SCIENCESCOPE

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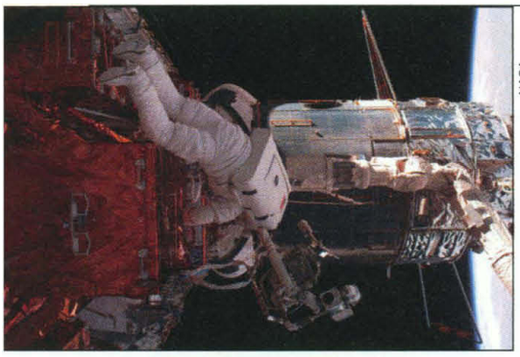

NASA

Hubble boost? If repair idea works out, NICMOS, installed during this mission, could get a new lease on life.

Cool Fix for Hubble Infrared Camera?

Astronomers' spirits sagged earlier this year when the Hubble Space Telescope's new infrared camera sprang a coolant leak, potentially cutting in half the instrument's planned 4-year lifetime. But now, NASA is toying with an idea for a fix that might even keep the camera going longer than originally planned.

The Near Infrared Camera and Multi-Object Spectrometer (NICMOS) can peer through cosmic dust into star-forming regions and pick up the reddened light of very distant galaxies. But after its installation in February, NASA engineers discovered that the solid nitrogen needed to keep NICMOS cool enough to avoid noise in the infrared signals it detects was warming and escaping into space faster than planned.

Because there's no easy way to refill the nitrogen Dewar in space, the agency is now exploring a different solution: a high-tech heat pump being developed by the Air Force to cool infrared missile detectors. The pump compresses gaseous neon, which then expands and draws heat from its surroundings.

NASA engineers believe such a system might be able to cool the NICMOS filters and detectors to about 70 kelvins, 12 K warmer than the solid nitrogen can manage, but "just fine" for observations, says Hubble project scientist David Leckrone. He says engineers hope to complete a preliminary analysis next month.

If they don't find major roadblocks, astronauts could attach the unit during the next Hubble servicing mission in December 1999—shortly after the last of the nitrogen is expected to sublime away. In the best case, the heat pump might even lengthen the instrument's lifetime. Unlike a supply of coolant, it could keep the instrument cool indefinitely, Leckrone adds. "We're pressing on until we see it isn't going to work," he adds.

Robert Williams, director of the Space Telescope Science Institute in Baltimore, says he's "ambivalent" about the plan, as it could siphon funds and energy from other Hubble research. But Leckrone says the project might attract outside funds from sources interested in using heat pumps in space, such as the Air Force and other programs at NASA.

Peña Delays Laser-Fusion Project

The Department of Energy (DOE) is postponing major construction of a $1.2 billion laser facility until after a federal court considers whether to issue a preliminary injunction halting work on the project.

The 11-day delay in building the National Ignition Facility (NIF) at Lawrence Livermore National Laboratory is "the astute thing to do," says Energy Secretary Federico Peña. "I'm a former practicing attorney, and we are trying to be courteous to the court." DOE had planned to begin digging the foundation on 5 June, but will now wait until the 16th, 6 days after the hearing.

Peña adds that he's confident that the legal challenge posed by a group of 39 environmental groups will be overcome. As a sign of that faith, DOE intends to go ahead with the 29 May groundbreaking ceremony, which Peña and several members of Congress from California will attend. But missing will be Vice President Al Gore, who declined to attend in light of the publicity surrounding the lawsuit, Administration officials say.

Meanwhile, DOE has lost a battle in another legal war over NIF. On 12 May, the same court—the U.S. District Court for the District of Columbia—denied a request by DOE regarding an earlier ruling that bars the agency from making use of a National Academy of Sciences report on NIF because it had not been done in accordance with government openness rules. DOE argued that because Livermore is a contractor, it should be allowed to use the report. But the court disagreed.

Two Tapped for White House Science Posts

The Clinton Administration is close to naming new science and technology associate directors at the Office of Science and Technology Policy. Physicist Arthur Bienenstock, an associate director at the Stanford Linear Accelerator Center, will get the science nomination, say Administration and academic sources. A Stanford University faculty member since 1967, Bienenstock would replace Massachusetts Institute of Technology physicist Ernest Moniz, who returned to academia last year but is now in line for a senior Department of Energy job.

Duncan Moore, dean of engineering at the University of Rochester in New York, will get the nod for associate director for technology, sources add. An optics professor at the university since 1974, Moore did a 2-year stint in Washington in the early 1990s as a science adviser to Senator John Rockefeller (D–WV) and an American Physical Society congressional fellow.

Don't expect either White House job to be filled immediately, administration aides say, given the huge backlog of nominations and delays in winning Senate confirmation.

Fire Stalls CERN Experiments

A fire in a power supply at CERN, the European particle physics center near Geneva, will cause serious delays in several CERN research programs, among them long-awaited experiments on the laboratory's biggest accelerator.

The fire, which caused no injuries, occurred on the morning of 13 May after an electrical circuit shorted. It destroyed a 1-megawatt power supply for a radio-frequency generator—a device that pumps energy into an accelerator. Replacing the power supply isn't the main problem, says CERN spokesperson Neil Calder—it's a coating of soot and acid smoke left throughout the building that houses the power supply by burning PVC (polyvinyl chloride) materials. Because this gunk could corrode equipment, 100 people are now working around the clock to remove it.

The affected generator supplies power to part of the Super Proton Synchrotron (SPS), which feeds electrons and positrons into CERN's flagship accelerator, the Large Electron-Positron Collider (LEP). The LEP has been down since December while it is upgraded to an energy of 184 GeV. But the start-up, originally set for mid-June, won't take place until July at the earliest, depriving researchers of 2 to 4 weeks of experiment time, Calder says. Several fixed-target experiments supplied by the SPS are also down, such as CHORUS and NOMAD, which detect neutrino oscillations.

In the next run, LEP will inch closer to the energy domain where theorists predict they will find a new particle—called the Higgs boson—that provides other particles with mass. Project scientist Luigi Rolandi says that at least a month-long delay won't cause CERN researchers to lose ground to a competing team, because "there is no other experiment that is going to explore this energy regime."