

Ottawa pushing sale of baby nukes

By RICK BOYCHUK of The Gazette (Gazette, 22 May 1986)

Last year, shortly after Mark Gordon was elected president of an Inuit-owned financial corporation, the boys from Atomic Energy of Canada Ltd. called up for a meeting. Over lunch, two men from AECL's Montreal office made a pitch to sell the Inuit a nuclear reactor. A small one. Just big enough to power a village of up to 6,000, a factory, mine or hospital, or perhaps a shopping mall.

"They said it was very different technology from the big Candu (the first commercial electricity-generating reactor developed by AECL)," said Gordon, who heads Makivik Corp., which administers the funds awarded the Quebec Inuit under the James Bay and Northern Quebec Agreement.

"They said the little one burns very slowly at low temperatures. It would be easy to maintain.

"They said it's so safe you wouldn't even need a full-time operator."

After years of design work and marketing studies, AECL has begun beating the bushes for buyers for its new reactor, the latest development in nuclear technology, which can produce electricity and hot water for heating buildings.

AECL is trying to sell the reactors now to small northern communities, large institutions in southern and northern Canada, and companies involved in mining and urban industries, but it will take at least two years to build the first one.

Critics of the nuclear industry say the concept of baby nukes powering malls is nightmarish.

Norm Rubin of Energy Probe in Toronto said the idea is "crazy. They want to run these things unattended. "If there was a failure, there is no way you could evacuate a shopping mall or hospital in time. It is one of the dumbest ideas I've heard in a long time."

Gordon Edwards, president of the Canadian Coalition for Nuclear Responsibility in Montreal, said the public will be given assurances by AECL that these reactors are safe.

"But we have had enough experience with technology that we aren't so naive as to accept these assurances."

And Mark Gordon said the Inuit are not about to serve as AECL's guinea pigs by allowing the Crown corporation to install the new reactor, called the Slowpoke Energy System, in one of their communities.

"Let them put the first one in the south somewhere," Gordon said. AECL expects there will be considerable public opposition to the new generation of reactors. The April 26 explosion and reactor fire at the Chernobyl nuclear-power plant in the Ukraine undoubtedly has generated even more skepticism about the safety of nuclear energy. But AECL officials say their new reactor is as safe as the tiny research reactors, also called Slowpokes, that have been operating at four Canadian universities, including the Université de Montreal, since the early 1970s.

A brochure published by AECL for its clients touts the new Slowpoke, which stands for Safe Low Power Critical Experiment, as a "safe, reliable, economic and pollution-free" energy source.

The development of the new Slowpokes was based on some chilling reasoning about public opinion. John Hilborn, the AECL research scientist who designed the original Slowpoke, noted in a paper he delivered in 1981 at a meeting of the Canadian Nuclear

Society that fear of nuclear accidents and radioactive contamination "may hinder the widespread use of small reactors."

Yet, Hilborn said; "It is now well known that people will accept frequent, small disasters more readily than rare catastrophes."

Although the Inuit first heard at least three years ago that AECL was seeking information about the energy needs of their communities and that the Crown corporation was designing a baby nuclear reactor, their attempts to get information about the project drew a blank.

"They kept telling us it was just a concept," said Gordon.

Special unit

AECL official Metro Dmytriw said in a telephone interview this week that the company threw its marketing activities for the new reactor into high gear last spring after Finance Minister Michael Wilson announced the Crown corporation's research and development budget would be cut by half, to \$100 million annually, by 1990.

The corporation immediately formed a special business unit for the new reactors.

AECL marketing people have talked to the government of the Northwest Territories and the Inuit of Quebec, are doing a study of the energy needs of the community of Hay River in the Northwest Territories and have asked Hydro-Quebec officials whether they are interested in the village-size reactors for energy needs in northern communities.

AECL is talking seriously with China and South Korea, Dmytriw said.

The corporation is ready to commit a commercial unit any time although the prototype reactor under construction at AECL facilities in Manitoba won't be operational until September, he said.

Not a problem

That's not a problem, he said, because even if a buyer stepped forward tomorrow it would take about two years to do the engineering studies and construct it.

"By then we would have operating experience on our demonstrator unit," he said.

So far, all the hustling has produced a few bites, a few interested parties, he said.

Hydro-Quebec official Robert Brunette said the utility has not rejected the possibility of using Slow pokes in the north, but for the moment no one is actively studying the question.

AECL says the new Slowpokes are simply an upscaled version of the small research reactors that have proven so reliable.

Rubin, of Energy Probe, agrees that the research Slowpokes have been a success and are safe. But the new Slowpokes are a different beast altogether because they are 100 to 1,000 times larger and pose a much greater threat if they fail, he said.

Edwards, of the Canadian Coalition for Nuclear Responsibility, said the research reactors are used just to generate neutrons for research purposes and don't have any moving parts. But the new Slowpokes have pumps and valves and all sorts of plumbing that can fail.

Edwards and Rubin also argue that the fuel for the new Slowpokes will have to be replaced regularly, that the reactors will use much more fuel than the research Slowpokes and that the spent fuel will be highly radioactive.

Dmytriw said the research Slowpokes use about one kilogram of uranium fuel while the new Slowpokes will use about 160 kilograms of uranium.

According to documents obtained by The Gazette under the federal access-to-information law, AECL scientists believed in 1983 that the fuel would have to be replaced every two years.

Dmytriw said the scientists now believe the fuel will need to be replaced every five to eight years.

Dmytriw insists that the new Slowpokes will be so safe and simple to run that AECL hopes they will operate unmanned for weeks at a time.

But he acknowledges that the new reactors will generate radioactive gasses that will have to be vented into the air.

Radioactive buildup

The Atomic Energy Control Board, which regulates the nuclear industry in Canada, has set what it considers acceptable limits for such gas venting.

The venting would be done in controlled circumstances, Dmytriw said.

But Edwards said some of those gases may contain radioactive particles that remain radioactive for years and build up in the environment.

“It would be a problem that escalates over time,” he said.

The reactors also would have water filters that would accumulate radioactive particles and would have to be replaced regularly, Dmytriw said.

The filters, like the spent fuel and any other materials that become contaminated with radioactive particles, would be shipped in secure containers to AECL’s research stations at Chalk River in Ontario or Whiteshell in Manitoba.

There, the wastes would be stored temporarily until AECL and the federal government come up with a permanent waste-disposal site. Such a facility is not expected to be in operation until the 1990s at the earliest.

Cost factor

Rubin and Edwards say it is folly to start selling the new Slowpokes before Canada comes to terms with the nuclear-waste storage problem.

Dmytriw said the most attractive feature of the Slowpokes is the cost of the electricity produced.

“We will be able to compete anywhere in the land with heating oil, which costs 30 cents a litre. We can’t compete with natural gas. But we can also compete anywhere that electricity costs 25 cents to 30 cents a kilowatt-hour to produce. In southern Canada, Canadians pay about 3 cents to 4 cents a kilowatt-hour so we can’t compete. But in northern Canada electricity costs are in excess of 25 cents to 30 cents.”

Edwards said AECL’s cost estimates may not include all the money pumped into researching, developing and marketing the new reactor.

“The nuclear industry has always been heavily subsidized,” he said. “We have no evidence that the industry can stand on its own two feet. I’m skeptical that the costs they are quoting include all the costs they have incurred.”

Dmytriw wouldn’t say what the reactors are selling for. He did say that in calculating its cost-competitiveness, AECL spread the capital cost over 20 years - the expected lifetime of the plant - and factored in fuelling, operating and decommissioning (dismantling) costs. Edwards said those costs are just guesses. Nobody has ever completely decommissioned a reactor, so AECL can’t possibly know what it is going to cost, he said.

Edwards said the Slowpokes are a desperate gambit by AECL to maintain a position in the reactor market.

But the Inuit are not interested; Hydro-Quebec has put the issue aside and anti-nuclear members of the legislative assembly in the Northwest Territories gave AECL officials a rough ride when they tried to sell the Territories government on the idea.

The company may have a contingency plan.

Discussions only

Documents obtained by The Gazette show that as far back as 1982, AECL and the Department of National Defence were discussing the possibility of installing a Slowpoke at Canadian Forces Station Alert on the north coast of Ellesmere Island.

Dmytriw says there have been discussions with the defence department and nothing more.

“If we can’t show they are safe, then the military isn’t going to want them either.”

Dmytriw also says that AECL would have to jump through all sorts of regulatory hoops to install a reactor at Alert, just as it would if the company installed a reactor in southern Canada.

Feature on Slowpoke reactors misleading

Letter to the editor of The Gazette (25 May, 1986)

Jaro Franta, Montreal

Rick Boychuk’s feature on Slowpoke reactors was of such great length that an entirely satisfactory explanation of its inherent – as opposed to engineered – safety features could easily have been included.

Instead, we unfortunately got the usual Norm Rubin – Gordon Edwards diatribe and innuendo, sprinkled with token expert opinion.

This time however, the antinuclear duo have surpassed even the leading antinuclear group – the Union of Concerned Scientists – who have consistently advocated a switch from current reactor designs to precisely the kind of Process Inherent Ultimate Safety (PIUS) designs of which the Slowpoke is one.

The PIUS principle means that completely adequate core cooling is maintained by natural circulation of coolant when the generator side of the plant – with all its failure-prone pumps and valves – fails to function.

Those who say, “to run these things unattended... is crazy” (Norm Rubin of Energy Probe) are themselves deserving of such a description.

Unattended operation for weeks at a time may seem like a big deal to Rubin or Boychuk, but then they probably don’t know about the discovery of the (long since innocuous) remains of Mother Nature’s own nuclear reactors, underground in a uranium mine in the African republic of Gabon. These “baby nukes” operated unmanned for over a hundred thousand years, before shutting down about 1.7 billion years ago.

Equally nonsensical are Rubin and Edwards’ claims that the PIUS principle can not be extended to larger – indeed any size – reactors. Just recently the Swedes have come up with a Candu-size (500 MWe) PIUS design dubbed “Secure-P” (see Nuclear Science & Engineering International, December 1983).

By saying that this is impossible. Rubin and Edwards are essentially telling us that they haven't the faintest idea of what heat transfer and thermohydraulics is about.

Yawn! What else is new about these media lobbyists!

Sherbrooke hospital seeks nuclear reactor

SHERBROOKE (Gazette, 28 April, 1988) - Sherbrooke University Hospital wants to be the first institution in the country to acquire one of Atomic Energy of Canada Ltd.'s baby nuclear reactors.

Hospital director Normand Simoneau said a major increase in hydro rates, which will hit 77 Quebec hospitals this fall, is one of the reasons the hospital wants to install the mini-reactor.

AECL official Pierre Giguère said a contract between the Crown-owned agency and the hospital should be signed within weeks.

Giguère also said the agency will undertake an environmental impact study which will be made public at hearings that must be held before the federal and provincial governments authorize the project.

It's unlikely the reactor will be in service before 1991, he said.

Simoneau said the reactor will be used to produce radioactive isotopes for clinical and research use at the hospital, which has one of the country's "most important departments of nuclear medicine."

Would heat hospital

The 10-megawatt reactor - tiny compare with AECL's full-sized 600-megawatt Candu reactors - also will heat the hospital.

AECL's critics say the project is a threat to the community and does not make economic sense. Norm Rubin of Energy Probe says installing the reactor in the hospital "will be an experiment in public safety and public acceptance."

"This will be the first to be built and run outside an AECL lab," Rubin said.

"The last place on earth you would want to put a reactor is in a hospital, except maybe a nursery school."

Gordon Edwards of the Canadian Coalition for Nuclear Responsibility said "taxpayers probably will foot the bill. I suspect it will be a very heavily subsidized operation."

Giguère said AECL will build, own and operate the reactor and sell the heat to the hospital. Both Edwards and Rubin said the reactor will generate high-level radioactive wastes that must be disposed of and will produce radioactive gases that will be vented.

Isotopes first goal

Simoneau said although the reactor was designed as a heating system - the radioactive core heats water which is circulated through radiators - the hospital is more interested in using it to produce isotopes.

"If it was just a question of heating, we would not have agreed to it," Simoneau said.

But he acknowledged that Hydro-Quebec has advised the hospital its heating bill will increase this fall to \$1.14 million from \$620,000 a year.

The increase marks the end of a program under which the provincial utility sold excess power from its northern dams to such institutions as hospitals at subsidized rates.

Robert Nadon of the Quebec Hospitals Association said 77 hospitals will be affected by the program's termination.

"The power bills for those hospitals will increase by a total of \$8.5 million a year. We have asked the Department of Health and Social Affairs to cover those costs but we have not yet had a response."

Energy Minister John Ciaccia said in a telephone interview from Quebec yesterday that he is "not prepared to see hydro power displaced by nuclear."

Ciaccia said he discussed the issue with the president of Hydro-Québec. "We are prepared to look at special cases" that merit subsidized rates, he said.