of course not be without challenges that the creativity and hard work of uranium miners will have to overcome.

- Localized opposition to mining (or development in general) - Even as the benefits of clean, safe nuclear power are being more widely recognized, we are seeing pockets of resistance to new mine development. I am referring to Colorado, Arizona, and the Navajo Indian lands in New Mexico. Even our expansion plans at Crow Butte in Nebraska are being challenged by an intervener who is located more than 50 miles from our operation and has no logical or scientific basis for a claim of legal standing. Furthermore this year, an Arizona Congressman passed an emergency measure to have the US Interior Secretary withdraw public lands adjacent to the Grand Canyon from uranium development. This impacted 1,100 valid mining claims on over a million acres (a very troubling not-in-my-backyard precedent).
- Workforce challenges - Many US companies are reporting challenges in staffing both experienced mine developers and the skilled crafts and trades at the operations level. The twenty-year downturn in the industry, coupled with the rapid, hyper-growth, turnaround, has presented unique challenges. This is especially true in light of workforce competition from other industries such as oil and gas (this has certainly been Cameco's experience in the Powder River Basin of Wyoming). We also have the challenge of "knowledge transfer" to the next generation that will guide our industry forward. A great deal of the leadership of the US uranium mining companies are, as you could say, "getting up in years". These veteran professionals, many of whom were pioneers of our business, have been the entrepreneurial vision and technical expertise behind many of the emerging US companies and projects. I know they all feel very fortunate to finally see their uranium dreams being realized, but they would also like to retire someday as well.
- Technical challenges - As straight forward as the ISR process is, many technical hurdles will face even the experienced producer, let alone the new start-up. This should not surprise us, but should be taken into consideration when projecting development and start-up timelines. It is here that the producer with an operational track record has the valuable experience to overcome those inevitable challenges.
- Market risk - A number of the US projects mentioned here are extremely sensitive to the health

of the uranium market and level of spot and long-term prices. Uranium price expectations are a critical input into the project feasibility stage as they drive assumptions on financing, base load customer contracting and ultimate cash flows. Decisions to go forward, or not, will be made off these price signals. As healthy as the overall market is today, even the recent drop to \$59 per pound in the published spot market has resulted in a much more difficult financial market for juniors. The flow of funding has slowed dramatically.

## Conclusions

- Higher uranium prices will support more US production centers which might not have been feasible in the period of depressed market prices.
- Production will come from a diverse geographic distribution of regions/states which are generally supportive of expanded uranium mining (some more than others).
- Environmentally friendly and cost competitive ISR will comprise the majority of new production (but conventional mining is also making a very significant comeback and contribution).
- Potential for nearer term development exists with significant reserves and resources identified from exploration capital/efforts spent in the previous "boom" years.
- The stable US political and regulatory environment will be appealing to capital investors evaluating riskier alternatives.
- For all these reasons, global nuclear utilities should find a welcome home for US uranium in their supply portfolios.

As the United States' largest uranium producer, I can say that Cameco values the stability, competitiveness, and environmental leadership that our Nebraska and Wyoming operations provide our shareholders and our customers.

We encourage the global nuclear energy industry to give the US uranium industry another look. While the US miners might not be producing to the levels which led the world in the 1960s and 1970s, we believe that the American uranium renaissance will play an important role in a worldwide expansion of nuclear power.