



NASA/JPL/UA/Lockheed Martin

NASA's Phoenix Mars Lander provides evidence of life? Here, the spacecraft is depicted fully deployed, monitoring the atmosphere and reaching out to the soil

NEW EVIDENCE THAT LIFE MIGHT HAVE BEEN (OR STILL IS) PRESENT ON MARS

A new analysis of data collected by NASA's Phoenix Mars lander two years ago has led specialists to rethink the possibility that the red planet may indeed have been an abode of life. Thirty years ago, almost all the geologists, biologists, chemists, and planetary scientists involved with NASA's Viking landers concluded that life had not been present on Mars, because there was no evidence of organic material found in the soil. Organics, simply meaning carbon-based compounds, can be from either biological or non-biological sources. But without detecting organic material, most of the scientific community closed the book on Viking's life sciences experiments.

Now, scientists examining chemical data from the Phoenix polar lander find that perchlorate (chlorine and oxygen) is present in the Martian soil. It is known that chlorine, when heated, can destroy organic compounds, and the Viking experiment that was designed to indicate the presence of organic material, heated the Martian soil. Instead of thinking that the heating in their experiment may have corrupted the results, the scientists believed that the chlorine that Viking found was a contaminant from Earth, not native to Mars. The reason was that the ratio of the two isotopes of chlorine found on Earth, matched the isotopic ratio that Viking found in the chlorine on Mars. But the ratio of the isotopes of chlorine on Mars has not been determined yet, so, in fact, it is not known if the isotopic ratio of the chlorine on Mars is the same, or different, from that on Earth. Finding the answers to these questions will require intensive interplanetary study. (See "Isotopes and Life," this issue.)

As NASA astrobiologist Chris McKay explains, this is not "proof" that life did exist on Mars, but it could "make a big difference in how we look for evidence to answer that question." The lead author of the paper, to be published in the *Journal of Geophysical Research*, is Rafael Navarro-Gonzalez of the National Autonomous University of Mexico (UNAM) in Mexico City.

JAPANESE REACTOR WILL LAST 80 YEARS, TAKE 30 MONTHS TO BUILD

The Japanese government, the Toshiba Corp., and Mitsubishi Heavy Industries, Ltd., are now developing a next-generation light water nuclear reactor, with a high power capacity and a lifespan of 80 years. The project was undertaken after a two-year feasibility study, and the basic design of the reactors is expected to be completed by 2015. The new reactor design, which is 1,700 to 1,800 megawatts, will have an almost 50 percent larger power-generation capacity than the largest reactors built today, and will take less than 30 months to build.

Takanori Tanaka, executive director of the Institute of Applied Energy (IAE), who oversaw the study, said on Aug. 17, that it is viable to develop an advanced boiling water reactor or pressurized water reactor that has the world's highest utilization rate—in service 97 percent of the time over an 80-year life—by using uranium more highly enriched than is currently used. This would also reduce the amount of fuel used.

Japan is targeting sales to the United States, Europe, and Asia, where an expected 270 reactors will be replaced by 2050, after reaching 60 years in use, according to the report. Serious economic development would require 10 times that number.



One big city: South Korea's High Speed Train, the KTX, will be expanded to unify the nation, making almost all locations accessible within 2 hours.

KOREA HIGH-SPEED RAIL PLAN: ONE BIG CITY

The Korean Government announced its strategic plan for the Korean Train Express (KTX) high-speed networks, which will consolidate the transport grid. Korea's current KTX system, which connects the capital, Seoul, with the two major southern cities, Busan and Mokpo, will be expanded and filled out to a network of routes that will completely unify the country. "Eighty-four percent of the Korean public will be

able to use bullet trains enabling them to travel to 82 percent of all locations in the country in less than 90 minutes and 95 percent in less than 2 hours," according to Hong Soon-man, director of transport policy at the Ministry of Land, Transport, and Maritime Affairs. Thus, "The entire country will essentially become one big city."

The railroad expansion will be rolled out in stages between 2014 and 2020. Initial speeds will be 250 to 300 kph (155 to 186 mph) but will be enhanced to 400 kph (250 miles per hour). The government also plans to develop the railway industry into a new engine of growth, and build a new generation of bullet trains capable of travelling up to 430 kph by 2012, with plans to export them overseas.

CHINA TO DOUBLE NUCLEAR CAPACITY WITH OWN MANUFACTURING BASE

China is expanding its own nuclear manufacturing base, to fulfill its aggressive program to double its nuclear generating capacity to 80 gigawatts in the next 10 years, and then to add an additional 120 gigawatts in the following decade (more than 200 plants, total).

For example, it was recently announced that China First Heavy Industries will be manufacturing the reactor pressure vessel for the first unit of the planned Xianning nuclear plant. This capability is critical, as there is a worldwide shortage of heavy forging capacity, and there is a multi-year waiting time in the West for reactor pressure vessel orders. The Xianning plant will be one of the first sited inland, not in the coastal regions, and will most likely be a Westinghouse AP1000 reactor. Westinghouse is already contracted to build four AP1000s in China.

The Westinghouse contracts all include a requirement that a certain percentage of the plant's components are to be built by local Chinese companies. At some point, China will license the technology from Westinghouse, and produce the nuclear plants entirely in-house. At the same time, China has designed its own nuclear plants, which, because they have no U.S. content, are not restricted by U.S. export laws. These have been sold to Pakistan, for example. One such indigenously produced plant, a CNP-600 (650-megawatt) pressurized water reactor, was connected to the East China Power Grid on Aug. 1. Another CNP-600 plant is under construction at the same site at Qinshan.

China is rapidly becoming self-sufficient in reactor design and construction. With 24 plants now under construction, and more about to start construction soon, it will rival the pace of the nuclear build in the United States in the 1970s, which was politically aborted in the 1980s, and never went beyond today's 104 operating plants.

VIETNAM PUSHES TO DEVELOP NUCLEAR LABOR FORCE

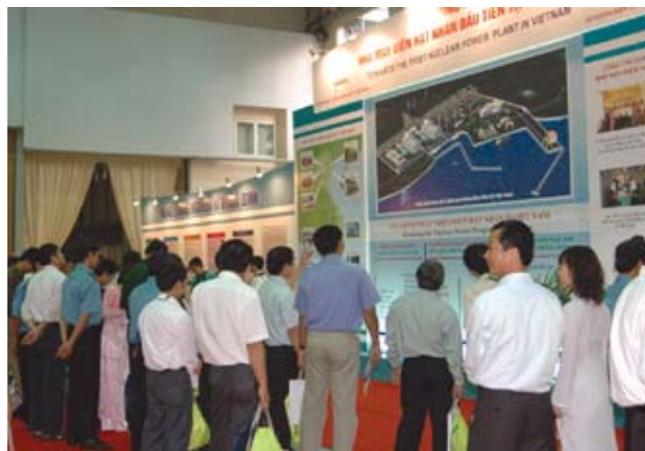
Vietnam, which is leading the countries of South East Asia in the race for nuclear power, has approved a \$154 million plan to train and develop a skilled workforce for the nuclear power sector over the next 10 years.

The country has already decided to build two nuclear power plants in the central province of Ninh Thuan by 2020, with a total capacity of 4,000 megawatts, and six additional plants will be constructed in the central region through 2030. The two initial plants will be built by Russia, and other nations, including Japan, are competing to build the subsequent plants. In late August, a Japanese delegation, including the heads of the three largest Japanese nuclear construction firms and the three largest operating companies, visited Vietnam, and China signed a memorandum of understanding on nuclear cooperation with Vietnam.

"Atomic energy can also be used in the health-care sector, industry, agriculture and other economic sectors. Thus, there will be a shortage of human resources to work in

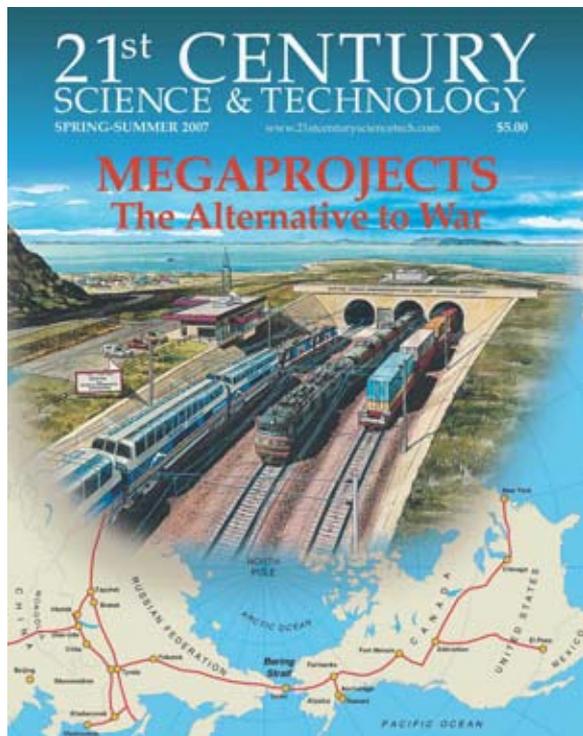


China plans to build more than 200 nuclear plants in the next 20 years, creating an indigenous nuclear manufacturing capability.



VAEC

Vietnam has an ambitious program to train nuclear scientists and engineers, to run the eight nuclear plants that it plans to build by 2030. Here a 2006 Nuclear Power Exhibition in Hanoi, which drew 6,600 Vietnamese visitors, including 200 Parliament members.



A rail tunnel across the Bering Strait, joining North America and Russia, is a crucial link in the World Land-Bridge project. Prince Philip's World Wildlife Fund wants to stop this development, by locking up the region for "nature."

conjunction with the North American Water and Power Alliance program (NAWAPA).

The White House push for this WWF anti-development program comes under the auspices of the new U.S.-Russia Presidential Commission, established in July 2009, by Obama and Russian President Dmitri Medvedev. Its goals featured the task of advancing "efforts to protect our shared heritage and environment in the Bering Strait region," as the Commission states. This jargon harks back, word for word, to the 1990s World Wildlife Fund propaganda for "Arctic preserves." The WWF is one of only two non-governmental organizations with official observer status in the Arctic Council, which consists of all the nations of the Far North: Canada, United States, Iceland, Denmark, Norway, Sweden, Finland, and Russia.



Ho Chi Minh City Ministry of Natural Resources and Environment

A landfill in Ho Chi Minh City, where one garbage-burning plant produced just enough electricity to run itself.

One landfill in Ho Chi Minh city that he operates has a \$13 million plant, mostly built with a grant from the Netherlands, to produce electricity from garbage. That plant produced just enough electricity to run only the garbage burning plant itself!

the field," a government statement reported on Aug. 21. "The plan is expected to help Vietnam develop human resources in tandem with its atomic capacity."

Vietnam will seek to bring its university-level atomic energy studies into step by 2015, five years before any of the plants are operational. It intends to train 2,400 nuclear engineers, and issue 350 masters degrees and Ph.D. degrees for operating nuclear power plants, all within Vietnam. Two hundred engineers and 150 of the high-level graduates will be trained abroad. Vietnam will also train another 100 advanced degree holders to teach nuclear energy at educational institutions.

WHITE HOUSE REACTIVATES WWF SCHEME TO HALT BERING DEVELOPMENT

In 2009, the Obama Administration reactivated a 20-year dormant project, spawned by the World Wildlife Fund (WWF), to impose an international nature preserve on the Bering Strait, which would deter any infrastructure development on this key link in the world land-bridge. Moves are continuing this Summer, towards a "Beringian Heritage" lock-up of land and resources, and impoverishment of local people, to directly serve the geopolitical interests of London finance behind the environmentalist game.

The area under discussion involves millions of hectares of coastal Alaska and Chukotka, on the Chukchi and Bering seas. This is exactly the region planned for the development corridors of the proposed Bering Strait Tunnel, linking Asia and the Americas, in

CHINA AND VIETNAM SHOW BIOFUELS ARE A FRAUD

Zhao Youshan, president of the China General Chamber of Commerce petroleum division, has repeated his demand that China end government-subsidized corn-ethanol production, the *Beijing Times* reported Aug. 10. Zhao first made this demand a month ago. He said that ethanol production has led to the rise of corn prices in China, turning the corn-exporting country into a corn-importer this year. Even so, the output of corn ethanol appears tiny when compared with the domestic demand for petrol, he says. Zhao heads China's largest membership association of private petroleum enterprises.

In Vietnam, they're asking "So, why would anyone invest in green electricity production to suffer losses?" Ho Chi Minh (HCM) City solid waste management chairman Nguyen Trung Viet estimates that to produce 1 kilowatt hour of electricity from garbage costs 20 cents (without subsidies), but costs only 4 cents with traditional power plants.