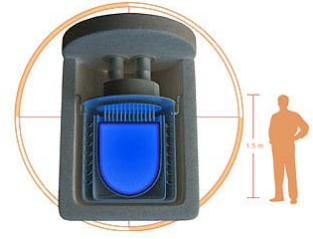
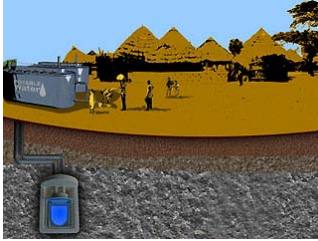


PORTABLE NUCLEAR 'HOT TUBS' COULD POWER AMERICA

Wednesday, November 12, 2008

By Paul Wagenseil



Yes, I DO want a nuclear reactor in my back yard.

That's what Hyperion Power Generation, a small Santa Fe, N.M.-based startup, hopes lots of utility and energy companies say over the next few years as it prepares to build and market small, self-contained, portable nuclear reactors that need almost no oversight or maintenance.

"Our goal is to generate electricity for 10 cents a watt anywhere in the world," Hyperion CEO John Deal told Britain's Observer newspaper in an article published Sunday. "They will cost approximately \$25 million each. For a community with 10,000 households, that is a very affordable \$2,500 per home."

In fact, Hyperion claims its sealed, buried reactors, which would be 10-15 feet long and about 10 feet wide, could power 20,000 homes for 7 to 10 years. At that point they'd be dug up and hauled back to the plant for refueling.

The portable, self-regulating nuclear reactor isn't a new one, and many companies and organizations have been trying to develop them.

Based on the low-maintenance TRIGA research reactors found at many American universities, the various designs all use a form of liquid metal to both carry the excess heat away from the core reaction and to absorb stray neutrons, moderating the reaction should it approach meltdown.

Toshiba has been developing a portable reactor, dubbed Rapid-L, that uses liquid lithium-6 as coolant and moderator, while the Department of Energy's Lawrence Livermore National Laboratory's SSTAR design (Small, Sealed, Transportable Autonomous Reactor) uses liquid lead hydride instead.

Both use traditional solid low-enriched uranium as fuel.

The Hyperion design, licensed from the DOE's Los Alamos National Laboratory, takes things one step further by swapping out enriched uranium hydride for the chemically similar lead hydride.

That means the same pool of molten metal is encased in a buried "hot tub" and acting as fuel, coolant and moderator all at once. If the reaction gets too hot, Hyperion claims, the hydrogen atoms will chemically separate from the uranium, stopping the reaction.

And as with the other designs, the Hyperion reactor's container would be tamper-proof so bad guys would have a hard time breaking in and stealing the nuclear fuel.

Not that they would be able to, claims Deal.

"Temperature-wise it's too hot to handle," he tells the Observer. "It would be like stealing a barbecue with your bare hands."