National Science Foundation
4201 Wilson Boulevard
Arlington, Virginia 22230

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Dear Colleague Letter - Transition Plans for the SAFOD Component of EarthScope

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This letter is intended to describe National Science Foundation (NSF) plans for the San Andreas Fault Observatory at Depth (SAFOD) component of the EarthScope Program.

SAFOD was built between 2003 and 2008 by Stanford University in partnership with the US Geological Survey-Menlo Park, and has been operated since 2008 by UNAVCO. SAFOD's goal is to enable multidisciplinary research into the physical and chemical processes that govern the behavior of large plate-bounding faults. SAFOD was designed to do so through (1) collection of seismic and other data from a long-term observatory installed inside a deep borehole drilled through the San Andreas Fault near Parkfield, California and (2) collection, curation, and distribution of physical samples from the borehole.

Nearly thirty research groups worldwide have used or are using SAFOD samples for a variety of investigations into the physical properties of material in an active plate boundary fault zone. More than two dozen research papers resulting from such studies have been published in just the past two years. However, despite significant effort, the downhole component has not been as successful: the long-term SAFOD observatory that was installed in September 2008 ceased operating shortly thereafter.

In 2010-2011, NSF undertook multiple activities to develop a new plan for the downhole component of SAFOD:

- The Advisory Committee for Geosciences appointed an independent SAFOD Engineering Subcommittee to examine the 2008 events and to recommend technical approaches that would give a reasonable likelihood of successful long-term operation of a new downhole observatory. The committee's report and an extensive set of appendices are available on line: Report of the SAFOD Engineering Subcommittee of the Advisory Committee for Geosciences, March 30, 2011 and Background Materials to Accompany the Report of the SAFOD Engineering Subcommittee of the Advisory Committee for Geosciences, March 17, 2011.
- In parallel with the committee's work, NSF consulted extensively with UNAVCO, our USGS partners, the EarthScope Steering Committee and SAFOD Advisory Committee, and the community about the future for SAFOD science.
- Finally, UNAVCO's community-elected Board of Directors considered UNAVCO's stewardship of SAFOD, and recommended that UNAVCO and NSF work to transition management of SAFOD to a new awardee.

After considering all this input, NSF released a Dear Colleague Letter (NSF 12-013) (November 16, 2011) announcing a three-pronged approach to the short-term future for SAFOD:

1. Redefine SAFOD to include the Main Hole, physical samples, vertical laser strainmeter, and all digital data collected to date, but not a new downhole observatory.
2. Solicit proposals for a new SAFOD Management Office (SMO) with the primary job of facilitating PI use of the SAFOD Main Hole and overseeing SAFOD physical samples.
3. Revise the EarthScope solicitation to invite PI experiments using the SAFOD Main Hole.

NSF followed this plan by releasing an SMO solicitation (NSF 12-574) in June 2012 and explicitly inviting SAFOD research proposals in the 2012 EarthScope program solicitation (NSF 12-550). However, we received no proposals in response to the SMO solicitation, and only one EarthScope proposal for downhole work at SAFOD.

Over the 15 months, NSF has consulted about SAFOD with the community, UNAVCO, our USGS partners, the SAFOD Advisory Committee, and the EarthScope Steering Committee; this has included public listening sessions at the 2012 American Geophysical Union Fall Meeting and the 2013 EarthScope National Meeting as well as numerous phone calls and smaller discussions. It is clear there is strong community desire for continued access to SAFOD physical samples for a variety of studies. The downhole aspects of SAFOD are less certain, but there is consensus that achieving most of the remaining scientific value of SAFOD downhole activities would require continuous data from a new observatory, and that such an observatory would require significant new investments and involve substantial risk.

Therefore, NSF intends to transition to a new support model for SAFOD activities:

- NSF intends to continue support for research and education activities using SAFOD physical samples. Texas A&M University has now assumed stewardship of these materials, under an award that is planned to operate through FY 2016 with Professor Judith Chester as principal investigator.
- NSF does not intend to set aside any specific level funding for proposals involving SAFOD downhole activities.
- NSF does not intend to solicit proposals for PI-driven experiments using the SAFOD Main Hole or for a new entity to assume management of SAFOD downhole activities.
- NSF will process, through the normal merit review system, any unsolicited proposals received for use of the Main Hole or for management of SAFOD downhole activities.
- If no such proposals are received within six months, NSF intends to explore further options for SAFOD downhole activities, including alternative ownership arrangements for the Main Hole or transitioning it into a long-term “mothball” status.

Please contact Greg Anderson with questions or comments at greander@nsf.gov or 703.292.4693.
Sincerely,

Paul Cutler
Acting Director, Division of Earth Sciences