SOUTH POLE

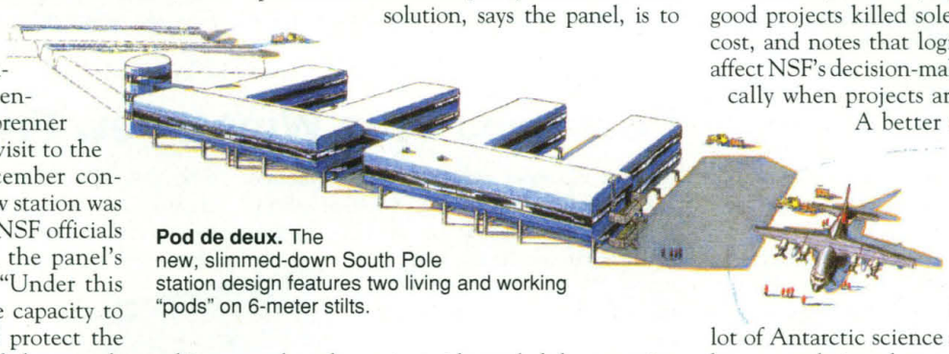
U.S. Antarctic Panel Makes Case for Replacement Station

A blue-ribbon panel has recommended that the National Science Foundation (NSF) proceed with plans to build a new U.S. research station at the South Pole to replace its aging facility there. But the panel also says the new station should be a Chevy, not the Cadillac NSF wanted, and the $70-million-a-year Antarctic science program should be trimmed by $20 million over the next 5 years to help pay for it.

The report is expected to boost NSF's 3-year campaign to win congressional approval for a new station. "I think $120 million will be a lot easier to sell than $180 million," the facility's original price tag, says Science Committee Chair Representative James Sensenbrenner (R–WI), who says a visit to the South Pole last December convinced him that a new station was indeed needed. And NSF officials appear pleased with the panel's balanced approach. "Under this plan, we preserve the capacity to do good science and protect the health and safety of the people working there," says Cornelius Sullivan, head of polar programs at NSF, which asked for the report. But many polar scientists are worried about the impact of the proposed cuts on researchers. "It's obviously going to hurt a great deal," says the head of NSF's polar science advisory panel, University of Michigan geologist Sam Mukasa. "It could discourage young people from submitting proposals as well as [limit the activities of] the current crop of investigators."

The panel was formed last fall to review NSF's request for a new station after a White House task force reaffirmed the geopolitical and scientific importance of maintaining research stations in Antarctica, and asked for a more detailed plan (*Science*, 10 May 1996, p. 803). Run by NSF as part of the $193-million-a-year U.S. Antarctic program, the Amundsen-Scott South Pole Station has become an important site for everything from balloon studies of atmospheric ozone depletion to astronomical observations of distant galaxies because of the pole's low temperatures, arid climate, and pristine air, among other attributes. The facility also serves as an important supply station for far-flung scientific efforts on the frozen continent and plays a vital geopolitical role by maintaining a strong U.S. presence at the hub of the overlapping territorial claims of seven other countries.

Presenting a summary of the still-unfinished report last week to a receptive House Science Committee, Norman Augustine, chair of the 11-member panel and CEO of Lockheed-Martin, applauded NSF's "remarkable" job of satisfying the needs of polar researchers within its overall $3-billion-a-year budget. He called the South Pole station the "crown jewel of [NSF's] scientific activities in Antarctica" but noted that it has lost its luster: "The U.S. would not send a ship to sea or a spacecraft into orbit in [such] condition." The solution, says the panel, is to replace the station with a scaled-down version of the $180 million facility drawn up 3 years ago (*Science*, 24 June 1994, p. 1836).



THOMAS VAUGHAN/U.S. ARMY

Pod de deux. The new, slimmed-down South Pole station design features two living and working "pods" on 6-meter stilts.

The new proposal would cost $120 million and would benefit from an additional $25 million being spent this year on renovations to the South Pole site. It would maintain the current summer capacity of 110 persons and would nearly double, to 50, the number of staff who could remain for the 8-month austral winter. But this slimmed-down station would be composed of two living and working "pods" instead of the three proposed in the 1994 design. This would reduce the amount of lab space and create some double-occupancy rooms. The new plan also jettisons an advanced water purification and sewage system, with facilities for growing vegetables hydroponically, and a supplemental power system.

While some of the cuts will just make life on the ice a bit more arduous for researchers, others could hamper ongoing research. One such measure includes delaying an upgrade of the current communications and computer systems until the station is completed in 2005. " 'More power, speed, and bandwidth' has always been our mantra," says Robert Morse, a physicist at the University of Wisconsin, Madison, and principal investigator on an international project to turn the ice into a vast detector for neutrinos by installing strands of light sensors in 1500-meter-deep shafts (*Science*, 7 January 1994, p. 28). "We're already generating gigabytes of data, and we need to get them out in a timely fashion," says Morse.

In addition to imposing a $20 million tax on research, the Augustine panel also suggested changes in how NSF reviews Antarctic research proposals to give it more scientific bang for its buck. Science on the ice is expensive: NSF will spend $40 million this year on the scientific infrastructure needed to do $30 million worth of research. It also will shell out $123 million for support staff, transportation, and food service, among other logistical necessities. One way for NSF to streamline costs, according to the panel, would be to ask reviewers to consider overall cost as well as scientific merit when evaluating projects.

Sullivan, however, says he wouldn't want good projects killed solely because of their cost, and notes that logistical costs already affect NSF's decision-making, although typically when projects are being scheduled. A better approach, he says, would be to reduce the number of researchers making annual trips to the ice: "Some people need to be there every year. But a lot of Antarctic science can also be done at home, analyzing data and developing new models before going back into the field."

Mukasa is already on such a staggered schedule, having spent 1993 and 1995 in the field examining a layer-cake formation called the Dufek intrusion—which offers clues to how different types of rocks are formed when magma from volcanoes cools—and the off years in his lab. His project is one of many that is dependent on a continued U.S. presence at the South Pole. Although the research site in the Pensacola Mountains is located several hundred kilometers from the Amundsen-Scott Station, the plane that drops him and his colleagues off at the site has to refuel at the pole station before returning to the main U.S. base at McMurdo Sound.

Despite the caveats, for Sullivan and his colleagues the panel's conclusion is a welcome one: Construction of the new station should start in the 1988 fiscal year. Augustine says the panel hopes that Congress will convert a pending NSF request for $25 million for repairs to the existing South Pole station into the first installment of the 5-year construction budget. And the panel's eye toward the bottom line is expected to help make the idea more palatable to a tightfisted Congress as it reviews NSF's budget this spring.

–Jeffrey Mervis