INDIRECT COSTS

Universities Balk at OMB Funding Rules

A smoldering dispute between major research universities and the U.S. government over the cost of doing research has flared up once again. The spark is a new set of rules, proposed by the White House, that would limit subsidies for research facilities. University lobbyists say the limits could hurt efforts to issue private construction bonds for new labs, and researchers worry that they could also increase the cost of animal research.

The proposed regulation is part of an arcane but far-reaching document known as Circular A-21, drafted by the White House Office of Management and Budget (OMB). Its aim is to control the $3 billion in "indirect" or infrastructure costs paid by the federal government each year to educational institutions as overhead on research grants. In September, OMB proposed changes to A-21 and gave the universities until 10 November to comment on them.

The strongest protest so far comes from the Association of American Medical Colleges (AAMC), which represents 125 U.S. medical schools and 86 professional societies. AAMC President Jordan Cohen sent a sharply worded critique to the White House on 28 October, urging that the proposals be "scrapped." AAMC is particularly upset by what it views as an attempt to discourage the construction of expensive facilities. OMB's proposed rules would require universities to submit detailed justification if they seek reimbursement for buildings costing more than $10 million and if the construction costs are more than 125% of the median rate for gross square footage in their geographic region, as determined by a survey conducted by the National Science Foundation.

Cohen's four-page letter says this demand for extra data assumes that universities are not now behaving reasonably—an assumption he finds outrageous. "Nowhere in the notice does OMB offer any evidence that educational institutions ... have constructed any facility that is unreasonably costed," writes Cohen. "We believe the OMB is proposing to create a burdensome system to solve a nonexistent problem." Cohen says cutting-edge science cannot be done in "average" facilities, adding that AAMC is "astonished ... that the proposal is presented without any credible, data-driven analysis modeling the impact of the new proposal on universities and schools of medicine."

Other groups representing research institutions—including the Association of American Universities and the Council on Governmental Relations (COGR)—are planning to submit letters as well. COGR's executive director, Milton Goldberg, predicts that their comments will be just as tough as AAMC's, and he confirms that some universities worry that the new rules could make it harder to raise money through bonds by undermining confidence in the universities' ability to recoup the cost of construction through federal payments.

A different complaint comes from the Federation of American Societies for Experimental Biology (FASEB), which represents researchers rather than administrators. According to FASEB's public affairs officer, Howard Garrison, the group is primarily concerned about a new accounting rule for animal facilities. OMB has proposed treating animal centers as "specialized facilities," which means that their costs would have to be paid directly from the grants of researchers who use the facilities and not charged as overhead across the entire university. Linda Cork, chair of comparative medicine at Stanford University School of Medicine, has estimated that this change could more than double the cost of animal studies. (See Policy Forum, *Science*, 2 May, p. 758.)

After the public comment period ends next week, OMB will decide whether to revise its A-21 proposal or proceed immediately with implementation. If it chooses the second course, the dissent may soon grow louder.

–Eliot Marshall

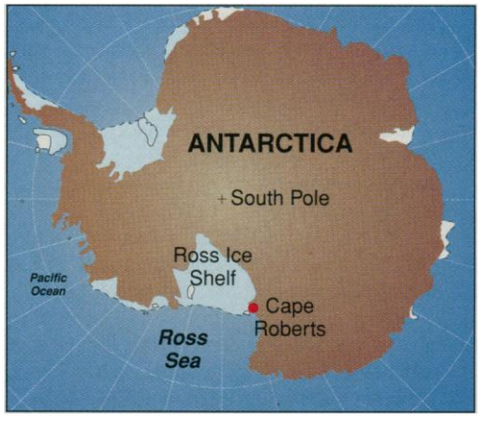
GEOLOGY

Storm Aborts Antarctic Drilling Project

A fierce storm off the Antarctic coast has forced scientists to abandon work on an eagerly awaited drilling project weeks earlier than they had planned. They now must wait at least another year for long-sought data on key geologic events that shaped the frozen continent. "It's real sad that they had to quit so early," says Rosemary Askin, a project scientist at Ohio State University in Columbus. But there was some good news: Before they aborted the drilling, researchers retrieved sediment from a period never before sampled in the region.

For years geologists have searched for Antarctic sediment dating from 30 million to 145 million years ago, a time during which the vast Antarctic ice sheet is thought to have formed and the Transantarctic Mountains pushed up. These layers may hold clues to the forces that transformed a lush landscape teeming with dinosaurs and other lifeforms into an icy wasteland. And the information might yield insights into how shifts in today's climate might alter the environment—particularly how warming might melt Antarctic ice and raise global sea levels.

Finding accessible sediment from that period has been no easy task, because 95% of Antarctica's landmass is covered by a kilometers-thick ice sheet. In the 1980s, however, geologists bouncing sound waves off submerged sediment about 20 kilometers off



Icebreaker. A severe spring storm has forced an end to drilling off Cape Roberts.

Antarctica's Cape Roberts pinpointed ancient strata 150 to 500 meters beneath the surface of the southwest corner of the Ross Sea. The sediments, 1500 meters thick, are estimated to span a period ranging from 30 million to 100 million years ago.

Jumping to exploit the find, several dozen researchers from Australia, Germany, Italy, New Zealand, the United Kingdom, and the United States set out to build a special drilling platform. They couldn't use a drill ship because sea ice extends too far into the austral summer to make that an option, and conditions in the winter are too harsh for any drilling operations. So project engineers designed a rig that could be rolled onto a 1.5-meter ice sheet in early September and be used until the ice starts to break up, which usually occurs in late November.

The platform was set to debut last year. However, late-winter storms in 1996 forced researchers to postpone the project. This year, drilling had been under way for just 9 days when an unseasonable storm bore down on the Ross Sea on 22 October. The 2-day storm, says project chief scientist Peter Barrett of Victoria University of Wellington, New Zealand, was "more severe than any [on record] from this time of year." Abetted by 3 weeks of temperatures that were about 10 degrees Celsius warmer than usual, the storm swells ravaged the outer fringe of the weakened sea ice and sent fissures snaking to within a kilometer of the rig. If the storm had passed just 50 to 100 kilometers further east, "there is a good chance the sea ice

would have survived nicely," says program manager Scott Borg of the National Science Foundation, co-sponsor of the $4.3 million project. Instead, the 20 drillers and support staff worked around the clock to dismantle the 50-ton drilling platform and haul it to the base camp near shore, an operation completed early on 26 October. "The illusion of man triumphant over nature is ripped away by the winds and cold here," says project scientist John Wrenn of Louisiana State University in Baton Rouge, who studies microfossils. Many scientists who had just reached the camp will now have to return home early.

But the storm-shortened season was not a complete loss: Researchers were able to recover 113 meters of core tentatively dated at 17 million to 22 million years old. Although the sediment is several million years younger than indicated by acoustic studies, it represents a period never before sampled near the Antarctic ice sheet. "I'm delighted with what we have recovered," says Wrenn. Because sediment analyses should help fill a gap in Antarctica's paleoclimactic record, adds Borg, "this core is expected to be very valuable from a scientific perspective."

The premature end to the drilling season, however, casts doubt on the scope of future work. While the project is funded for two field seasons, project scientists acknowledge that there's no way to sample the remaining 1350 meters of valuable sediment layers next season alone. That will leave Barrett and others to sort out over the coming months whether they can squeeze money out of project backers for a third season or whether they must settle for fulfilling only part of their goal. And of course they will keep a wary eye on the weather. Says Askin, "We'll keep our fingers crossed for next year."

–Richard Stone

SPACE TELESCOPE

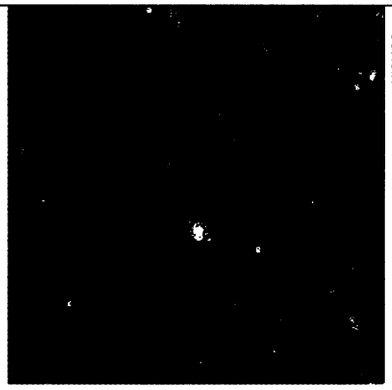
Making the Most of a Short Life

The front-page pictures last month of the "pistol star"—perhaps the brightest star ever seen in our galaxy—was one of a string of striking images this year from the Hubble Space Telescope. But it was among the first from the Hubble's Near Infrared Camera and Multi-Object Spectrometer (NICMOS), one of two new instruments astronauts installed on the telescope in February. For NICMOS scientists, the splash of publicity was a welcome respite from the headaches that the instrument has caused.

Problems with the instrument's cooling system have forced one of its three cameras out of focus and cut its life expectancy by more than half—from 4 1/2 years to less than 2 years. The efforts to complete as much science as possible during NICMOS's shortened lifetime are disrupting observing schedules on other instruments. And NASA is even planning to move the telescope's secondary mirror for a few weeks next January to sharpen some NICMOS observations—an adjustment that astronomers say carries a small, but real, chance of leaving other instruments permanently out of focus.

Soon after NICMOS was installed, NASA engineers discovered that the solid nitrogen coolant, which keeps ambient heat from obliterating the infrared radiation NICMOS is designed to observe, had expanded so that it was touching its casing. The resulting "thermal leak" is heating the nitrogen so quickly that engineers predict it will all sublimate into space by late next year, leaving the instrument's sensors blinded. The expanded ice has also pushed out of focus the detector for the third camera and its multiobject spectrometer, a tool that separates incoming light into a spectrum, revealing an object's speed and what it is made of.

Engineers say they might be able to install a cooling pump in 1999 (*Science*, 23 May, p. 1183), but Hubble managers are not counting on such a save. The Space Telescope Science Institute (STScI) in Baltimore, which controls Hubble operations, has set aside almost half of the telescope's orbits next year for NICMOS observation—double the original allotment. That means some long delays for astronomers who want to use the Space Telescope Imaging Spectrograph (STIS)—the other new instrument installed in February—the Wide Field Planetary Camera 2 (WFPC2), and the Faint Object Camera.



Brightest star in the galaxy. This image was one of the first from NICMOS.

While most of those affected say they understand and even support the shuffling, the delays are frustrating, says astronomer Jeff Linsky of the University of Colorado, Boulder, who hopes to use STIS to probe the anatomy of young stars. "We put in our proposals a long time ago," he says. "[NASA] invested $125 million in STIS, and we have seen very little so far." He estimates that his observations will end up a year behind schedule. Douglas Richstone of the University of Michigan, Ann Arbor, who plans to use STIS to take a census of black holes, estimates that his observations are 6 months behind.

STScI officials acknowledge that the delays will be painful. "There are people who applied for time a year ago and who will have to wait another year for their data," says Andrew Fruchter of STScI, a member of the WFPC2 group. "After that amount of time, a conception can become scientifically stale."

Efforts to sharpen the focus of the multiobject spectrometer camera will also disrupt other observations, at least temporarily. In late January, NASA engineers will send a command for Hubble to move its secondary mirror a fraction of a millimeter to bring the detector into focus. But even that tiny shift is enough to blur the vision of the other instruments, and they would be handicapped if the mirror can't be moved back to its original position. "That scares me," Richstone says. "Suppose the motor fails. It's not astronaut serviceable." But Fred Walter of the State University of New York, Stony Brook, chair of the Space Telescope User Committee that advises STScI, says NASA has made bigger adjustments before. "It's only a small risk that you'll be stuck at a bad focus," he says. "The engineers are confident it will come back."

NICMOS users, on the other hand, are thrilled at the chance to use the third camera to look at the composition of Pluto's moon Charon and of the star-forming regions of the Milky Way and other galaxies. Almost half of the 3-week set of observations will be devoted to taking another look at the Hubble Deep Field, a region of the sky that WFPC2 probed nearly 2 years ago, revealing some of the faintest and most distant objects ever seen. The expansion of the universe stretches the light from distant galaxies into longer—redder—wavelengths, and by viewing the Deep Field in the infrared, NICMOS may be able to probe even deeper into the outer reaches of the universe.

But the coolant troubles will still limit that observation. Scientists had hoped to get deep views of adjacent areas of the sky with WFPC2 and STIS. The mirror shift, however, will render WFPC2 useless, and astronomers are unsure how useful the out-of-focus information from STIS will be.

Nonetheless, STScI director Robert Williams emphasizes that the intense set of observations over the next year should produce a spectacular scientific harvest: "NICMOS works. It can do everything we had hoped." But he admits that the problems have been "a big disappointment." The triage "has required a tremendous amount of work," he says. "We're going to end up recouping most of the science, but it's taken so much more effort to do it."

–Gretchen Vogel