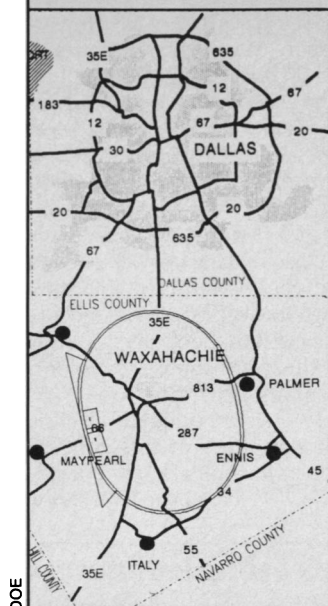


## Texas wins the fight for a super prize



The proposed \$4.4 billion Superconducting Super Collider (SSC) finally has a home state. After years of study and intense lobbying efforts by officials from the seven state finalists (SN: 1/30/88, p.68), the Department of Energy last week identified a patch of gently rolling prairie 25 miles south of Dallas as its preferred site for what will be the world's most powerful particle accelerator — if it gets built.

"The Texas site is the location that . . . will permit the highest level of research productivity and effectiveness of the Super Collider at a reasonable cost of construction and operation with minimal impact on the environment," Secretary of Energy John S. Herrington said in a statement announcing the selection.

"I'm delighted," says physicist Steven Weinberg of the University of Texas at Austin. "I think it's a very good site . . . and it's going to make life in Texas universities a lot more exciting."

Construction of the SSC's underground ring, which will completely encircle the town of Waxahachie (see map), will require tunneling through 53 miles of layered chalk and marl, a crumbly mixture of sand, silt and clay. The facility, to be named the Ronald Reagan Center for High Energy Physics, will take up 16,000 acres of land.

For fiscal year 1989, Congress has appropriated \$100 million for continued research and development and preliminary engineering design work on the project but has provided no construction funds. Whether Congress will agree to fund the full project isn't clear yet. The Energy Department must also complete an environmental impact statement before it makes its choice final. — J. Peterson

## Harbor site may be Cretan pirate nest

For most of the last few centuries B.C., many inhabitants of the Mediterranean island of Crete made a living through piracy. Ancient Roman texts describe the navigational skill and fast ships that enabled Cretan pirates to terrorize and rob passing vessels. The writings describe pirate ships kept in harbors with watch-towers and arsenals, but make no reference to specific pirate outposts.

Greek investigators now report they may have uncovered the first archaeological evidence of such a harbor on the western coast of Crete. In the just-released October *AMERICAN JOURNAL OF ARCHAEOLOGY*, project director Elpidia Hadjidaki of the Archaeological Museum of West Crete in Hania suggests the harbor, an excavated basin connected to the sea by a now-dry channel, "was one of the famous Cretan pirate nests, possibly one of those destroyed by Romans in the mid-first century B.C. when the Mediterranean was cleared of all pirates."

Preliminary excavations at the Phalasarna site, named for a nearby city, were conducted in 1986 and 1987. The harbor is now on dry land because western Crete now stands 6 to 9 meters above its level of 2,000 years ago.

Hadjidaki located the site with the aid of a map drawn up by a 19th-century English scholar who believed the area contained the remains of an ancient harbor. She noticed a long, dilapidated stone wall that may have served as part of a protective curtain for a harbor. Initial excavations were directed at a mound behind the wall.

Tons of earth removed in two field seasons yielded the remains of the circular foundation of a large harbor-fortification tower. Further excavation uncovered two parallel walls connected to the tower; apparently, the space between the walls was once filled with water and served as a moat, Hadjidaki says. Pottery found within the tower dates to the late fourth century B.C.

The tower, as well as three other mounds containing unexcavated towers, lies next to a 100-meter-wide basin dug out of the ground about 100 meters from the sea. A smaller basin of about 50 meters is situated behind the main harbor and is the focus of future excavations.

Similar man-made harbors were fashioned as early as the sixth century B.C. by the Phoenicians, who lived in cities along the coast of modern Lebanon and northern Israel and were avid sea traders. The Phoenicians generally used their harbors for trading rather than for military purposes. It remains unclear, Hadjidaki says, whether the Phalasarna harbor was influenced by the Phoenicians or was of purely Greek design. — B. Bower

## Agent Orange linked to some veterans' ills

An epidemiologic study of military veterans for the first time strongly links health problems with exposure to dioxin-tainted defoliating herbicides—including Agent Orange—used in Vietnam. The effects show a dose-response relationship with respect to estimated exposures. Moreover, the conditions are consistent with reports of animals and other human populations exposed to dioxins, the researchers reported this week at an American Public Health Association meeting in Boston.

The United States sprayed some 10 million gallons of defoliant on Vietnam during the war, notes Jeanne M. Stellman of Columbia University in New York City, one of the study's authors. Stellman is an independent adviser to the federal court in a \$180 million settlement between makers of Agent Orange and veterans claiming injury from it (SN: 1/26/85, p.57). She also has studied Defense Department records for 86 percent of the defoliants' use—detailing how much was used, where and when—as well as troop-movement data for 250,000 U.S. servicemen. With her husband, Steven Stellman, New York City's assistant commissioner of health for epidemiology, she developed a method for estimating an individual's Agent Orange exposure.

Financed by the American Legion, the study was based on detailed surveys of 6,810 randomly selected Legion mem-

bers. While all respondents served during the Vietnam-war era, only two-fifths saw duty in Southeast Asia.

The Stellman data show that veterans exposed to herbicides faced an increased risk of elevated blood pressure, benign fatty tumors, a wife's miscarriage, visual and skin sensitivity to light and symptoms of depression, as compared with veterans who were not exposed. The researchers say they adjusted for combat stress in their analysis. They caution, however, against putting too much weight on the exact magnitude of the risk increases at this time. Rather, they say, their findings' high statistical significance and strong dose-response relationship support a link between herbicide exposure and adverse health effects. (Study design didn't allow assessment of cancer and birth-defects risks.)

Their report and four related Stellman papers in the December *ENVIRONMENTAL RESEARCH* "represent a landmark in veteran health research and occupational epidemiology," says Michael Gochfeld of the Robert Wood Johnson Medical School in Piscataway, N.J. The federal government, he notes in an accompanying editorial, has refused to conduct congressionally mandated health studies of veterans, arguing that "since exposure cannot be well documented, the study was not feasible." The new studies refute that argument, he says. — J. Raloff