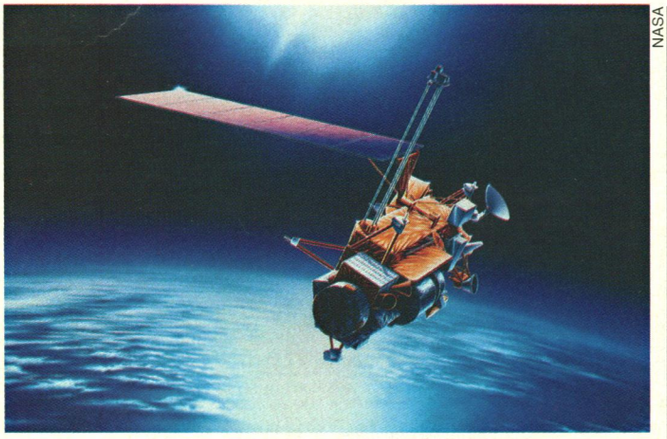
Hard Start for UARS

■ After 14 years of preparation and numerous delays, scientists awaiting the September launch of the Upper Atmosphere Research Satellite (UARS) now will have to loft their precious instruments into what might be the most tempestuous upper atmosphere of the century.

Once launched this September, UARS will peer down on a busy scene: an upper-level atmosphere laced with nitrogen oxides produced by recent record-breaking solar flares and below it a stratosphere engulfed by debris from the June eruption of the Pinatubo volcano. "I can't say I'm glad it happened this way, but it presents some interesting challenges," says Aidan Roche of Lockheed's Palo Alto Research Laboratory, one of 10 UARS principal investigators.

Originally, UARS would have been launched in the 1980s in time to get a good look at "normal" atmospheric conditions before all hell broke loose. Now researchers will have to deal with glare from volcanic debris that will flood their instruments and complicate quantitative measurements of upper atmosphere chemistry. And for Roche's instrument, which measures 12 chemical species as well as wind speeds, there's no chance of waiting for the mess to clear, either: It will go blind 21 months after launch when its coolant runs out.

Rumors flew after the eruption that the UARS launch might be delayed until things calmed down in the upper atmosphere. But after the long wait, NASA now says there will be no more delays. "I want to launch," says Roche. "I'm ready. I'm raring to go."



NASA

UARS will make detailed measurements of the upper atmosphere.

Goodbyes at Reston

■ An attempt to infuse NASA's space station program with the same engineering rigor that has characterized the unmanned space program soon will draw to a close. Come this September, a few dozen engineers from the Jet Propulsion Laboratory (JPL), who since 1987 have been helping to coordinate design activity at NASA's Space Station Office in Reston, Virginia, will be winging their way back home. While a NASA spokesperson explains the cut as a savings measure, insiders complain that the move really speaks volumes about NASA's commitment to engineering excellence.

JPL engineers in Reston have long been critical of each successive station engineering design. These are not popular sentiments in Reston, where the JPL engineers rubbed elbows with engineers from the aerospace industry and other NASA centers. "Our culture from the unmanned, planetary world never fit perfectly here," says one JPL engineer. The whole station program is "an awful lot of money for not doing much," he says. "That's why I'm not sorry to leave."

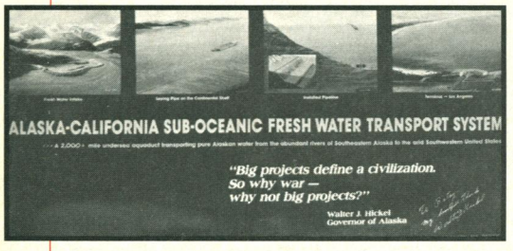
Alaska Governor Comes Up With a New Pipe Dream

■ If the populist governor of Alaska has his way, the trans-Alaska oil pipeline will one day have a rival in the megaproject department: an underwater pipeline that would carry water from Alaskan rivers 2000 miles down the Pacific coast to California desert dwellers.

In a full-color poster recently commissioned to promote the water pipeline, Governor Walter Hickel is quoted: "Big projects define a civilization. So why war—why not big projects?" An aide explains that technological advances often develop out of wartime research, and that Hickel would like to see a peace-time project spur such developments. The Republican Party plans to sell the posters for $100 apiece.

But Hickel's enthusiasm for pushing engineering technology to its limits borders on the bizarre. One preliminary study estimated that the project will take about 15 years and cost $150 billion. Hickel, however, believes the project can be finished sooner and cheaper by more than doubling the pipe's diameter, from 14 to 30 feet, and building it from new plastics instead of steel or cement. Hickel says he hopes the project will foster research into plastic pipes and water transport.

Even so, Los Angeles County officials are taking the idea of a water pipeline seriously. "By the year 2000 we will be out of water and northern California and the northwest are unwilling to help us, but now here is Alaska actually volunteering its water," says one. The congressional Office of Technology Assessment also is expected to begin a review of the idea.



Office of the Governor/State of Alaska

■ Life in a government lab—even a top-drawer operation like Los Alamos—can lose its thrill if all your energy goes into writing proposals and pleading for funds. At least that's how it seems to Doyne Farmer, a pioneer in chaos theory, who recently quit the lab. So next month, Farmer—along with two other refugees from Los Alamos and several from academia—will start a new corporation, intending to let private markets fund what he says national laboratories no longer easily can.

Farmer's idea is to adapt the sophisticated algorithms of "complexity theory"—an extension of chaos theory—to predict how cash will move in the financial markets. Getting rich, he says, is his last, best hope for doing more research.

Things have reached this state, he says, because the tradition of support for high-risk, high-payoff research at Los Alamos has virtually come to an end. It was the spirit of adventure that made the lab a hotbed of chaos theory in the 1970s, says Farmer, who did seminal work in that field as a graduate student at the University of California at Santa Cruz.

If the new private venture fails, "I'll have spent a year having fun doing some real research on generalizing those techniques," Farmer says. "And if it works, then the research will make money by itself, and I won't have to convince some bonehead back in Washington that it's worthwhile."

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