

# The Converger

Gerry Yonas, [gyonas@sandia.gov](mailto:gyonas@sandia.gov)

*“Any sufficiently advanced technology is indistinguishable from magic.” —Arthur C. Clarke*



Globalization strains both the international norms of security and world resources. The more you seek security, the less of it you have. But the more you seek opportunity, the more likely it is that you will achieve the security that you desire. Today the U.S. has an opportunity as a global exporter of security. We face no direct military threats, yet we are constantly called upon to deal with indirect threats. Learning from the global war on terror (GWOT) we have come to realize that the best way to beat an insurgency is to deny it an incubation sanctuary. U.S. policy is beginning to reflect this idea with the formation of the State Department's Office of the Coordinator for Reconstruction and Stabilization (S/CRS) ([www.state.gov/s/crs/c12936.htm](http://www.state.gov/s/crs/c12936.htm)). Their mission is to provide infrastructure and economic development opportunities in post-conflict nations, and we anticipate that that mission could expand to pre-conflict nations as we better understand how to avoid insurgencies.



The U.S. as the global exporter of security is having real problems paying the bills; we have to borrow money from other nations to finance our debt. As long as those other nations think we are still trustworthy and they believe they will get back their money along with a reasonable amount of interest on their loans, they are likely to keep funding us. On the other hand, if we begin to look like a poor credit risk, then they will look at other investment opportunities. Once we realize the threat to the U.S. dollar we will start to worry about such possibilities, and then we will start to get our finances in order by spending less, taxing more, and looking for real technological solutions. But, there are few areas for flexibility in cutting discretionary spending since we already have such large commitments we cannot escape, like making the rapidly escalating payments for geezer's health care and servicing the interest on the national debt. We could all pay more taxes, but at some point that would weaken the economy and the result would be less income for us taxpayers, and even less income for the government. This worry can get out of control if the people who lend us money begin to lose confidence in our finances so that we increase the interest we pay them, which then makes it ever harder to raise the cash without making the balance on our loans ever larger.

So what is a way out of this mess? The answer is the Sandia “Converger,” namely a remarkably stunning invention based on an integration of rapidly evolving technologies that makes our nation a lot richer, a lot more productive, less dependent on foreign energy and a lot cleaner. Now that sounds hard to believe, but you probably remember when Dick Tracy talked on the wrist radio, Jules Verne wrote of going to the moon, and submarines were



limited to just hours of undersea operation. As you know we now have wrist radios in the form of cell phones, we really have been to the moon and back, and submarines remain under sea for months. Many of these ideas were seen as wacky or too far into the future when they were first introduced and seemed like magic. Vision and focused application of technology brought these visions to reality.

**“ Many of these ideas were seen as wacky or too far into the future when they were first introduced and seemed like magic. ”**

In order to generate excitement, Sandia’s invention would be accidentally “leaked” to the press, the leak would reveal that we are working on the secret “Converger” project that will be worth trillions of dollars to the U.S., will reduce the need for imported oil, will solve water problems, will provide affordable electric power where it is needed, and will guarantee that global warming will be reversed. Of course, these things will contribute to global security by reducing the tensions naturally attributed to energy, environment, and economic stability.

Of course, the multitudes will demand that we tell them more about it, but we will say they must wait for the formal demonstration at the half-time of the next Super Bowl. On that day, in February of 2006, several 18-wheelers will drive onto the football field. With fireworks bursting overhead the “Converger” will be positioned ceremoniously at the center of the 50 yard line. The Sandia technical team runs next to the “Converger” and makes the final adjustments while, from every corner of the stadium, janitors march to the center of the field and dump trash barrels full of stadium debris into the hopper at the top of the “Converger.” A hot shot plumbing crew runs onto the field dragging a hose from the stadium’s sewer line which they connect to a fixture on the side of the “Converger.” The stadium becomes quiet and the “Converger” begins to hum quietly. Within moments clean water begins pouring out of a tap, electricity powers thousands of lights arrayed around the field, and liquid fuel begins pouring into the tank of an open top HUMVEE where the now smiling Sandia technical team has assembled. The millions watching around the world are amazed. Markets around the world react almost instantaneously. The value of the dollar rises like a rocket, interest rates collapse, and in mere moments the budget deficit becomes a thing of the past. Investors, admirers, and groupies storm the field and chase after the Sandia tech team. Well, we can dream can’t we? But this scenario could become a reality, in a sense.

The “Converger” may seem to be a far fetched bit of magic, but it is not new, it exists in many forms not yet integrated and modernized. The main power source could easily be a small, self-contained, portable proliferation resistant nuclear engine (<http://www.eurekalert.org/features/doe/2004-07/dnl-net071204.php>; [http://www.osti.gov/bridge/product.biblio.jsp?osti\\_id=793886](http://www.osti.gov/bridge/product.biblio.jsp?osti_id=793886); <http://www.nic.com.au/nip60.htm>; <http://www.atomicengines.com/distributed.html>). DOE, through Lawrence Livermore National Laboratory, Los Alamos National Laboratory, and Argonne National Laboratory, is working on concepts called SSTAR and STAR-H2, respectively. These concepts are small, sealed, transport-able, autonomous nuclear reactors designed to provide electricity, heat, hydrogen, and fresh water.

These energy supplies could be connected to proven technologies such as desalination systems and trash converters to form the “Converger.” This is not magic. Westinghouse Plasma Corp. ([http://online.wsj.com/public/article/0,,SB110859811970957124-18FjhmJye9HlJSRruKEYYICb34\\_20050319.00.html?mod=tff\\_article](http://online.wsj.com/public/article/0,,SB110859811970957124-18FjhmJye9HlJSRruKEYYICb34_20050319.00.html?mod=tff_article)) is currently marketing a plasma system for transforming trash into hydrogen, CO<sub>2</sub>, and a glass-like material that can be used in construction. The plasma machines disintegrate waste using temperatures in the range of 30,000 degrees F, (three times as hot as the surface of the sun). In addition, by adding the developing technology of the thermo-depolymerization (TPD) that mimics the Earth’s own process for fossil fuels, but shaves millions of years off the production time, waste can be transformed into natural gas, fuel oil, and minerals. ConAgra, along with Changing World Technologies, is building a TPD plant that can convert 200 tons of processed poultry waste into 500 barrels of oil a day ([http://news.nationalgeographic.com/news/2003/11/1125\\_031125\\_turkeyoil.html](http://news.nationalgeographic.com/news/2003/11/1125_031125_turkeyoil.html)). Thus, we see that the “Converger” is much closer to reality than one might expect, but technical challenges remain in the form of integration, modernization, security and safety—all challenges that Sandia is well positioned to accommodate.

The “Converger” will greatly improve global security by raising the quality of life in underdeveloped or failed-state countries that are not yet integrated into the functioning world economy. By providing states with a viable, functioning infrastructure they can become part of the global interdependent economy, and they become less threatening and unusable for insurgents. Additionally, as failed states pick-up steam, trillions of dollars will be added to the U.S. treasury because of our direct foreign investment in these new global economies. Interdependent functioning states lead to a more secure global environment as the nation’s population turns to shopping, rather than revolution.

In the end, people will look back at that historical Super Bowl halftime show in our scenario and praise the national security lab that helped the nation develop the “Converger.” Everyone in the future will be aware that the halftime show was the tipping point when technology enabled global security to advance by reducing suffering and enhancing global interdependence. Think about it—it could happen!

So what’s next? First we will see if such a concept makes economic and technical sense. In the near future, the ACG will host a brainstorm to investigate the practicality and technical feasibility of the “Converger.” *For further information contact David Kitterman, 844-6853; or Darryl Drayer, 844-8479.* ■