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OPERATING FOR THE
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La Serena, Chile & Hilo, Hawaii

National Optical Astronomy Observatory
Tucson, Arizona & La Serena, Chile

National Solar Observatory
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OPERATING FOR THE NATIONAL AERONAUTICS
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Space Telescope Science Institute
Baltimore, Maryland

MEMBERS/SINCE:

Harvard University 1957
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University of California 1957
University of Chicago 1957
University of Michigan 1957
University of Wisconsin 1957
Yale University 1958
Princeton University 1959
California Institute of Technology 1972
University of Arizona 1972
University of Texas at Austin 1972
University of Colorado 1977
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Australian National University 1999
New Mexico State University 1999
Rutgers University 1999
Leiden University 2000
University of Florida 2002
University of Virginia 2003
University of Toronto 2004
Instituto de Astrofísica de Canarias 2005
Kiepenheuer-Institut für Sonnenphysik 2005
Montana State University 2005

December 14, 2006

Dr. Wayne Van Citters
National Science Foundation
4201 Wilson Blvd., Room 1045
Arlington, VA 22230

Dear Wayne:

The AURA Solar Observatory Council (SOC) is pleased that the Senior Review substantially affirms NSO long-range planning for the development and implementation of the Advanced Technology Solar Telescope and SOLIS. However, the SOC is deeply concerned that the recommendation to close GONG one-year after the launch of Solar Dynamics Observatory (SDO) will have serious consequences for the very productive field of helioseismology. When coupled with the high quality atmospheric magnetic field data that ATST and SOLIS will produce, GONG's probing of the subsurface structure and flow offers the opportunity to understand the origin, evolution, and demise of solar magnetic field. These both impact humanity and are a key to understanding many astrophysical processes.

Helioseismology has evolved markedly since 1995, when NSF's GONG program began and NASA launched SOHO with the MDI instrument. These two events revolutionized the field, as for the first time nearly continuous data was available free of the contamination caused by the diurnal rising and setting of the sun at a single ground-based site.

The rich scientific harvest reaped by these facilities could not have been achieved without the combination of the two. As each facility discovered new and significant features about the solar interior, the first question was "Does the other one see it?" It became clear that an outstanding issue with helioseismology is the impact of systematic effects on the results -- effects that cannot be reduced by averaging more data together. Even after a decade of work, both programs are still discovering subtle effects that need to be addressed.

Significant effort has been expended by both programs to understand the source of the systematics through joint comparisons. Thus, the two programs have actually functioned as a single scientific endeavor. This is a prime example of de facto interagency cooperation between NASA and NSF, albeit without a prior official plan. The Astronomy and Astrophysics Advisory Committee (AAAC) should recognize that this cooperation exists, and seek future

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discussions about how the NASA and NSF helioseismology programs can cooperate further. The risks associated with space missions as well as ground-based funding uncertainties should be of concern to both agencies in this situation. It may be necessary to increase the membership of solar physicists on the AAAC to adequately address the issues.

Given the budget constraints of today, the future launch of NASA's SDO mission with HMI, and the NSF Senior Review recommendation concerning GONG, the AAAC should ensure that the essential synergy between GONG and NASA's helioseismology missions is maintained. The SOC requests that the National Solar Observatory brief the AAAC on this issue at their next meeting.

Respectfully,

AURA Solar Observatory Council

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cc: Garth Illingworth, Chair
AAAC