

South Pole Users Committee Letter to ASA

June 25, 1997

Mr. Ron Koger Project Director for Research Antarctic Support Associates

Dear Mr. Koger:

Once again the South Pole Scientific Community, and the South Pole Users Committee (SPUC) would like to thank you and the entire ASA staff for the superb level of support and high level of professionalism that all of you have brought to the support of South Pole Science. As in previous years, SPUC also will try to make its contribution by identifying an area which, it feels, if addressed in an appropriate way, could have a major impact on improving the station's scientific effectiveness.

The science program--especially winter-over science--has enjoyed a rapid growth over the past several years, and the program has attracted some of the best science groups in the world to the South Pole. However, while the South Pole may be the best place to do this science, it is not the only place. Other sites and experiments can and do compete. This increased competition makes today's scientists acutely aware of the need to analyze and publish their results during "windows of maximal impact". They understand that promptness of obtaining and reporting results is crucial in directing a viable competitive experiment.

Therefore, like last year, SPUC is still concerned that the communications and computing platforms at south pole are not keeping pace with the increasing scientific demand. The committee feels that not only is bandwidth important, but that more encompassing concept of "connectability" is of paramount importance. Connectability gives the scientists a south pole presence for it keeps scientist and winter-over personnel "engaged".

Further, the window of opportunity for many scientific projects is just too short to favor a long-term and studied approach to the implementation of any new technology. The scientific community is willing to accept some levels of experimentation and risks if this will shorten the time required to improve the communications systems. We encourage prompt installation of prototype systems, that while serving as test vehicles, can also be used by the scientific community. Such prototyping risks will be gladly embraced by the science users if they bring the promise of future enhanced performance.

Specifically, SPUC would like to call ASA's attention to the communications up-grade recommendations that the Communications and Computing Sub-Committee of SPUC has submitted with this letter. We feel that the discovery potential of the current South Pole science endeavors needs and deserves this level of support to guarantee that its full "promise and potential" can be achieved.

Respectfully submitted for the South Pole Users Committee by

Robert M. Morse Chairperson

CC: N. Lane, NSF C. Shepherd, ASA C. Sullivan, NSF S. Kottmeier, ASA D. Peacock, NSF D. Fischer, ASA E. Chiang, NSF D. Neff, ASA J. Lynch, NSF A. Moore, ASA S. Stephenson, N E. Blain, ASA J. Marty, NSF C. Rhone, ASA P. Smith, NSF

SPUC Computing and Communications Sub-Committee Report

COMMUNICATIONS

The communications capabilities at the South Pole must continue to improve in order for the major science projects to succeed. Already the benefits of the higher bandwidth and Internet connection have had a major impact on the way we are doing science at the Pole.

Now that we have been able to evaluate the day to day experience (separate summary to follow) with the Internet connection to the Pole for the past three years, we can summarize our future needs with three words: Availability, Performance, and Bandwidth, in that order.

The South Pole User's Committee believes that nearly continuous coverage at T1 data rates can be achieved in the next few years. As a first step towards this goal we have prioritized these communication recommendations for this year.

Short Term:

1) Upgrade the Malibar-Miami link to T1 rates with multiplex voice capability.

This has our highest priority. The current 128 Kbps link is a major bottleneck in the communications system.

2) Upgrade the GOES-3 ground stations to T1 rates in a serviceable and documented way.

GOES has been operating in its initial prototype stage since its coming on-line. To prevent any failures in the system, and to provide higher bandwidths and more reliable connection, this upgrade should begin.

3) Provide remote phone service between the station phone system (PBX) and CONUS.

We think that this phone service may be best implemented by multiplexing the GOES link with reserved voice channels, but alternative technologies such as the rapidly developing Internet voice transmission could be considered.

4) Provide fax capability to CONUS.

Both realtime, when satellites permit, and store and forward capabilities.

To keep pace with the increasing demands on the communications infrastructure, we need to plan now for future growth. The following list is our long term recommendations:

Long Term:

1) 24 hour connectivity with the south pole.

a) Continuous communications would support remote observing programs at the CARA facilities.

b) The AMANDA and SPASE collaborations could move much their data analysis to machines at the pole, which would allow results to be obtained much more quickly.

c) The window for interaction between CONUS and Pole will be widened, resulting in much more efficient interaction with winter-overs.

d) The longer availability would allow better use of CONUS experts (such as software and hardware engineers).

2) Pursue acquisition of other satellites (GOES, TDRS) to complement the two we currently depend on.

3) Emphasize connectivity convenience, times, and quality rather than very high bandwidth.

NETWORKING

- 1) Continue the network LAN plan begun in the 96-97 summer season.
- 2) In concert with the communications upgrades recommended above, data rates from the Dark Sector need to be expanded by laying of 100Mb fibers.

A follow-up letter with statistics on current performance and throughput of the satellite links will follow this recommendation.

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