

SUBMITTED TESTIMONY FOR THE RECORD

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GENERATION"**

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WASHINGTON, DC

Overview:

Mr. Chairman and Members of the Subcommittee my name is Marvin Yoder. I am the City Manager for the City of Galena, Alaska. I want to thank you for the opportunity to testify today.

The purpose of my testimony is to (1) review with you the urgent energy needs of Galena, Alaska and other remote Alaska communities, (2) to emphasize that

Galena's first concern is to develop a safe energy source for our citizens, that is clean and cost-effective, and (3) describe for you the 4S small nuclear power plant design which we believe satisfies our safety concerns and is ready for Nuclear Regulatory Commission (NRC) review and licensing.

Galena, Alaska:

Galena is a small community of 700 people, 60% Alaska Native, living on the banks of the Yukon River. There are no roads to Galena so travel is primarily by air.

Because of our small size it may be difficult to conceptualize the fact that Galena is a "hub community". There are four smaller villages in our region that are partially dependent on Galena for transportation and health care.

Freight is moved by air in the winter because the river is frozen over; however, the river is open from June through mid-September, and we do get barge service from Fairbanks in the summer. These transportation constraints increase the cost of goods and services. For instance milk is \$10 per gallon and gas is \$4.20 per gallon.

Another expensive commodity is electricity. The City operates the power plant which produces power from diesel generators. The power plant annually

receives approximately 700,000 gallons of fuel from barges on the river. There is storage for enough fuel to operate all winter.

As everyone knows the cost of fuel is rising dramatically. Since 2000 the cost of fuel has increased by more than 250 percent. Fuel is more than 70 percent of our generation cost, and electricity has risen to 33 cents per kilowatt hour.

Impact of BRAC and follow-on plans:

The effect of this has been exacerbated by the fact that the City is losing our largest customer, the U.S. Air Force base, to the Base Realignment and Closure (BRAC) process. The Air Force purchases approximately 55% of our power. When BRAC 2005 is fully implemented the city will lose that load unless a reuse for those facilities is found. Our aim is to utilize the facilities on the Air Force property by developing commercial businesses, and to expand our educational and trade school program. Galena currently operates a boarding school for 100 high school students and also offers post secondary training. Low cost electricity and heat are vital to the success of any Galena reuse plan.

Because of all these challenges the City has been searching for an alternative to diesel power for 10 years. We have considered coal, methane gas, solar, wind and in-stream hydroelectric. Galena's situation is preferable to some of the other Alaskan remote villages where the cost of utilities is even higher. There is

now concern that some of these native villages will be forced to close their doors if alternatives to high energy prices are not found.

4S Small Nuclear Power Plant:

In the summer of 2003 we heard of a “4S” (super-safe, small, simple) nuclear power plant that is buried under ground, is safe, small, will last for 30 years, is built in modules, and will lower the cost of electricity by two-thirds. Furthermore, it will generate excess power beyond the City’s needs that could provide additional power to nearby villages.

In August of 2003 the Toshiba Corporation along with others traveled to Galena to discuss 4S and look at our community. Several members of the City Council attended that meeting.

My observation is that Toshiba was pleased with the prospect of working with the community, and the community members present thought the 4S nuclear reactor held some promise to meet our power needs.

Alternative energy sources studied:

In 2004 we worked with the U.S. Department of Energy to complete a study entitled Galena Electric Power – a Situational Analysis. That study compared the electric rate and the environmental impacts of various electric power options.

The 4S was determined to be superior to the other alternatives on both counts. It was noted in the report that this technology would reduce the greenhouse gases of our diesel generators, and also mitigate the likelihood of a barge spill of diesel fuel on the Yukon River.

Based on the results of that study, the Galena City Council, in December of 2004, passed a resolution to continue our efforts to determine if the 4S plant was suitable for Galena. In February of 2005 the City met with the NRC to inform them of our intentions to further evaluate the feasibility of installing a 4S plant in Galena.

GNEP:

For the first two years that we pursued this goal we seemed to be swimming against the current. In past few months the current seems to have reversed and we are encouraged by several events.

First, in November of last year Mohammed Elbaradei, Director General of the International Atomic Energy Agency (IAEA), in a speech at MIT, suggested that there could be hundreds of small reactors with designs like the 4S providing electrical power and clean desalinated water in locations around the world. (It should be noted that the 4S is well suited for hydrogen production as well.)

Second, we were further encouraged when President Bush included small power reactors as an integral part of his Global Nuclear Energy Partnership (GNEP) initiative. GNEP contains elements that endorse small reactors with a long fuel cycle that are proliferation resistant.

Third, we were given seed money from the Governor of Alaska and State Legislature to begin the “White Paper” process for eventual submittal to the NRC.

And finally, in the past year there have been numerous articles published addressing the role that nuclear power may play in reducing greenhouse gases, stabilizing the cost of energy, and reducing world demand for fossil fuels. While most of the emphasis is on large nuclear facilities we are convinced that small nuclear power plants will also play a significant role world-wide.

4S power plant specifics:

The 4S is a Liquid Metal Reactor (LMR) and is very similar to the EBR-2 reactor which was successfully run at the Idaho National Lab for decades as an electric generator. The 4S reactor and the power generation equipment are designed to produce 10 megawatts of electricity. The facility is quite small taking up only about one-half acre of land.

The 4S reactor is designed to be fueled once, producing heat and electricity for 30 years. In this design all the nuclear heat producing equipment is below grade, and contained within separate underground structures. This design prevents access without specialized lifting equipment. There is no spent fuel storage on site. Because of its small size and simple design the facility can be air cooled during normal operation. The design also uses air cooling for the nuclear equipment after it is shutdown.

Galena's focus on safety:

The citizens of Galena and I want to have a safe and secure power source. As mentioned in my opening comments, facility safety is absolutely our first priority, and the 4S plant meets or exceeds our expectations in this regard. In fact, tests were run on EBR-2 that proves that the reactor would safely shutdown without the need for active safety systems or human intervention. The 4S plant is inherently safe in its passive design. I want to emphasize that 4S is a technology that is ready to deploy today. Galena has evaluated all the alternatives and we conclude that a 4S small nuclear power facility is the right choice for our energy and environmental needs.

Nuclear Regulatory Commission review:

Toshiba and other Japanese companies have developed the 4S design to the point where it is ready for NRC licensing. Work is being finalized now to prepare the NRC application documents.

Galena has met with the NRC to understand what needs to be done to permit a plant like this in the United States. Our aim is to have the 4S facility operational by 2012. We expect to pursue with the NRC an Early Site Permit (ESP) and a Combined Operating and Construction License (COL) process for the Galena project. We think the permitting will take between 3 and 4 years. We will meet with the NRC again in a few weeks to continue the dialogue.

With funding from Governor Murkowski and the Alaska State Legislature, the City was able to contract with Burns and Roe, Inc to prepare a series of White Papers. (These technical papers will provide further education regarding the safety of the 4S plant.) Other Alaska towns are closely following Galena's 4S program because skyrocketing energy costs are threatening their way of life. Mining interests in Alaska and in Canada have also contacted us. They are very interested in the potential of a low cost, non-polluting energy source that would allow mining and processing of gold, other metals, oil bearing sands and shale.

City leaders have met with our Alaska Senators and Congressman and have their support for this project. They view Galena's 4S project as being the first of several projects having the potential to bring lower cost energy to remote parts of Alaska and the lower 48 states while improving the environment.

Funding and Design Certification:

We are looking for funding to carry this technology through the NRC licensing process. Ultimately we want a design certification, and a license to construct and operate the 4S plant in Galena. We have visited with the Department of Energy (DOE) to request funding, and appeal to this Committee to help us meet our goals. Our immediate needs are for funds to prepare the environmental work which will cost \$20 million over 2 years. We have requested the GNEP program provide \$2.8 million of that amount to begin immediate air, water and ground data collection necessary for the environmental analysis. We see the GNEP program as a logical source for funding this program and encourage your support of Galena's efforts to build this 4S small nuclear power plant.

Conclusion:

The 4S small nuclear power plant is a "today" energy source that is ready to be built. We are a small community with a big idea that wants to build it. I ask for your help in deploying this new energy source. We are enthusiastic about the

opportunity to change the cost of living dynamic, and preserve our Native Alaskan way of life in our little corner of the world.

Thank you, Mr. Chairman, for this opportunity to testify today. I request that Galena's entire written testimony be included in the hearing record. In attendance with me is our nuclear engineer, Philip Moor, of Burns and Roe Engineering. We would be happy to answer your questions.