

CORE QUESTIONS and REPORT TEMPLATE for FY 2013 NSF COMMITTEE OF VISITOR (COV) REVIEWS

Guidance to NSF Staff: This document includes the FY 2013 set of Core Questions and the COV Report Template for use by NSF staff when preparing and conducting COVs during FY 2013. Specific guidance for NSF staff describing the COV review process is described in the “COV Reviews” section of NSF’s Administrative Policies and Procedures which can be obtained at www.inside2.nsf.gov/od/oia/cov¹.

NSF relies on the judgment of external experts to maintain high standards of program management, to provide advice for continuous improvement of NSF performance, and to ensure openness to the research and education community served by the Foundation. Committee of Visitor (COV) reviews provide NSF with external expert judgments in two areas: (1) assessments of the quality and integrity of program operations and program-level technical and (2) managerial matters pertaining to proposal decisions.

The program(s) under review may include several sub-activities as well as NSF-wide activities. The directorate or division may instruct the COV to provide answers addressing a cluster or group of programs – a portfolio of activities integrated as a whole – or to provide answers specific to the sub-activities of the program, with the latter requiring more time but providing more detailed information.

The Division or Directorate may choose to add questions relevant to the activities under review. NSF staff should work with the COV members in advance of the meeting to provide them with the report template, organized background materials, and to identify questions/goals that apply to the program(s) under review.

Suggested sources of information for COVs to consider are provided for each item. As indicated, a resource for NSF staff preparing data for COVs is the Enterprise Information System (EIS) –Web COV module, which can be accessed by NSF staff only at <http://budg-eis-01/eisportal/default.aspx>. In addition, NSF staff preparing for the COV should consider other sources of information, as appropriate for the programs under review.

For section IV addressing portfolio balance the program should provide the COV with a statement of the program’s portfolio goals and ask specific questions about the program under review. Some suggestions regarding portfolio dimensions are given on the template. These suggestions will not be appropriate for all programs.

Guidance to the COV: The COV report should provide a balanced assessment of NSF’s performance in the integrity and efficiency of the **processes** related to proposal review. Discussions leading to answers for Part A of the Core Questions will require study of confidential material such as declined proposals and reviewer comments. **COV reports should not contain confidential material or specific information about declined proposals.** The reports generated by COVs are made available to the public.

We encourage COV members to provide comments to NSF on how to improve in all areas, as well as suggestions for the COV process, format, and questions. For past COV reports, please see <http://www.nsf.gov/od/oia/activities/cov/covs.jsp>.

¹ The COV Reviews section has three parts: (1) Policy, (2) Procedures, and (3) Roles & Responsibilities.

**FY 2013 REPORT TEMPLATE FOR
NSF COMMITTEES OF VISITORS (COVs)**

The table below should be completed by program staff.

Date of COV: 16-17 September 2013	
Program/Cluster/Section: Section for Arctic Sciences	
Division: Division of Polar Programs	
Directorate: Geosciences Directorate	
Number of actions reviewed: 120	
Awards:	60
Declinations:	60
Other:	
Total number of actions within Program/Cluster/Division during period under review:	1318
Awards:	489 (37.1%)
Declinations:	829 (62.9%)
Other:	
Manner in which reviewed actions were selected:	
The number of proposals per program is pro-rated based on number received by each program.	
The proposals selected represent equally these four combinations:	
	highly ranked, awarded
	highly ranked, declined
	lower ranked, awarded
	lower ranked, declined

COV Membership

	Name	Affiliation
COV Chair or Co-Chairs:	Douglas MacAyeal	University of Chicago
COV Members:	Paul Bierman	University of Vermont
	John Farrell	U.S Arctic Research Commission
	Janet Intreiri	NOAA Earth System Research Laboratory
	Martha McConnell	International Union for Conservation of Nature (IUCN)
	Liesel Ritchie	University of Colorado Boulder
	Rebecca Woodgate	University of Washington

**INTEGRITY AND EFFICIENCY OF THE PROGRAM'S PROCESSES
AND MANAGEMENT**

Briefly discuss and provide comments for *each* relevant aspect of the program's review process and management. Comments should be based on a review of proposal actions (awards, declinations, and withdrawals) that were *completed within the past three fiscal years*. Provide comments for *each* program being reviewed and for those questions that are relevant to the program(s) under review. Quantitative information may be required for some questions. Constructive comments noting areas in need of improvement are encouraged.

I. Questions about the quality and effectiveness of the program's use of merit review process. Please answer the following questions about the effectiveness of the merit review process and provide comments or concerns in the space below the question.

QUALITY AND EFFECTIVENESS OF MERIT REVIEW PROCESS	YES, NO, DATA NOT AVAILABLE, or NOT APPLICABLE
<p>1. Are the review methods (for example, panel, <i>ad hoc</i>, site visits) appropriate?</p> <p>Comments:</p> <p>The COV affirms that the review methods employed by the Program are appropriate. This finding was made after the Committee's review of the eJacket materials, supplementary documents provided by the Program, verbal exchange with NSF staff, and discussion within the committee.</p> <p>Among the strongest points of the Program's review methods are the Program Officer's "review analysis" which summarizes and synthesizes the results of the <i>ad hoc</i> and panel reviews for each proposal, including the rationale for decision. The review analysis associated with the proposals examined by the Committee were notable in being comprehensive, logically laid out, rational, frank and including insightful consideration of the agreements and disagreements between panel and <i>ad hoc</i> reviews. It was clear from the Committee's reading of the eJackets, that the Program Officers were spending considerable effort and time in completing these review analyses, and that the result was likely to be more accurate decision making on proposals. The Committee commends the Program Officers for this effort and considers the review analysis portion of the review methodology to be essential to the continued success of the Arctic Program.</p> <p>In addition to commending the 'review analysis' portion of the review methodology, the Committee commends the Program Officers for the efficient and fair functioning of the other aspects of the review process. These other aspects are essential for producing the information needed for the review analysis, and the Committee affirms that the methods used are both appropriate</p>	<p>YES</p>

and effective.

The COV report of 2009 shared our views of the valuable contribution that the review analysis provided by the Program Officers provides the overall decision making process, and it went further to suggest that the review analysis should be made available to PIs as a means of conveying greater detail about the decision making process that applied to their particular proposals. This Committee agrees that the review analysis often provides critical information about what aspects of the ad hoc and panel comments are weighted more than others, and this should be of great value to PIs, especially early career PIs who are learning the ropes. The Committee realizes, however, that a verbatim accounting of the review analysis should not in all circumstances be given to the PIs as it would compromise the freedom of the Program Officers to express frank opinions or to discuss specific referee or panelist comments in a confidential manner. Nevertheless, the Committee urges the Program Officers to make use of appropriate parts of the review analysis as possible in their communications with the PIs.

In reviewing the statistics provided by the Program about numbers of *ad hoc* reviews obtained for proposals, it was realized that proposals that are declined generally have >1 more *ad hoc* review than proposals that are awarded. The Committee made note of this, but did not pursue the significance of the statistics nor the likely impact, if this apparent difference is real, on the relative weight of the *ad hoc* reviews in yielding the ultimate decisions on each proposal. On one hand, it may be possible that greater numbers of reviews could increase the chances for a proposal to be declined by virtue of the fact that more *ad hoc* reviews subject the proposal to a greater “jeopardy” of receiving an unfavorable review. On the other hand, the greater number of *ad hoc* reviews might signify a Program Officer’s effort to seek more opinions to counterbalance what might be considered “rogue” unfavorable reviews. The Committee does not have the resources to decide on the significance of the apparent difference in the numbers of *ad hoc* reviews for awarded vs. declined proposals. However, the Committee suggests that this difference, and its potential influence on decision-making within the Program, be investigated by the Program in advance of the next COV. The Committee also expresses the opinion that, in a perfect world, all proposals, whether awarded or declined, should have roughly the same number of *ad hoc* reviews.

Several other comments were notable in the Committee’s evaluation:

- The Program should periodically review the calendar schedule of proposal submission deadlines and subsequent *ad hoc* review gathering periods so as to avoid periods when potential *ad hoc* reviewers are less inclined to provide reviews (e.g., because of field activity, academic calendar activity, etc.)
- The Program should review the effectiveness of the Panels used in the decision making process (see comments also in section I.4). The Committee noted that some panel reports were relatively insubstantial, or would often show little difference from consensus associated with *ad hoc* reviews.

<p>- The Committee noted, however, that Panels are effective in spotting aspects of proposal review that may not be apparent to Program Officers, including historical knowledge on funding and duplicative efforts. Panels also allow Program Officers to have greater contact with the scientific community, and this is regarded as a major benefit in maintaining the high level of community awareness apparent by the Program Officers of the Arctic Program.</p> <p>- The Committee was not able to assess the value of site visits in the review process, as it appeared that site visits were not part of the reviews conducted in the 2010-2013 time frame under consideration.</p>	
<p>2. Are both merit review criteria addressed</p> <p>a) In individual reviews? YES</p> <p>b) In panel summaries? YES</p> <p>c) In Program Officer review analyses? YES</p> <p>Comments:</p> <p>The Committee reviewed both the <i>ad hoc</i> and panel reviews provided in the eJackets and affirms that both review criteria (intellectual merit and broader impacts) are addressed in ad hoc reviews, panel summaries and Program Officer review analyses. The Committee was pleased to note that <i>ad hoc</i> reviews cover broader impact review criteria with greater detail and more appropriateness than in the past (based on the Committee's experience with these matters in the past). Only on rare occasions, most notably with <i>ad hoc</i> referees who are from countries other than the U.S., were the review criteria misidentified or misunderstood.</p>	

<p>3. Do the individual reviewers giving written reviews provide substantive comments to explain their assessment of the proposals?</p> <p>Comments:</p> <p>The Committee affirms, after careful review of the eJacket materials, that individual reviewers are giving written reviews that are almost always substantial and sufficiently well expressed to explain their assessment of the proposals. The Committee was pleased to see that the majority of reviews were highly informative and reflected careful, time-consuming consideration by the individual reviewers. Relatively few “lazy” reviews were seen in the eJackets examined. It was further noted that Program Officers would often solicit additional ad hoc reviews if any initial reviews were insubstantial.</p> <p>During the Committee’s discussion, it became clear that there are times when the Program Officers must deal with “unsolicited” reviews that are uploaded to the review system by panelists. Sometimes these reviews do not have the tone or substance consistent with the solicited <i>ad hoc</i> reviews—but Program Officers are required to consider them anyway. The Committee suggests that “unsolicited” reviews be minimized by giving more explicit instructions to the panels as they convene, and by explaining how “unsolicited” reviews could undermine the NSF review process.</p> <p>During the Committee’s discussion, the need for early career scientists to be engaged in <i>ad hoc</i> and panel review processes was strongly affirmed. Among the benefits of such involvement is the increased familiarity with the “elements of a successful proposal” that the early career scientist would invariably gain as a result of involvement. Such an approach might also improve the chances for success and inclusion of investigators from underrepresented groups.</p>	<p>YES</p>
<p>4. Do the panel summaries provide the rationale for the panel consensus (or reasons consensus was not reached)?</p> <p>Comments:</p> <p>While the panel summaries and other outcomes of panel activity appear to be sufficient, the Committee expresses concern that the panel process may not be providing as much useful information for the Program as is desired. The Committee thus urges the Program to review its use and make up of panels so as to improve the role they play in the review process. Specific concerns include ensuring that:</p> <ul style="list-style-type: none"> - panel summaries are analytical and not simply a “list” of strengths and weaknesses of given proposals gleaned from the <i>ad hoc</i> reviews. - the strong interdisciplinary nature of the Program and proposals coming to the Program are adequately covered within panel analysis. - panel composition be diverse in disciplinary representation; but ensuring 	<p>YES</p>

<p>that this diversity does not become a challenge for the panel to reach substantive recommendations.</p> <p>- panels are used wisely and for cohorts of proposals where there is sufficient number, i.e., critical mass, to justify the panel.</p> <p>Finally, noting that the report of the COV of 2009 regarded the panel summaries as a weaker aspect of the review process, the Program is encouraged to continue to review its choices and methods for employing panels in the review process.</p>	
<p>5. Does the documentation in the jacket provide the rationale for the award/decline decision?</p> <p>[Note: Documentation in the jacket usually includes a context statement, individual reviews, panel summary (if applicable), site visit reports (if applicable), program officer review analysis, and staff diary notes.]</p> <p>Comments:</p> <p>The Committee, after reviewing the eJackets of the Program for the time period under consideration, affirms that the documentation therein provides fully adequate rationale for the award decline decision. The Committee again affirms its opinion that the “review analysis” contained within the eJackets and composed by the Program Officers is a highly valuable part of the jacket.</p>	<p>YES</p>

<p>6. Does the documentation to the PI provide the rationale for the award/decline decision?</p> <p>[Note: Documentation to PI usually includes context statement, individual reviews, panel summary (if applicable), site visit reports (if applicable), and, if not otherwise provided in the panel summary, an explanation from the program officer (written in the PO Comments field or emailed with a copy in the jacket, or telephoned with a diary note in the jacket) of the basis for a declination.]</p> <p>Comments:</p> <p>The Committee affirms that documentation provided to the PIs gives adequate rationale for the award/decline decisions. The Committee further notes that the communications by Program Officers with PIs are well composed and that they comply with confidentiality and other requirements. The Program Officers are commended for their special effort in conveying difficult decisions associated with declined proposals, and the Committee affirms that this special care is helpful for PIs at all levels, but especially for early-career PIs.</p>	<p>YES</p>
<p>7. Additional comments on the quality and effectiveness of the program's use of merit review process:</p> <p>The Committee applauds the quality and effective use of the merit review process demonstrated by the Program. The statistics compiled by the Program to assist in the COV's overview of the review process were especially useful in reaching this conclusion. Several suggestions are made for future statistical compilations:</p> <ul style="list-style-type: none"> - In breaking down awards among various types of institutions, the category of "businesses, state & local, foreign, and other" should be broken down further to differentiate between, e.g., private sector businesses and public sector laboratories (NASA labs, for example), state and local government labs vs. government administration, and finally there should be accounting of awards made to NGO's and IGO's. - An analysis of PI award success history would be useful to determine how prior success or prior difficulty bears on the potential of funding for new awards. <p>The Committee notes that during the merit review process the Program could specially solicit early career scientists and young faculty as panelists and <i>ad hoc</i> referees so as to expose them to the review process from the perspective of decision advisors. This has proven to be beneficial for early career scientists who are learning how to write effective proposals.</p> <p>In dealing with large facility proposals, e.g., Toolik and ARCUS, Program Officers should consider whether their instructions to <i>ad hoc</i> reviewers and panelists (in the form of specific review questions based on the program and/or</p>	

<p>type of proposal) are adequate and successful in stimulating substantive analysis. These specific questions and criteria should be provided in the eJacket materials to accompany the <i>ad hoc</i> reviews and panel assessments.</p>	
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II. Questions concerning the selection of reviewers. Please answer the following questions about the selection of reviewers and provide comments or concerns in the space below the question.

SELECTION OF REVIEWERS	YES , NO, DATA NOT AVAILABLE, or NOT APPLICABLE
<p>1. Did the program make use of reviewers having appropriate expertise and/or qualifications?</p> <p>Comments:</p> <p>After careful review of the eJackets and supplementary materials provided by the Program, the Committee affirms that reviewers of appropriate expertise and qualifications have been used by the Program in conducting the review process. The Committee commends the Program Officers for maintaining a strong awareness of the scientific community and its individuals as this awareness allows focused expertise and qualification to be brought to bear in the review process where necessary.</p> <p>Comments that arose in the course of Committee discussion include:</p> <ul style="list-style-type: none"> - The Program should continue to seek to achieve a balance between expert, disciplinary and “broad stroke”, interdisciplinary referees where appropriate to ensure the diversity of reviewer composition allowing the most accurate assessment of proposals under review. - It is noted that the Program Officers comment on their rationale for picking reviewers in their “review analysis”. The Committee commends this commentary and suggests that it be continued. - The Committee urges the Program to ensure that Program Officers are given the resources (e.g., travel opportunities) to keep abreast of the scientific community’s composition and activities. Efforts should be made to encourage Program Officers to have contact with PIs. Such contact is greatly facilitated by PO attendance at relevant professional meetings. - The Committee expresses concern for what appears to be an increasing trend to hold “virtual” meetings using conference call technology rather than having person-to-person meetings involving participant travel. Virtual meetings eliminate the opportunity for side conversations and long-term interpersonal exchange that normally accompany meetings where participants are gathered together. 	<p>YES</p>
<p>2. Did the program recognize and resolve conflicts of interest when</p>	<p>YES</p>

<p>appropriate?</p> <p>Comments:</p> <p>After careful review of the eJackets and supplementary materials, the Committee affirms that the Program recognizes and appropriately resolves conflicts of interest.</p>	
<p>Additional comments on reviewer selection:</p> <p>The Committee commends the Program for its strong and efficient practices in selecting reviewers with appropriate diversity, expertise and qualifications.</p> <p>In cases where there are special considerations involved in the review of a given proposal, for example, if the proposal involves special facilities that are shared by the community, explicit instructions should be given to both <i>ad hoc</i> referees and panelists informing them of any special review questions that may apply.</p>	

III. Questions concerning the management of the program under review. Please comment on the following:

MANAGEMENT OF THE PROGRAM UNDER REVIEW

1. Responsiveness of program to previous COV comments and recommendations.

Comments:

The Committee finds that the Program has been responsive to the 2009 recommendations by the COV of 2009.

The 2009 COV report expressed 5 recommendations. The present Committee considered these recommendations and actions taken by the Program to respond to them, and affirms that the Program has been responsive to these recommendations. In particular:

(italic and small font are quotations from the COV 2009 report)

COV 2009 Recommendation 1:

To proactively reduce dwell time

a) process the obvious declines as soon as possible after panels; simply processing the obvious declines two weeks earlier would result in ~60% of proposals being cleared within six months,

b) for the period 2009-2012, track these dwell-time metrics at the end of each specific solicitation to evaluate whether the issue is being adequately dealt with, and

c) consider whether moving back to 2 target deadlines per year instead of 1 would significantly affect dwell time without other negative impacts.

The COV2013 has reviewed the eJacket and supplementary materials provided by the Program to assess whether this COV2009 recommendation has been addressed by the Program in the years since COV2009. The COV2013 believes that point (b) was adequately addressed by the fact that the Program now tracks dwell-time statistics. The Committee reaffirms the COV2009 recommendation that these statistics continue to be tracked, and that they be reviewed by Program Management to ensure that dwell time, especially for proposals destined to be declined, be kept as close to 6 months as possible.

For point (c), the Committee did not reach a finding as to whether Program Management should consider moving back to 2 target deadlines per year. This choice should be periodically reviewed, however, by Program Management to determine whether having 1 or 2 proposal submission deadlines per year would be advantageous to the efficient running of the program and to the scientific community it serves.

COV 2009 Recommendation 2:

Consider evaluating the RSL program on a longer time-frame (e.g., 5-6 years) than the standard three year window used for COV reviews of science programs. Such a short, recent window for review fails to capture much of the work of the logistics program for individual projects and hampers adequate review.

The Committee notes that a decision on this recommendation appears to be held up within the Office Advisory Committee (OAC). The Committee urges the Program and the OAC to come to a decision on this recommendation in the near future.

COV 2009 Recommendation 3:

Make the bulk of the content in the Review Analysis available to PIs (with reviewers' names excised). These documents are much richer with respect to the decision making process and review weighting components that are often missing from the panel summary. Providing Review Analysis or similar document to PI in case of declines will help avoid the common practice of misinterpreting the overall significance or weight of individual review and panel comments in the final decision. Having more complete analysis would allow resubmissions to be targeted more effectively where the most benefit to the science could result most easily.

The COVs concern with this recommendation is that POs might feel constrained in preparing Review Analyses for public consumption, and their quality and informativeness would correspondingly decline. This would defeat the purpose of the recommendation. The COV review panel also does not want to increase the already heavy workload of the POs. An alternative is to formally encourage POs to rely heavily on their Review Analyses in communicating the results of panel deliberations to PIs (e.g., by 'cutting & pasting' sections of the Review Analysis into the email notifications).

The COV2013 spent considerable time exploring the various elements of review analysis contained within the eJackets, and concurred enthusiastically with the findings of the COV2009: The Program Officer "review analysis" is often the most insightful and comprehensive part of the proposal review, and gives a concise, but detailed, reasoning behind the decision ultimately made. The COV2013 expresses its wish that this aspect of proposal review continue, and that Program Officers be commended for their thorough, professional analysis of the various aspects of proposal review.

The COV2013 also recognizes the competing tensions that exist in creating the effective, insightful review analyses that we enthusiastically support: there is a need to give Program Officers the freedom to express themselves in the review analysis in a manner that is not constrained by the fact that PIs will see the analysis, there is also a need to ensure confidentiality of reviews in cases where referee bias must be brought to bear in the analysis. The COV2013 thus concludes that this recommendation by the COV2009 be rescinded. However, it should be emphatically noted that Program Officers should strongly consider providing a sufficient summary of the review analysis in their communications with the PI so that the reasons for decisions are more clearly linked to the review materials (ad hoc and panel) that were considered by the Program.

COV 2009 Recommendation 4:

Whenever possible, obtain at least three ad-hoc reviews in addition to a panel evaluation, thereby minimizing the use of panel-only reviews. The COV's opinion was that ad hoc reviews in combination with panel review led to the best science being funded and to the best and clearest documentation of those funding decisions.

After reviewing the eJackets and supplementary materials provided by the Program, the Committee concludes that this recommendation has been met for the 2009-2013 period.

COV 2009 Recommendation 5:

The program should assure that the post-doctoral funding competition is regularized, and that the Program Officers effectively use this mechanism to facilitate the transition of underrepresented investigators from the status of trainees to senior investigators.

The COV2013 notes that this recommendation is no longer applicable, as the post-doctoral fellowship offered by OPP has been discontinued.

2. Arctic Research Support and Logistics (RSL) Program

- a. Has the level and quality of support provided through the Research Support and Logistics (RSL) program been appropriate for completion of the funded proposal? **YES**
- b. Has the RSL program been able to adjust services to match unanticipated needs of funded projects? **YES**
- c. Has the RSL program demonstrated the capability to respond to emerging community needs in a reasonable time frame? **YES**

Comments:

After careful review of the provided materials and discussions with the Program Officers associated with RSL, the Committee affirms that: (a) RSL has provided both sufficient levels and quality of support in a manner appropriate to ensure the completion of funded proposals, (b) RSL has, when necessary, adjusted services to meet unanticipated needs of funded projects, and (c) RSL has demonstrated the capacity to respond to emerging community needs on a reasonable time frame.

The Committee commends the Program Officers associated with RSL for cultivating an extensive awareness of the community's support and logistics needs. Of particular note, the Program Officers are aware of both the strengths and the weaknesses of the current support and logistics practices, and this is regarded as a sign of Program health. The Committee commends the Program Officers for maintaining an accurate, self-aware sense of how the RSL activities are performing.

Within the course of discussion, the Committee recommends that the Program continue to work to regularize and improve planning activities with the U.S. Coast Guard, which is responsible for Arctic ship activities. Several systemic challenges were noted in the discussion including: (a) that USCG administrators and ship personnel rotate with a 2-year schedule often incompatible with scientific research activity, (b) the NSF is burdened with paying for ship time during transit of ships from home ports to the Arctic point of departure for scientific work, (c) and that travel restrictions applicable to the Program Officers make it impossible to attend the USCG planning meetings that are applicable to science support. The committee suggests that providing the relatively modest funding for attending such meetings could have large positive paybacks and encourages the provision of these resources.

The Committee makes note of the fact that the RSL is likely to be challenged by the "home rule" changes anticipated for Greenland. There is a possibility that the anticipated home rule government will impose tax regulations that will require researchers, both individuals and their organizations, to pay taxes on income, corporate taxes, and import taxes. The Committee affirms that the RSL is keeping abreast of developments in home rule for Greenland and to work toward maintaining equal or greater field support and logistics capabilities in the future.

The Committee commends the RSL for maintenance of strong, innovative practices to ensure field safety, energy efficiency, compliance with local laws and regulations, serviceability of shared resources, and contacts with local communities. The Committee was impressed with the diversity of support provided by the RSL including: uses of over-snow traverses to replace airlift where appropriate, employment of local community members to both facilitate expertise on science teams and to provide outreach to the local communities, running of joint educational programs in Greenland with international partners, maintenance of high quality living facilities in Toolik research

station, efficient management of contractors and contracts, provision of support for support facilities such as the National Ice Core Repository and the Polar Geospatial Imagery Center, and appropriate facilitation of international cooperation.

3. Arctic System Science (ARCSS) Program

- a. Has the program articulated goals? If so, are they adequate? **YES / YES**
- b. If so, how has the program developed those goals with the research community? **SEE BELOW**
- c. Has the program identified the tools and approaches that the research community needs to apply to the Arctic System Science program to achieve the goals? **YES**
- d. Is the program able to support projects that apply these tools and approaches? **YES**

Comments:

After review of the Program materials and discussion with Program Officers of ARCSS, the Committee affirms: (a) that the program has adequately articulated goals, (b) the Program has developed its goals within the research community, (c) the Program has identified tools and approaches that the community needs to conduct Arctic System Science in a manner to meet the goals of the Program, and (d) the Program is effective in its support of projects that apply the requisite tools and approaches.

The Committee makes note of the fact that the ARCSS Program is one of the oldest and most successful programs within the Arctic Program, being 25 years old, and having a number of very influential projects under its belt such as SHEBA, SBI, and others. Among the points discussed by the Committee is the fact that the ARCSS Program has evolved from a “big project/big science” style program, with specific calls for proposals, to one that funds smaller projects that are more integrative in achieving the cross-disciplinary connections of focus within the ARCSS Program. This evolution means that there are fewer “expeditionary” focused proposals and more “system science” focused proposals being funded in the present day.

As in other parts of the Arctic Program, the Program Officers of the ARCSS maintain a strong, self-aware sense of strengths and weaknesses within the program. This awareness continues to make the overall Program nimble and responsive to the difficult challenges of conducting cross-disciplinary science. The main weakness of ARCSS articulated by the Program Officers was associated with the difficulty of explaining the goals of the program to the scientific community and how ARCSS differs from the Arctic Natural Sciences Program. While the solicitation calling for ARCSS proposals has recently been updated and is written to be as clear as possible, PIs often do not read or sufficiently follow the program goals in constructing their proposals. Work could be done to help correct this difficulty, for example, by keeping the ARCSS and ARCUS websites updated, and by having more community meetings (e.g., town hall meetings, all hands meetings, etc.). The Committee commends the Program Officers for working hard to overcome this communication/awareness/understanding issue. The Committee encourages the Program to continue exploring effective ways to demonstrate how ARCSS synthesis work is essential for making informed decisions. To ensure the success of the ARCSS Program in overcoming community awareness issues, the Committee urges the Program to give adequate resources to the Program Officers to support their community contact.

4. Arctic Observing Network (AON) Program

- a. Has the program articulated goals? If so, are they adequate? **YES / YES**
- b. If so, how has the program developed those goals with the research community? **SEE BELOW**
- c. Has the program identified the tools and approaches that the research community needs to apply to the Arctic Observing Network program to achieve the goals? **YES**
- d. Is the program able to support projects that apply these tools and approaches? **YES**

Comments:

The Committee affirms: (a) that the AON Program has goals that are articulated adequately, (b) fosters development of these goals within the research community, (c) has identified the tools and approaches needed by the community, and (d) supports projects that apply the tools and approaches as needed to meet the program goals.

The Committee qualifies its affirmation of the above programmatic goals and activities by stating that the AON Program appears to be burdened by several dysfunctions that threaten the continued excellence of the program. As with the other programs reviewed by the Committee, the Committee commends the AON Program Manager for being aware of the program's strengths and weaknesses.

The main strength of the AON Program is the fact that the development of innovative networks capable of compiling long-term observations in the Arctic is one of the key, emerging goals of Earth Science. Simply put, the Arctic is the forefront of global climate change, and the time scale of this change is decadal to multi-decadal—a time scale that is awkward for NSF to deal with. The goal of the AON Program, within the traditional framework of the NSF (i.e., which does not see its mission as support of decadal to multi-decadal monitoring of environmental conditions), is to develop the observational and networking technologies, and to foster the diversity of systems under observation in the Arctic, before 'handing off' such developed systems to other funding agencies or stakeholders that can conduct long term operations.

Weaknesses of the AON Program, which cause great concern within the Committee, are several: First, the program is relatively young and has suffered from management changes during the ~5 years of its infancy. This has led to a situation where management style has been less stable than what is needed to start a program of such a demanding nature. The program has not identified the "hand off" strategy, possibly because other agencies that support long-term observations are not adequately resourced or are uninterested based on their own mission requirements. The program is funded at a level that is small, extremely small, when compared to funding-levels of current state-of-the-art observation networks in other areas (e.g., NEON has a 465 million dollar budget for development vs. 10 million dollars a year for AON). The program has difficulty gaining the attention of PIs willing to carefully consider the program goals articulated in the solicitations and who will construct proposals that adequately address those goals. The program does not yet have an "identity" or recognizable "brand name" within the scientific community. Finally, the program

struggles under the weight of having diffuse goals that on the surface seem strongly justified, but under scrutiny, are oversimplified and awkward to work with.

Possibly the most striking weakness of the AON Program which was apparent in the discussions between the Committee and the Program Officer was the extent to which the Program Officer's time must be split between "normal" program management associated with proposal review and extraordinary interagency and international program coordination and administration. The Committee commends the Program Officer of AON for juggling two diverse job activities in a manner that is effective and adequate. However, the Committee wonders if "splitting" of work responsibilities between program management and international coordination means that the AON Program is too much for one person to manage. The Committee also wonders whether it is in the NSF's mission to be burdened with such extensive interagency and international coordination and administration.

The Committee had the impression that the Program Officer in charge of AON might be overwhelmed by the complex nature of the program, but is possibly also taking on more work than is strictly required or that can be dealt with effectively. In the future, presentations about what AON program should focus as much on what it could be as on the various problems of its current reality.

RECOMMENDATION: The Committee recommends that the AON Program be reviewed in detail by the Program and by the program advisory boards (including, for example, the Polar Research Board of the NRC¹). While this review is undertaken, the Program is advised to take steps to pursue partnerships to offload excessive interagency and international coordination activity, or to provide additional support to ensure that this activity does not impact negatively the functioning of the normal proposal processing.

¹It is noted that several of the COV members have either served on, or worked for, the PRB in the past.

Overview and recommendations:

The COV met in teleconference for two afternoons on 16 and 17 of September. Due to contingencies beyond the control of the COV, two members of the COV (LR and RW) were unable to participate in the teleconference. They were however given full opportunity to participate in the drafting of the present COV report. The teleconference involved 3 COV members (DRM, JI and PB) connected by telephone and computer-screen sharing with 2 COV members (JF and MM) and the NSF Program Officers and Staff who were located in an NSF conference room.

During the 3-7 day period prior to the 2-day teleconference the COV was given access to eJackets and supplemental documents (relating to program statistics), and was given general instruction on the purposes and functions of the COV by the Program Officers.

Overall, the Committee believes that the Arctic Program processes the COV was asked to assess are healthy. The key to this health is the fact that the Program Officers are a dedicated and hardworking group who take great care and pride in their work. The Committee expresses its respect for the Program Officers and Staff.

Comments about the COV assessment process:

In consideration of the seriousness of the COV purposes, the Committee expresses its regret that a teleconference was substituted for an actual in-person meeting with all committee members and

Program Officers in a conference room. The Committee further regrets that there was relatively little opportunity for the Committee to speak to and interact with the senior officers of the Program. (With the unexpected medical absence of the Program Director, it would have been good if the Division Director could have spent more time with the Committee discussing their questions and observations on both days of the teleconference.) While the Program Officers in charge of specific parts of the Program did a commendable job, they should not be burdened with the responsibility for answering questions that the senior Program Officers are more suited to address.

Receiving information necessary for the COV review less than 7 days prior to the COV was insufficient, and resulted in all COV members being rushed and some simply not able to review all the documents assigned. In addition, the 'extra' materials on the password protected portal were only made available 3 days prior to the teleconference. Some members of the Committee were not certain that they were even supposed to review that material. This stems from lack of guidance by NSF to COV members.

In future COV assessments, this Committee recommends that:

- Face-to-face meetings be preferred over teleconference
- More time be set aside for conversation with Program Officers, especially senior Program Officers
- More time be devoted to verbal exchange between the Committee and Program Officers.
- Review materials required by the COV be made available 2 to 3 weeks prior to the COV meeting.

Summary of Recommendations:

This report contains recommendations interspersed throughout the responses to specific questions, however, two recommendations are restated here for emphasis.

Recommendation: The Committee recommends that the AON Program be reviewed in detail by the Program and by the program advisory boards (including, e.g., the Polar Research Board of the NRC). While this review is undertaken, the Program is advised to take steps to offload excessive interagency and international coordination activity, or to provide additional support to ensure that this activity does not impact negatively the functioning of the normal proposal processing.

Recommendation: The Committee recommends that Arctic Program Officers attend at least two significant Arctic Science meetings per year to keep abreast of emerging results, new faces, new ideas, etc. Interaction between the Program Officers and the scientific community outside of Washington DC will help to energize the Program and allow exchange of perspective that is not always possible within the confines of the NSF offices.

SIGNATURE BLOCK:

 25 September 2013

For the Section for Arctic Sciences COV
Douglas R. MacAyeal
Chair