



HYPERION

Power Generation

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**The world is
demanding
more energy!**

**World energy consumption is
projected to **increase** by**

50%

from 2005 to 2030

<http://www.eia.doe.gov/oiaf/ieo/world.html>

Net electricity generation worldwide is projected to total 33.3 trillion kilowatt hours in 2030 – nearly **double the 2005 total of 17.3 trillion kilowatt hours.**

What is driving the increase in worldwide energy demand?



Industrialization

Emerging markets

Increasing wealth

Growing economies require more energy

Globalization

Transportation uses lots of energy

Concerns over energy security

**And, the planet is
demanding *clean* energy!**



The vast majority (88%) of consumers said they believe it is important for their countries to reduce reliance on fossil fuels

20 country survey by *Accenture*, March 2009

What's the Solution?

Where do we look for CLEAN energy?

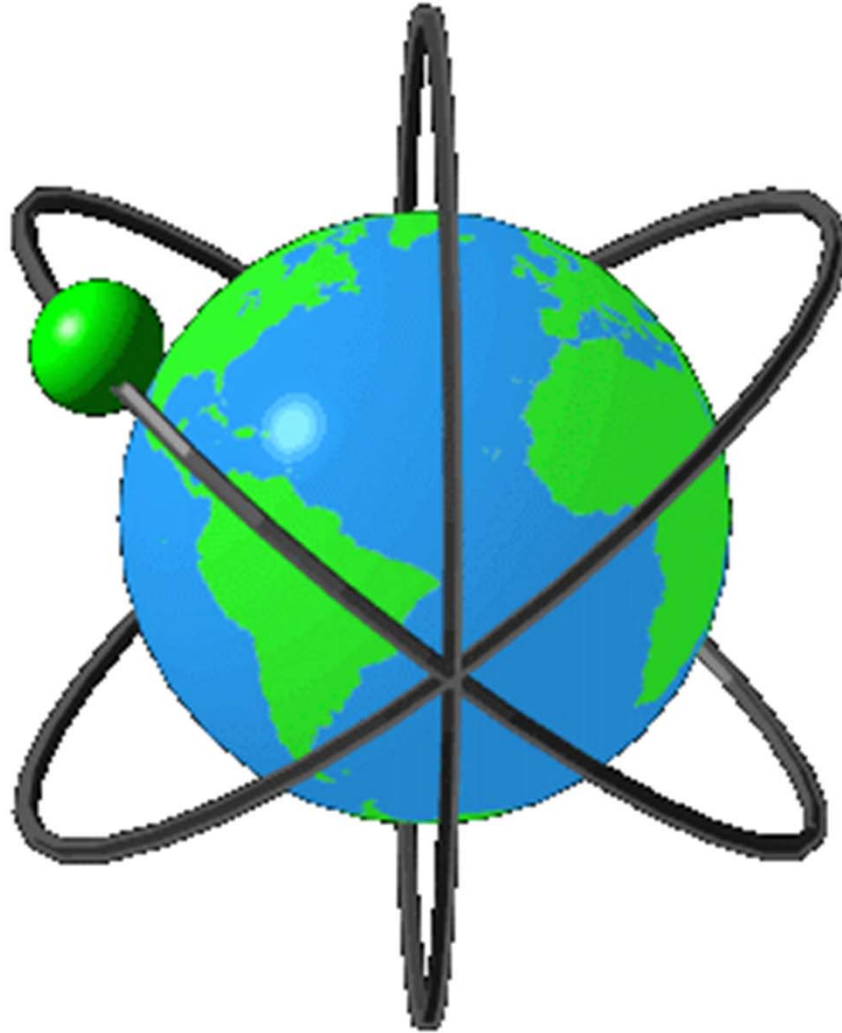
**Solar and Wind alone cannot
meet the need for**

Reliable

Consistent

BASELOAD POWER

The answer for
Reliable
Consistent
baseload power is
NUCLEAR ENERGY



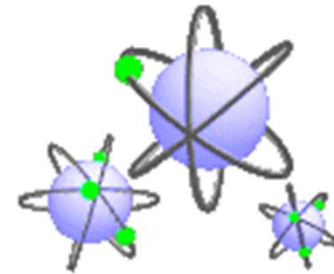
**Today, more than 2/3 of the
global population believe their
country should *start using*

or

increase their use of

nuclear power**

**29% say they are more in favor
of nuclear than they were
just 3 years ago**



* Accenture survey March 17, 2009

*But conventional nuclear
power plants cannot meet
the need fast enough!*

\$12 billion

12 years

**WE can't wait that long
&
WHO is going to fund them
anyway?**

A viable solution?

Small Modular Reactors

(aka SMRs)

Not your father's Cadillac!

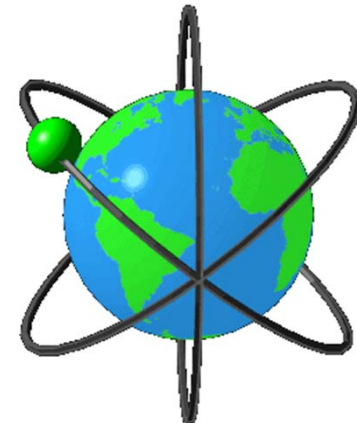


Small Modular Reactors are the *Wave* and the *Rave* of the future



**China, Japan, Russia, & South Africa are
developing SMRs**

**In the U.S. the leading SMR technology is
the Hyperion Power Module**



Hyperion Power Module

Small Modular Reactor

- **Distributed or “Grid Appropriate” Power**
- **70 MW_t - 27 MW_e**
- **Localized power for a community of 25,000 homes or the industrial /commercial equal**



← 1.5 m →

Hyperion Power Module

Small Modular Reactor

- **Transportable**
- **Sealed**
- **Factory-produced**
- **Buried underground**



← 1.5 m →

Hyperion Power Module

- **Designed at Los Alamos National Laboratory**
- **Licensed for commercialization to Hyperion Power Generation**



And...

- **First commercial nuclear power tech-transfer from U.S. gov't labs – your tax dollars at work.**
- **Benefits to U.S. laboratory system.**

Hyperion, the company ...

- **World's first start-up in nuclear**

Opens a new door to the energy industry for fresh input.

- **U.S. company**

U.S. technology; U.S. factory & jobs.



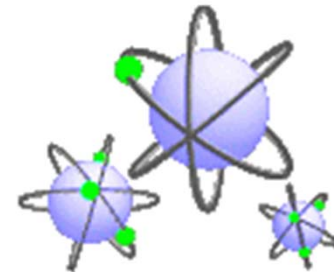
- **HPG fostered by Purple Mountain Ventures**
- **U.S. company based in New Mexico**
- **Experienced team - Dozens of successful startups from public & private labs**
 - *Committed to U.S. economic strength & national energy security*

What's Different?

- **Not your father's Cadillac! *Not* a scaled-down version of a lightwater reactor**
- **Totally different technology**
- **Uses Uranium Hydride fuel**

Hyperion Power Module

- **Takes advantage of natural capabilities of uranium hydride (UH₃)**
 - *New application of existing science, proven engineering*
- **Self Regulating**
 - **Inherently safe: cannot “melt down”**
 - **No mechanical moving parts nor complexity of moving parts**



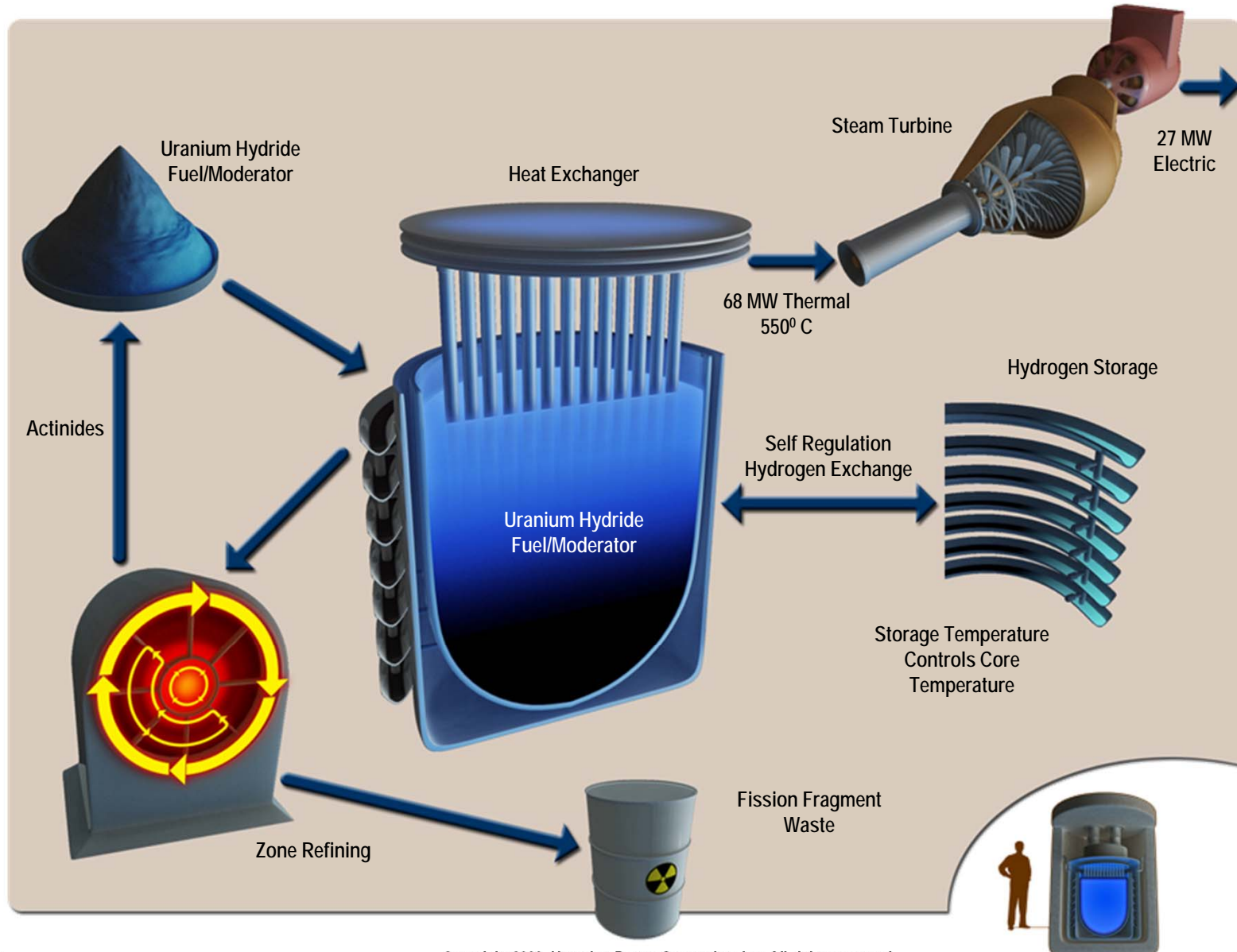
Hyperion Power Module

- **Sealed Modules**
 - **Factory refueling eliminates proliferation attempts**
 - **Operational variables minimized**
- **Transportable**
 - **Rail, truck, ship**



Hyperion Power Module

Fuel, Energy, Power Cycle



Hyperion Power Module

continued

- **Leverages existing science and engineering standards**
- **Standardized design reduces licensing & certification to a single event**
- **Economy of mass production instead of economy of scale**

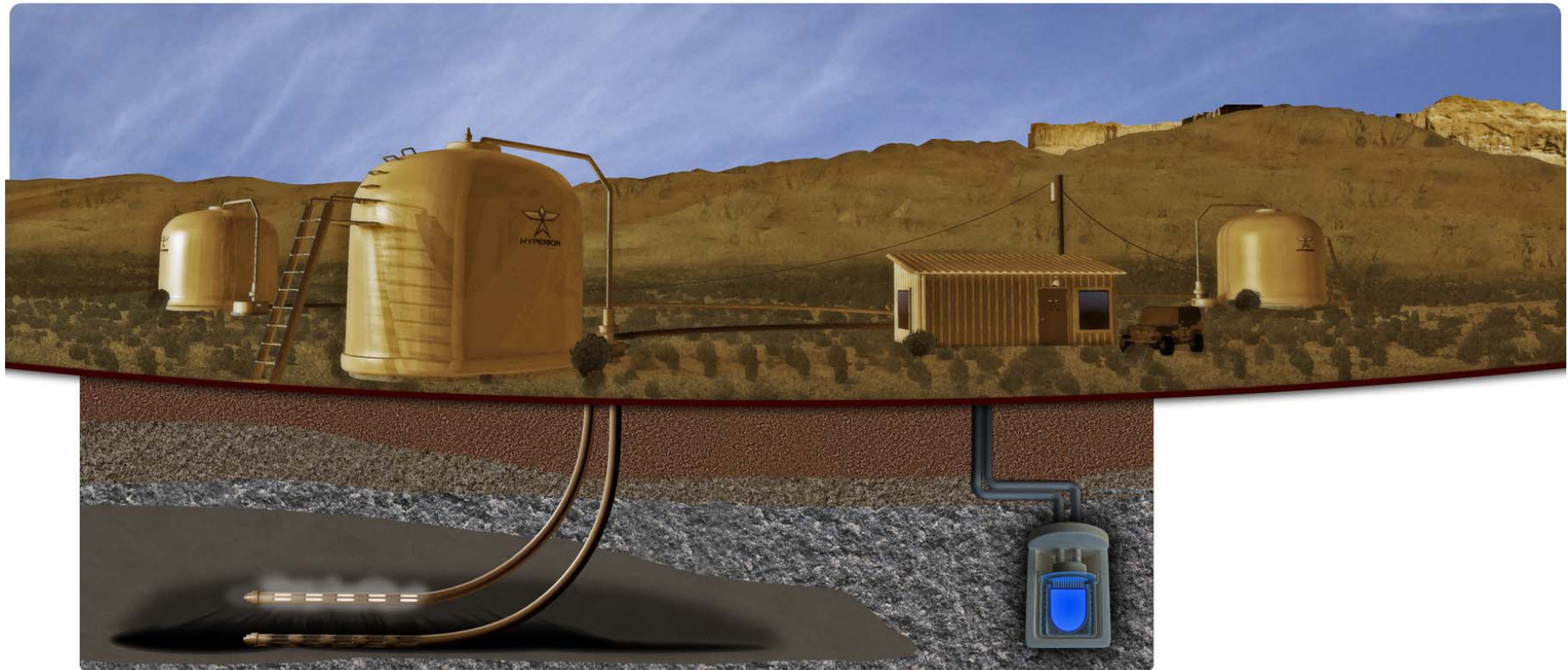
Hyperion Power Module

- **Reduces investment risk; reduces time to market**



- **Replace oxide fuel and aqueous reprocessing**
 - **Minimize instead of expanding waste**
 - **Recycle actinides**
 - **Waste is #1 public concern**

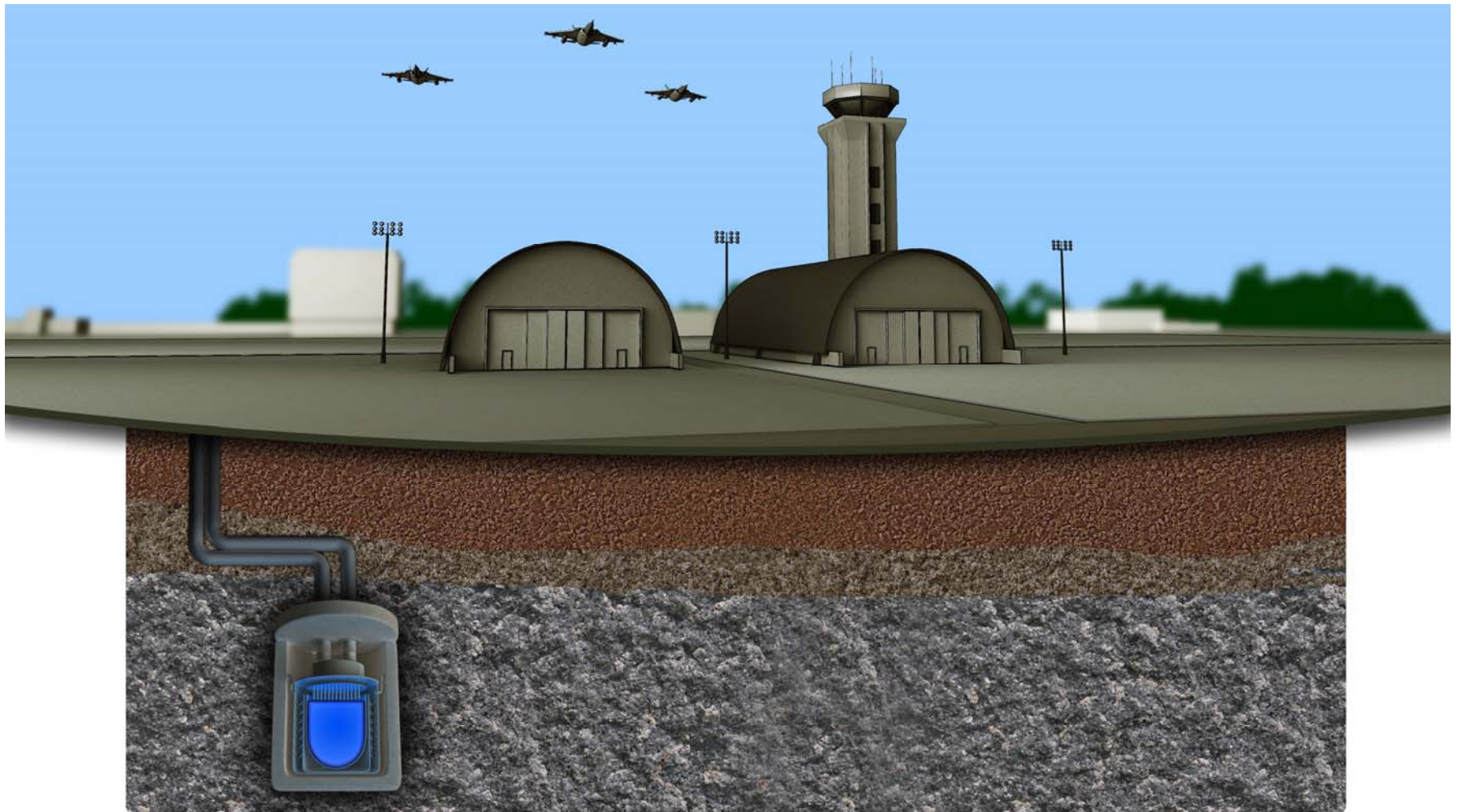
Hyperion Application Oil & Gas Production



Oil & Gas Production

- **Oil & Gas are fact of life for foreseeable future for auto & other applications**
- **Oil Sands & Shale not economical**
 - **30-50% of energy recovered is used in extraction**
 - **“Hyperion will dramatically cut costs”**
- **Oil Sands & Shale Reserves are Enormous**
 - **reserves approximately equal to the world's total reserves of conventional crude oil**

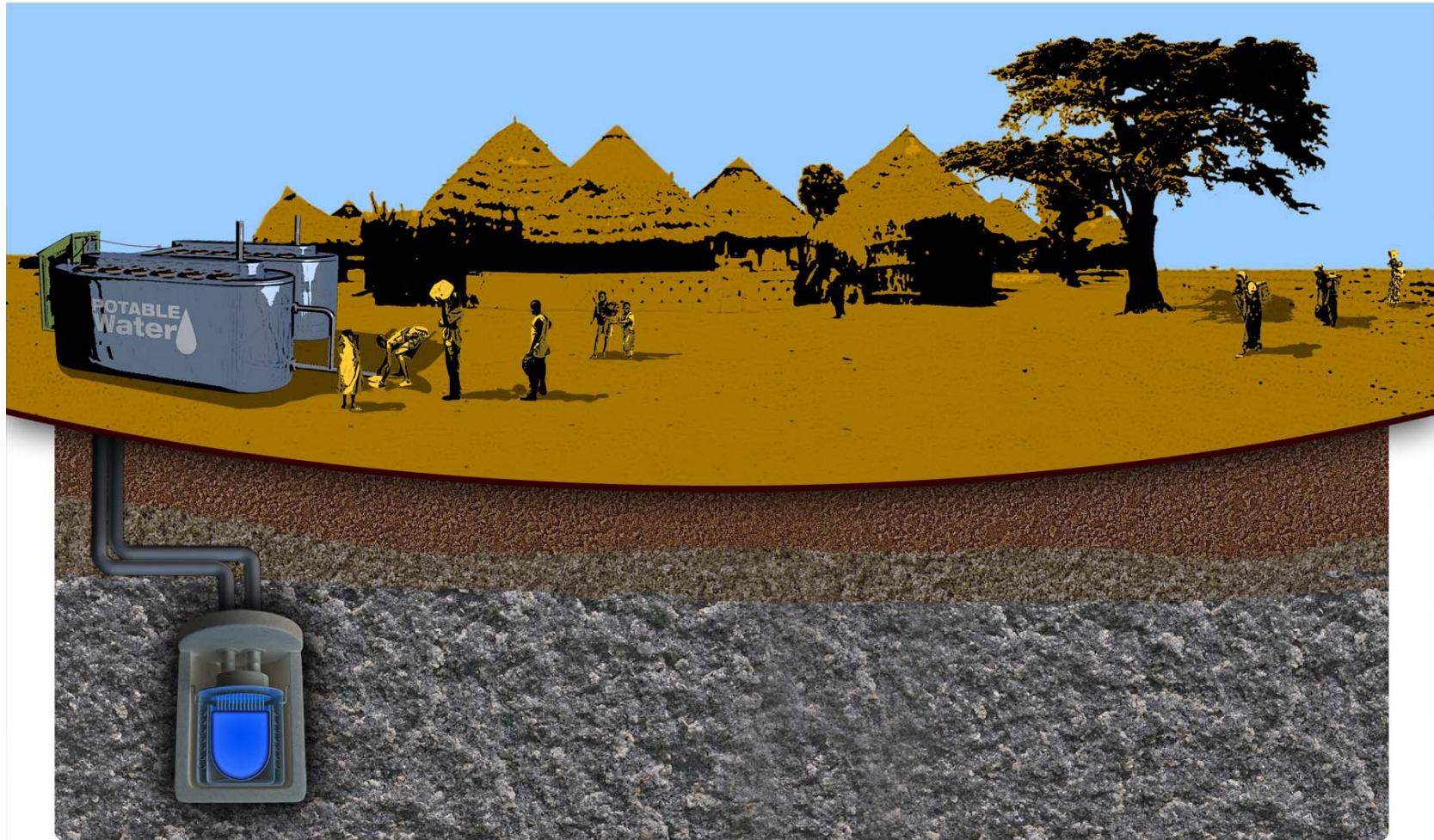
Hyperion Application Military Installations



Military Installations

- **Secure power**
 - **Dependence on local grid an unnecessary risk**
 - **Power source must fit into existing operations**
 - **flexible, easy to deploy & operate, safest form of generation**
- **U.S. operates and/or controls 737 bases worldwide**
 - **Each should have independent power**

Hyperion Application Remote Communities



Remote Communities

- **25% of global population without access to electricity**
 - **Lack of clean water & proper wastewater treatment**
 - **Lack of proper health and resulting disease cause social unrest**
 - **Lack of sustainable economy / industrial base**
 - **Gives rise to political instability and terrorism**

Hyperion Economics

are Very Attractive

- **Capital Costs**
 - **Thermal power: 70 MW_t for \$25,000,000**
 - **Electrical power: 27 MW_e for \$37,000,000 (\$1,380/kW_e)**
 - **Conventional plants estimated \$2,000/kW_e (MIT study)**
- **Small size and cost minimizes financial risk**
- **Hyperion Cheaper & Cleaner Than Natural Gas**
 - **Hyperion reactor \$3 / million BTU**
 - **Natural gas comparison costs are \$14–\$18 / million BTU**

Why Hyperion?

- **Best & Brightest Minds**
 - Hyperion using WFO for additional work at LANL
- **Collaboration with NRC**
 - Insures design will meet NRC licensing expectations
- **Aggressive Commercial Approach**
 - Commercial delivery beginning in 2013
- **We Understand Partnerships are Key**
 - To providing revolutionary product
- **Building an Industry**
 - This is not just a science experiment



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