Briefings

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Preserve Weapons-Making Technology

As the possibility of a Soviet attack on Europe or the United States fades, so does the rationale for keeping a huge military arsenal. Big reductions are already being made in the defense budget, and according to a new report from the Office of Technology Assessment (OTA),* this trend will continue for the rest of this decade, with defense spending falling to around 3.8% of GNP in 1996—the lowest level since before World War II.

But the OTA also sees a danger in the peacetime phasedown: By the time a new threat arises, the country may have lost its weapons-making skills. For example, warns the OTA, by 1998 the nation may have completely disbanded the crews and facilities that make armored vehicles, allowing the special skills acquired over decades to be scattered to the winds.

To avoid such losses, OTA recommends that the government preserve certain "core competencies" so that the skills needed for producing high-tech weapons are not lost. The report calls for Congress and the Administration to develop a "long-term defense technology and industrial strategy" for making technical decisions about which facilities to preserve and which to scrap.

Sustaining the R&D portion of the military budget while weapons manufacturing is scaled back should be the "first priority," says OTA. Congress should also change the Pentagon's method of buying weapons, shifting from a system that emphasizes mass production and meticulous bureaucratic audits to a more flexible approach that supports continuous experimentation and prototype building. That way the nation could "surge" into weapons production during a crisis. It will become increasingly important to adapt commercial technologies for military uses, OTA reports, for this would improve the business economy and make it easier to boost production, if necessary.

Reforming the system won't be easy, however. The OTA says that will require changes not only in the laws that govern military contracts and standards but also in the existing weapons procurement culture.

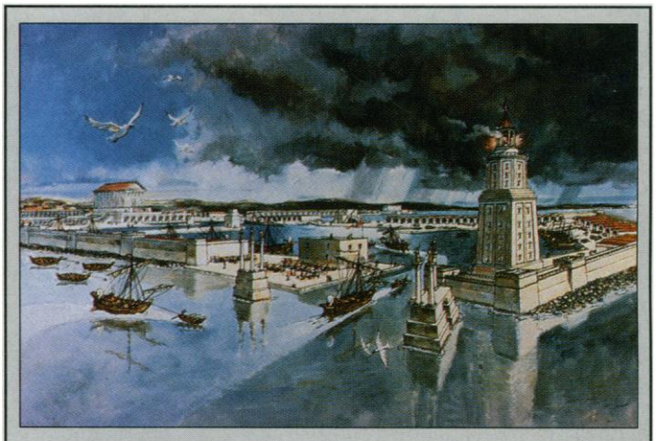
*"Redesigning Defense: Planning the Transition to the Future U.S. Defense Industrial Base."

Brain Cancer Near Los Alamos?

The New Mexico Health Department plans to examine a resident's claim that brain cancer is on the rise in certain neighborhoods near Los Alamos National Laboratory (LANL). The health department reportedly will request $250,000 in funding from the Department of Energy (DOE), which owns the laboratory, but a DOE spokesperson refused to verify the cost of the study.

The cancer worries began when Tyler Mercier, a Los Alamos sculptor, publicized a list of 20 alleged Los Alamos brain cancer victims. After a local doctor confirmed that nine of the victims had died from primary brain tumors, the *Albuquerque Journal* reported that three of them had lived on the same block in Western Area, a section of Los Alamos about a mile from the laboratory. According to statistics collected by the National Cancer Institute, the Los Alamos County rate is several times higher than the average for the state, though health officials won't speculate on whether or not LANL is to blame.

LANL apparently took the issue seriously. In June it set up a working group cochaired by a local resident and a laboratory employee to investigate the laboratory's operations in Western Area. On 17 July, the working group announced plans for a Los Alamos program costing between $50,000 and $100,000 to sample soil. At the urging of local residents, the federal government is also getting involved. The Agency for Toxic Substances and Disease Registry is considering participating in the state epidemiologic study, in which health officials plan to track down cancer victims in Los Alamos County and test the area for radioactive contamination.



Checkered Past of a Roman Harbor

The civil engineering skill of the ancient Romans is even today so evident in the impressive remains of their roads and aqueducts that it's hard to imagine archeologists being surprised by anything new they might uncover. But the 2000-year-old breakwater recently excavated by a team led by University of Colorado history professor Robert Hohlfelder, University of Maryland history professor Kenneth Holum, and Haifa University professor of maritime civilization Avner Raban has dropped jaws among their most jaded peers.

The site—Caesarea Maritima—is near modern-day Haifa, Israel. There, the team has been unearthing the remains of ancient Sebastos Harbor, which they believe to be the world's first harbor unsheltered from the stormy Mediterranean Sea. And it's that aspect of the harbor that makes the Roman construction prowess so impressive. The task of building anything lasting in the middle of the pounding water presented the Romans with a daunting challenge. These archeologists believe they have finally put enough pieces together to puzzle out the ancient architects' tricks.

Remains of two 1000-yard-long breakwaters revealed an unusual checkerboard design—created to take advantage of the rough water by using churned up silt as part of the building material. Roman engineers sunk 30-foot-long wooden pilings offshore, forming the checkerboard-shaped mold, says Hohlfelder, adding that the Romans apparently used a special concrete that hardened under water. But they poured it only into alternate squares and let the sea dump sand and silt into the empty ones. By letting the sea do half the work, the architects saved both tons of concrete and years of construction time on the 10-year project.

One interesting question might be, Why would such a sophisticated group of engineers pick Caesarea Maritima, a village in the kingdom of Judea, with no natural protection from the elements? Indeed, the Romans could have come up with an easier location to build their harbor, says Hohlfelder, but legend has it that Herod the Great, king of Judea, ordered the harbor built because it would give Judea badly needed trade as well as clout with the Roman emperor Augustus. Hohlfelder blames politics, not nature, for making the harbor such a colossal challenge. Sound familiar?