Update on South Pole Infrastructure

Presentation to the Astronomy & Astrophysics Advisory Committee

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Bottom Line Up Front

- **NSF DCL 22-078, April 29, 2022. "Update on Science Support and Infrastructure in Antarctica"**

*"**South Pole Station*** is saturated with already-funded projects, and required critical infrastructure and maintenance activities that can no longer be deferred, until late in the decade. South Pole Station will continue to host its current suite of large-scale science projects, such as the IceCube Neutrino Observatory; however, proposers seeking support for new projects at South Pole Station should consult the cognizant program officer to discuss alternative pathways to accomplish science goals."

South Pole Limitations 101

- **What are the limitations at Amundsen-Scott South Pole Station?**

1. Beds
   - Limited by station footprint, increased only by huge station expansion.

South Pole Limitations 101

- **What are the limitations at Amundsen-Scott South Pole Station?**

2. Cargo
    - Limited by air re-supply (number of aircraft) and traverse capabilities (people, equipment, daylight). Aircraft are expensive and very long lead time. Length of summer (daylight) is not changeable.

South Pole Limitations 101

- **What are the limitations at Amundsen-Scott South Pole Station?**

3. Fuel/station power
    - Limited by air re-supply, traverse capabilities, current power plant.

- Also:
    - Transport limits to Antarctica mean that infrastructure investments at McMurdo will limit ability to invest at South Pole.
    - Near-term need to raise buildings at South Pole.

South Pole Prioritization Subcommittee

- Subcommittee of OPP Advisory Committee formed in summer 2022.
  - Chaired by Fleming Crim (former NSF COO and MPS AD).
  - Membership drawn from NSF and partner agencies (DOE, NOAA, NASA).
- Charge: Develop a framework and decision rules for prioritizing projects, given
  - Diversity of disciplines;
  - Capacity for world-class science; and
  - Scientific priorities established in different fields
- Consider:
  - Current assets at South Pole Station; and
  - Potential future investments.

Strategic Approach to Infrastructure Recapitalization

Three Components:

- Initiate the Antarctic Infrastructure Recapitalization (AIR) Program
- Develop and refresh Master Plans across the U.S. Antarctic Program
- Resume construction on the Antarctic Infrastructure Modernization for Science (AIMS) project

Antarctic Infrastructure Recapitalization (AIR) Program

Long-term capital plan with a predictable budget that will improve our ability to support the future of Antarctic science and increase engagement with the communities we serve.

https://www.nsf.gov/about/budget/fy2023/pdf/34_fy2023.pdf

Antarctic Infrastructure Recapitalization (AIR) Program

- **Immediate needs** to keep the program safe and viable
- Opportunities to **enhance efficiency** and long-term performance
- Investments to enable USAP's **continued leadership** on the continent
- Technological **innovations** that improve the program's resilience

South Pole Station Master Plan Status

- Funded architect/engineering firm to develop South Pole Station Master Plan, including energy study.
- Preliminary analysis under way, with stakeholder engagement planned for later this year.
- More information, including schedules and engagement avenues, will be posted soon on OPP web page.

USAP Standard COVID Protocols

McMurdo

Traveling South:

- **Airport of Departure: Negative supervised RAT, masking during travel, health screening**
- **Gateway: Negative PCR or two negative RATs, 48 hours apart**

New Arrivals: Five days of masking and community separation

Deep Field: PCR test to enter isolation, 5 days of isolation, negative RAT to exit isolation and further deploy

Vessels

Traveling South:

- **Airport of Departure: Negative supervised RAT, masking during travel, health screening**
- **Gateway: Negative PCR on arrival and negative RAT before embarkation**

South Pole

Pre-Departure: Negative RAT, 5 days of isolation (may be completed at SP)

New Arrivals: Five days isolation (if not completed at MCM), upon isolation completion five days of continued masking and separation in galley

Palmer

Disembarkation: Health screening and negative RAT. Note that arrivals have a minimum of five days transit before arrival to Palmer

Note: Community spread can lead to station-wide masking, all positive cases are required to isolate for 5-7 days and mask until Day 10


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