

**NSF COMMITTEE OF VISITORS
SELF STUDY REPORT
FOR
DIVISION OF BIOLOGICAL INFRASTRUCTURE (DBI)
July 12-14, 2010**

General Introduction

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 managerial matters pertaining to proposal decisions; and (2) comments on how the results generated by awardees have contributed to the attainment of NSF's mission and strategic outcome goals.

To facilitate the work of the CoV and provide more time for thoughtful analysis and discussion, BIO created the Self Study Report. It maps exactly onto the standardized CoV report template; provides data, tables, definitions and explanations – question by question. It does not draw conclusions from the information presented but presents information that BIO believes the CoV will find useful in coming to their conclusions and preparing their report.

This CoV is being asked to review fiscal years 2007, 2008, and 2009; this period includes awards funded by the American Recovery and Reinvestment Act. The NSF Recovery Act Policies and Procedures can be found at: <http://infoshare.nsf.gov/showFile/3370/2009RecoveryPoliciesProcedures1009.pdf>. The NSF Funding Priorities are found in Section III.

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>.

Introduction to the Division

DBI empowers biological discovery by supporting the development and enhancement of biological resources and human capital. These investments underpin advances in all areas of biological research. The Division is organized into two clusters – Research Resources and Human Resources. Support for Research Resources includes development of informatics tools and resources, development of new instrumentation, the curatorial improvement and computerization of research collections, improvements of research facilities at biological field stations and marine laboratories as well as improvements in and partial operations of existing living stock collections. Support for Human Resources includes research experiences for undergraduates (sites), undergraduate research and mentoring in biology, undergraduate interdisciplinary research experiences at the interface of biology and mathematical sciences, research initiation grants to broaden participation and, in selected areas, postdoctoral research fellowships.

In addition, BIO's participation in a variety of crosscutting activities such as IGERT, Graduate Research Fellowships, and Major Research Instrumentation is managed in DBI. Because these crosscutting activities are assessed at the NSF level, they are not a part of this particular CoV.

For the purposes of this review, you are being asked to assess DBI's activities in the following areas:

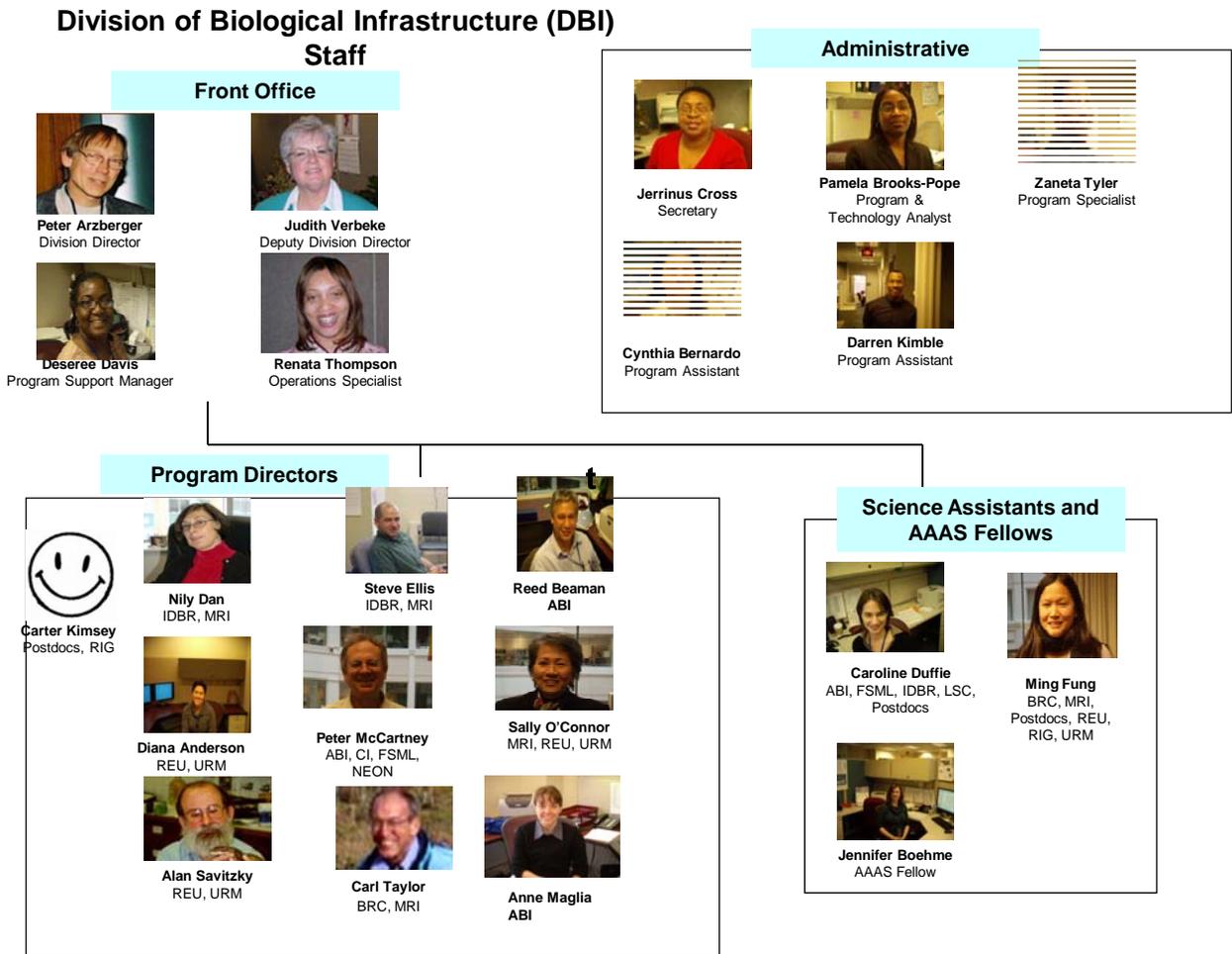
Human Resources Cluster

- Postdoctoral Research Fellowships in Biology*
- Undergraduate Research and Mentoring in the Biological Sciences*
- Research Experiences for Undergraduates*

Research Resources Cluster

- Advances in Biological Informatics*
- Improvements to Biological Research Collections*
- Living Stock Collections for Biological Research
- Improvements at Biological Field Stations and Marine Laboratories*
- Instrument Development for Biological Research*

*Includes ARRA awards.



**Division of Biological Infrastructure
Staffing Roster**

Office of the Division Director
Dr. Peter Arzberger, Division Director
Dr. Judith Verbeke, Deputy Division Director
Deseree Davis, Program Support Manager
Renata Thompson, Operations Specialist
Jerrinus Cross, Division Secretary
Dr. Jennifer Boehme, AAAS Fellow

Program Directors
Dr. Diana Anderson (URM, REU Sites)
Dr. Reed Beaman (ABI)
Dr. Nily Dan (IDBR)
Dr. Steven Ellis (IDBR)
Ms. Carter Kimsey (Post Doctoral Fellowships)
Dr. Anne Maglia (ABI)
Dr. Peter McCartney (FSML, ABI)
Dr. Sally O'Connor (REU Sites, URM)
Dr. Alan Savitzky (REU Sites, URM, FSML)
Dr. W. Carl Taylor (BRC)

Science Assistants
Caroline Duffie
Ming Fung

Administrative Staff
Pamela Brooks-Pope, Program Specialist
Zaneta Tyler, Program Specialist
Donna Webb, Program Specialist
Cynthia Bernardo, Program Assistant
Darren Kimble, Program Assistant
Luis Fernandez, Summer Intern
Lundon Sweetney, Summer Student

Date of COV: July 12-14, 2010
Division: Division of Biological Infrastructure (DBI)
Directorate: Directorate for Biological Sciences (BIO)
Number of actions reviewed: Awards: Declinations: Other:
Total number of actions within Division during period under review (including ARRA): Awards: 599 (includes ARRA awards) Declinations: 1368 Other: 0
Manner in which reviewed actions were selected: <p>For the analysis, we randomly chose 96 award and decline jackets (36 Human Resources Cluster; 45 Research Resources Cluster; 15 ARRA awards). The list of this random sub-sample is available at the CoV module in eJacket.</p> <p>Data were downloaded from the Enterprise Information System (EIS) for all of the awards and declines for each year of the three years under consideration (FY2007, FY2008, FY2009) and for all of the ARRA awards (FY2009). The awards and declines were sorted into separate lists; each list was assigned a randomly generated value for each row (=RAND function in Excel). The award/decline lists were then sorted for FY, Program, and Random Value (in order). For awards, the first award for each program in each FY was selected (based on randomly assigned value). For ARRA (all awards), the first two awards for each program were selected. For declines, the first two declines for each program in each FY were selected (based on randomly assigned value).</p>

PART A. INTEGRITY AND EFFICIENCY OF THE PROGRAM'S PROCESSES AND MANAGEMENT

A.1 Questions about the quality and effectiveness of the program's use of merit review process.

NSF seeks to provide a fair and equitable review for all proposals it receives. It therefore allows various types of review mechanisms and encourages programs to use those best suited to the types of proposals under review. DBI requests that reviewers evaluate proposals using the NSF review criteria as found in the NSF Grant Proposal Guide (GPG). The criteria include considerations that help define them. These considerations are suggestions, and not all apply to any given proposal. While proposals must address both merit review criteria, reviewers are asked to address only those considerations that are relevant to the proposal being considered and for which the reviewer is qualified to make judgments.

The criteria used for the 2007-2009 review period are as follows.

What is the intellectual merit of the proposed activity?

How important is the proposed activity to advancing knowledge and understanding within its own field or across different fields? How well qualified is the proposer (individual or team) to conduct the project? (If appropriate, the reviewer will comment on the quality of prior work.) To what extent does the proposed activity suggest and explore creative, original, or potentially transformative concepts? How well conceived and organized is the proposed activity? Is there sufficient access to resources?

What are the broader impacts of the proposed activity?

How well does the activity advance discovery and understanding while promoting teaching, training, and learning? How well does the proposed activity broaden the participation of underrepresented groups (e.g., gender, ethnicity, disability, geographic, etc.)? To what extent will it enhance the infrastructure for research and education, such as facilities, instrumentation, networks, and partnerships? Will the results be disseminated broadly to enhance scientific and technological understanding? What may be the benefits of the proposed activity to society? Examples illustrating activities likely to demonstrate broader impacts are available electronically on the NSF website at <http://www.nsf.gov/pubs/gpg/broaderimpacts.pdf>.

In addition, many of the programs in the Division have additional review criteria listed in the relevant program announcements.

1. Are the review methods (for example, panel, ad hoc, site visits) appropriate?

DBI used the following merit review mechanisms for the specified programs during the three years under review:

- Human Resources Cluster
 - Postdoctoral Research Fellowships in Biology – panel review only
 - Undergraduate Research and Mentoring in the Biological Sciences – panel and mail review
 - Research Experiences for Undergraduates Sites – panel and mail review
- Research Resources Cluster
 - Advances in Biological Informatics – panel and mail review
 - Improvements to Biological Research Collections – panel and mail review
 - Living Stock Collections for Biological Research – mail review
 - Improvements at Biological Field Stations and Marine Laboratories – panel and mail review
 - Instrument Development for Biological Research – panel and mail review

- Other
 - Conferences and Workshops – Program Director Review only
 - Proposals from active panelists – mail review only

2. Are both merit review criteria addressed

- a. In individual reviews?
- b. In panel summaries? (N.B. Several proposals were co-reviewed, resulting in more than one panel summary per jacket.)
- c. In Program Officer Review Analyses?

	FY 2007	FY 2008	FY 2009
Human Resources Cluster (36 jackets in sample)			
# Reviews Surveyed	46	46	48
% Addressing Both	95.7%	95.7%	93.8%
# Panel Summaries Surveyed	12	13	15
% Addressing Both	91.7%	92.3%	93.3%
% Missing Intellectual Merit	0	0	0
% Missing Broader Impacts	8.3%	7.7%	6.7%
# Review Analyses Surveyed	12	12	12
% Addressing Both	91.7%	90.9%	83.3%
% Missing Intellectual Merit	0	0	0
% Missing Broader Impacts	8.3%	9.1%	16.7%
Research Resources Cluster (45 jackets in sample)			
# Reviews Surveyed	80	68	59
% Addressing Both	96.3%	94.1%	98.3%
# Panel Summaries Surveyed	15	15	15
% Addressing Both	86.7%	100%	100%
% Missing Intellectual Merit	0	0	0
% Missing Broader Impacts	13.3%	0	0
# Review Analyses Surveyed	15	15	15
% Addressing Both	100%	100%	100%
% Missing Intellectual Merit	0	0	0
% Missing Broader Impacts	0	0	0
ARRA Awards (15 jackets in sample)			
# Reviews Surveyed			60
% Addressing Both			98.3%
# Panel Summaries Surveyed			16
% Addressing Both			68.8%
% Missing Intellectual Merit			0
% Missing Broader Impacts			31.2%
# Review Analyses Surveyed			15
% Addressing Both			100%
% Missing Intellectual Merit			0
% Missing Broader Impacts			

3. Do the individual reviewers provide substantive comments to explain their assessment of the proposals?

N.B. NSF defines “substantive comments” as more than five words about the project.

	FY 2007	FY 2008	FY 2009
Human Resources Cluster (36 jackets in sample)			
# Reviews Surveyed	46	46	48
% Sufficient	95.7%	95.7%	93.8%
Research Resources Cluster (45 jackets in sample)			
# Reviews Surveyed	78	66	58
% Sufficient	98.7%	93.9%	100%
ARRA Awards (15 jackets in sample)			
# Reviews Surveyed			60
% Sufficient			98.3%

4. Do the panel summaries provide the rationale for the panel consensus (or reasons consensus was not reached?)

	FY 2007	FY 2008	FY 2009
Human Resources Cluster (36 jackets in sample)			
# Panel Summaries Surveyed	12	9	15
% Sufficient	100%	100%	93.3%
Research Resources Cluster (45 jackets in sample)			
# Panel Summaries Surveyed	15	15	13
% Sufficient	93.3%	100%	92.3%
ARRA Awards (15 jackets in sample)			
# Panel Summaries Surveyed			16
% Sufficient			87.5%

5. Does the documentation in the jacket provide the rationale for the award/decline decision? (N.B. Documentation in jacket usually includes context statement, individual reviews, panel summary – if applicable, site visit reports – if applicable, program officer review analysis, and staff diary notes.)

ARRA

During FY 2009, NSF permitted reversal of a decline decision for funding through ARRA for proposals declined after October 1, 2008. The following questions do not apply to programs for which the reversal of decline option was not used.

- i) Were the reversals of the decision to decline based on both the high quality (i.e., rated “Very Good” or above or the functional equivalent by review panels) of the reviews received on the initial submission and the lack of available funding at the time the original recommendation was made?
- ii) Is documentation provided, including a revised Review Analysis, to support the award decisions?

	FY 2007	FY 2008	FY 2009
Human Resources Cluster (36 jackets in sample)			
# Proposals Surveyed	12	12	12
% Complete	100%	100%	100%
Research Resources Cluster (45 jackets in sample)			
# Proposals Surveyed	15	15	15
% Complete	100%	100%	100%
ARRA Awards (15 jackets in sample)			
# Proposals Surveyed			15
% Complete			100%

6. Does the documentation to the PI provide the rationale for the award/decline decision?

(N.B. Documentation to PI usually includes context statement, individual reviews, panel summary – if applicable, site visit reports – if applicable; also, if not otherwise provided in the panel summary, an explanation from the program officer – written or telephoned with diary note in jacket – of the basis for a declination.)

	FY 2007	FY 2008	FY 2009
Human Resources Cluster (36 jackets in sample)			
# Proposals Surveyed	12	12	12
% Complete	100%	100%	100%
Research Resources Cluster (45 jackets in sample)			
# Proposals Surveyed	15	15	15
% Complete	100%	100%	100%
ARRA Awards (15 jackets in sample)			
# Proposals Surveyed			15
% Complete			100%

7. Is the time to decision appropriate?

N.B. Time to Decision – NSF Annual Performance Goal: For 70 percent of proposals, inform applicants about funding decisions within six months of proposal receipt or deadline or target date, whichever is later. The date of Division Director concurrence is used in determining the time to decision. Once the Division Director concurs, applicants may be informed that their proposals have been declined or recommended for funding. The NSF-wide goal of 70 percent recognizes that the time to decision is appropriately greater than six months for some programs or some individual proposals.

The data in the following table were obtained from the Enterprise Information System (EIS) database, which is an NSF-wide database.

	FY 2007	FY 2008	FY 2009
Human Resources Cluster			
# Proposals	220	225	198
Average Dwell Time	5.5 months	5.7 months	6.5 months
Research Resources Cluster			
# Proposals	438	422	464
Average Dwell Time	7.2 months	6.7 months	7.1 months

8. Additional Comments

- a. Additional comments on the quality and effectiveness of the Division’s use of the merit review process.**
- b. To what extent does the documentation in the jacket or otherwise available provide the rationale for use of ARRA funding?**

The Division believes that the previous sections and the random set of jackets should provide the information needed to address this question.

A.2 Questions concerning the selection of reviewers.

1. Did the Division make use of reviewers having appropriate expertise and/or qualifications?

DBI Program Directors seek to provide each proposal with the best possible review. This includes selecting the most knowledgeable mail reviewers and panelists, the most appropriate panel, providing co-review when needed, and seeking additional mail review if the initial reviewers indicated that such would provide needed expertise. Program Directors obtain reviewers’ names from a wide variety of sources, including their own knowledge of the subject, suggestions provided by the PI in the proposal, references in the proposal, the NSF reviewer database, other databases (e.g., Science Citation Index and other bibliographic databases), the web, colleagues, and other Program Directors. Because the issue of “appropriate expertise” is a function of a particular proposal and the reviewers selected for that proposal, the Division encourages the CoV members to examine the jackets and assess for themselves if the expertise of the reviewers selected was appropriate.

2. Did the Division use reviewers balanced with respect to characteristics such as geography, type of institution, and underrepresented groups?

N.B. Demographic data is self-reported, with only about 25% of reviewers reporting this information. “Reviewer” used here refers to both mail and panel reviewers. Each year is treated independently (i.e., if an individual provides a review in more than one year, he/she is counted in each year).

The Division strives to engage the entire scientific community in the review process. Consequently, Program Directors are encouraged to select reviewers and panelists from different areas of the country, from different types of institutions, and from groups underrepresented in science. The following tables contain data from the EIS on the reviewers and panelists used by the programs under review.

State		FY - 2007	FY - 2008	FY - 2009	Total
Unknown	Number of Reviewers	3	9	4	16
	Percentage of Reviewers	0.41%	1.40%	0.74%	0.83%
INTL	Number of Reviewers	22	14	12	48
	Percentage of Reviewers	3.01%	2.17%	2.21%	2.50%
AK	Number of Reviewers	4	4	3	11
	Percentage of Reviewers	0.55%	0.62%	0.55%	0.57%
AL	Number of Reviewers	15	12	9	36
	Percentage of Reviewers	2.05%	1.86%	1.66%	1.88%
AR	Number of Reviewers	1	7	4	12
	Percentage of Reviewers	0.14%	1.09%	0.74%	0.63%
AZ	Number of Reviewers	17	11	9	37
	Percentage of Reviewers	2.32%	1.71%	1.66%	1.93%
CA	Number of Reviewers	74	59	72	205
	Percentage of Reviewers	10.11%	9.15%	13.28%	10.68%
CO	Number of Reviewers	14	14	9	37
	Percentage of Reviewers	1.91%	2.17%	1.66%	1.93%
CT	Number of Reviewers	4	6	7	17
	Percentage of Reviewers	0.55%	0.93%	1.29%	0.89%
DC	Number of Reviewers	10	14	10	34
	Percentage of Reviewers	1.37%	2.17%	1.85%	1.77%
DE	Number of Reviewers	2	3	2	7
	Percentage of Reviewers	0.27%	0.47%	0.37%	0.36%
FL	Number of Reviewers	29	23	15	67
	Percentage of Reviewers	3.96%	3.57%	2.77%	3.49%
GA	Number of Reviewers	19	19	15	53
	Percentage of Reviewers	2.60%	2.95%	2.77%	2.76%
HI	Number of Reviewers	11	8	10	29
	Percentage of Reviewers	1.50%	1.24%	1.85%	1.51%
IA	Number of Reviewers	11	10	7	28
	Percentage of Reviewers	1.50%	1.55%	1.29%	1.46%
ID	Number of Reviewers	3	2	3	8
	Percentage of Reviewers	0.41%	0.31%	0.55%	0.42%

IL	Number of Reviewers	23	22	16	61
	Percentage of Reviewers	3.14%	3.41%	2.95%	3.18%
IN	Number of Reviewers	11	9	7	27
	Percentage of Reviewers	1.50%	1.40%	1.29%	1.41%
KS	Number of Reviewers	23	19	13	55
	Percentage of Reviewers	3.14%	2.95%	2.40%	2.87%
KY	Number of Reviewers	4	6	3	13
	Percentage of Reviewers	0.55%	0.93%	0.55%	0.68%
LA	Number of Reviewers	9	12	9	30
	Percentage of Reviewers	1.23%	1.86%	1.66%	1.56%
MA	Number of Reviewers	33	30	25	88
	Percentage of Reviewers	4.51%	4.65%	4.61%	4.59%
MD	Number of Reviewers	20	20	16	56
	Percentage of Reviewers	2.73%	3.10%	2.95%	2.92%
ME	Number of Reviewers	7	5	5	17
	Percentage of Reviewers	0.96%	0.78%	0.92%	0.89%
MI	Number of Reviewers	28	12	12	52
	Percentage of Reviewers	3.83%	1.86%	2.21%	2.71%
MN	Number of Reviewers	11	7	8	26
	Percentage of Reviewers	1.50%	1.09%	1.48%	1.35%
MO	Number of Reviewers	12	13	13	38
	Percentage of Reviewers	1.64%	2.02%	2.40%	1.98%
MS	Number of Reviewers	3	4	5	12
	Percentage of Reviewers	0.41%	0.62%	0.92%	0.63%
MT	Number of Reviewers	7	6	5	18
	Percentage of Reviewers	0.96%	0.93%	0.92%	0.94%
NC	Number of Reviewers	32	30	22	84
	Percentage of Reviewers	4.37%	4.65%	4.06%	4.38%
ND	Number of Reviewers	2	3	2	7
	Percentage of Reviewers	0.27%	0.47%	0.37%	0.36%
NE	Number of Reviewers	3	0	4	7
	Percentage of Reviewers	0.41%	0.00%	0.74%	0.36%
NH	Number of Reviewers	5	5	5	15
	Percentage of Reviewers	0.68%	0.78%	0.92%	0.78%
NJ	Number of Reviewers	5	7	4	16
	Percentage of Reviewers	0.68%	1.09%	0.74%	0.83%
NM	Number of Reviewers	14	9	4	27
	Percentage of Reviewers	1.91%	1.40%	0.74%	1.41%
NV	Number of Reviewers	2	1	2	5
	Percentage of Reviewers	0.27%	0.16%	0.37%	0.26%
NY	Number of Reviewers	52	36	35	123
	Percentage of Reviewers	7.10%	5.58%	6.46%	6.41%

OH	Number of Reviewers	19	10	13	42
	Percentage of Reviewers	2.60%	1.55%	2.40%	2.19%
OK	Number of Reviewers	8	8	4	20
	Percentage of Reviewers	1.09%	1.24%	0.74%	1.04%
OR	Number of Reviewers	12	9	9	30
	Percentage of Reviewers	1.64%	1.40%	1.66%	1.56%
PA	Number of Reviewers	27	24	16	67
	Percentage of Reviewers	3.69%	3.72%	2.95%	3.49%
PR	Number of Reviewers	8	9	4	21
	Percentage of Reviewers	1.09%	1.40%	0.74%	1.09%
RI	Number of Reviewers	7	4	2	13
	Percentage of Reviewers	0.96%	0.62%	0.37%	0.68%
SC	Number of Reviewers	7	9	9	25
	Percentage of Reviewers	0.96%	1.40%	1.66%	1.30%
SD	Number of Reviewers	4	5	4	13
	Percentage of Reviewers	0.55%	0.78%	0.74%	0.68%
TN	Number of Reviewers	3	4	5	12
	Percentage of Reviewers	0.41%	0.62%	0.92%	0.63%
TX	Number of Reviewers	28	30	20	78
	Percentage of Reviewers	3.83%	4.65%	3.69%	4.06%
UT	Number of Reviewers	6	4	7	17
	Percentage of Reviewers	0.82%	0.62%	1.29%	0.89%
VA	Number of Reviewers	22	25	18	65
	Percentage of Reviewers	3.01%	3.88%	3.32%	3.39%
VI	Number of Reviewers	1	0	1	2
	Percentage of Reviewers	0.14%	0.00%	0.18%	0.10%
VT	Number of Reviewers	1	1	2	4
	Percentage of Reviewers	0.14%	0.16%	0.37%	0.21%
WA	Number of Reviewers	17	16	11	44
	Percentage of Reviewers	2.32%	2.48%	2.03%	2.29%
WI	Number of Reviewers	13	13	8	34
	Percentage of Reviewers	1.78%	2.02%	1.48%	1.77%
WV	Number of Reviewers	2	4	2	8
	Percentage of Reviewers	0.27%	0.62%	0.37%	0.42%
WY	Number of Reviewers	2	1	3	6
	Percentage of Reviewers	0.27%	0.16%	0.55%	0.31%

Institution Type		FY - 2007	FY - 2008	FY - 2009
2 Yr	Number of Reviewers	3	5	1
	Percentage of Reviewers	0.41%	0.78%	0.18%
4 Yr	Number of Reviewers	34	30	37
	Percentage of Reviewers	4.64%	4.65%	6.83%
Business, State & Local, Foreign, Other	Number of Reviewers	88	82	70
	Percentage of Reviewers	12.02%	12.71%	12.92%
Masters	Number of Reviewers	55	54	47
	Percentage of Reviewers	7.51%	8.37%	8.67%
PhD Institutions	Number of Reviewers	203	174	158
	Percentage of Reviewers	27.73%	26.98%	29.15%
Research Intensive PhD Institutions (Top 100)	Number of Reviewers	223	198	145
	Percentage of Reviewers	30.46%	30.70%	26.75%
UNKNOWN	Number of Reviewers	126	102	84
	Percentage of Reviewers	17.21%	15.81%	15.50%

Please note that NSF cannot require reviewers to identify whether they are members of underrepresented groups. Reviewers have the option to volunteer this information when they submit a review, but fewer than 50% choose to do this.

Minority Status		FY - 2007	FY - 2008	FY - 2009	Total
Not Available	Number of Reviewers	423	329	263	1,015
	Percentage of Reviewers	57.79%	51.01%	48.52%	52.89%
N	Number of Reviewers	259	262	222	743
	Percentage of Reviewers	35.38%	40.62%	40.96%	38.72%
Y	Number of Reviewers	50	54	57	161
	Percentage of Reviewers	6.83%	8.37%	10.52%	8.39%

3. Did the Division recognize and resolve conflicts of interest when appropriate?

There are several types of disqualifying conflicts that would legally prevent someone from participating in the review of a proposal. They include:

- Close family or personal relationship with the PI or CoPI(s);
- Being from the same institution as the PI;
- Collaboration with the PI within the last 48 months (this includes Post Docs); or
- Being the thesis advisor or advisee of the PI or CoPI.

There are other conflicts that are not legally disqualifying and may be waived for good cause at the discretion of the DBI conflicts official. These include:

- Having received a sizable honorarium from a submitting institution within the last 12 months;
- Being in a policy-making position of the submitting organization; or
- Having been employed by the submitting institution within the last 12 months.

To identify conflicts, Program Directors first carefully review the collaborator lists provided by the PI(s) and note the institutions involved with the proposal. When mail reviewers self-identify that they are in conflict with a proposal, they may or may not provide a review. A score of “C” is recorded on the Review Record and the review, if any, is not provided to the panel or taken into consideration in the decision-making process. All reviewers, mail or panel, are prevented from seeing the text of the review.

Panelists who are in conflict with a particular proposal are either identified by the program prior to the panel meeting or self-identify during the meeting. In either case, the panelist in conflict is asked to leave the panel room and does not participate in any aspect of the review of the proposal. The Program Director notes the panelist’s name and that they left the panel room on the narrative Review Analysis and a score of “C” is recorded in the Review Record. The NSF Interactive Panel System is designed so that panelists are blocked from having access to proposals with which they are in conflict.

When Program Directors are in conflict with a particular proposal, they are removed from the entire review process, including the panel review, leaving the room when that particular proposal is discussed; another Program Director handles all aspects of the review. Their conflict and departure from the room is also noted on the narrative of the Review Analysis. The eJacket System also prevents the Program Directors in conflict from seeing and acting on these proposals.

The following table is based on an examination of the jacket sub-sample. The Division examined the Program Director Review Analysis and the Review Record to determine which jackets had a CoI, and if they were properly documented and resolved.

	FY 2007	FY 2008	FY 2009
Human Resources Cluster (36 jackets in sample)			
# Proposals with Conflicts	5	1	1
# Not properly resolved	0	0	0
Research Resources Cluster (45 jackets in sample)			
# Proposals with Conflicts	1	5	1
# Not properly resolved	1	2	0

4. Additional comments on reviewer selection.

The Division believes that the previous sections and the random set of jackets should provide the information needed to address this question.

A.3 Questions concerning the resulting portfolio of awards under review.

1. Overall quality of the research and/or education projects supported by the program.

The Division encourages all of its programs to develop a balanced portfolio of awards. This means that portfolios are expected to contain awards that are high risk, multidisciplinary, and innovative. In addition, the portfolio should include awards to a variety of institution types, to institutions across the US, to new and established investigators, and to individuals from groups underrepresented in the biological sciences. Since NSF does not have quotas for any of these categories and proposal numbers vary from year to year, the balance in the awards portfolio across categories will vary as well.

Resources available to the CoV team to address this question include:

- Highlights (FY 2007 – FY 2009)
- Highlights – Potentially Transformative Research (FY 2007 – FY 2009)
- Awards list (FY 2007 – FY 2009)
- Final and Annual Project Reports (see individual proposals in eJacket)

2. Does the Division portfolio promote the integration of research and education?

All NSF awards seek to integrate research and education. However, specific programs have this as a specific goal. In DBI, these programs include Undergraduate Research Mentoring in the Biological Sciences (URM) and Research Experiences for Undergraduates – Sites (REU Sites). Data on the number of competitive awards made by these programs during the period under review are presented below. (“Competitive awards” is defined as a new award in that Fiscal Year; it does not include supplements to existing awards or awards in support of conferences, symposia, or workshops.)

Competitive Awards Made in Specific DBI Programs				
Program	FY 2007	FY 2008	FY 2009	ARRA (FY 2009)
URM	11	12	13	4
REU Sites	30	30	35	12

3. Are awards appropriate in size and duration for the scope of the projects?

The Division attempts to fully fund highly competitive projects whose budgets are well-justified. However, when the limitation of resources makes this impossible, the Program Director determines an amount that the program can provide for the project and informs the PI of this amount. If the reduction is greater than 10% of the amount originally requested, the Program Director requests a revised budget and an impact statement. The Program Director notes the budget reduction and the rationale for it in the jacket. The following table contains information related to award size and duration. Data were obtained from EIS and include all competitive awards made by the Division during the time indicated.

	FY 2007	FY 2008	FY 2009
Human Resources Cluster			
Number of Awards	64	73	107
Average Annual Dollars	\$82,798	\$77,677	\$79,257
Average Duration	3.32	3.20	2.96
Research Resources Cluster			
Number of Awards	89	106	160
Average Annual Dollars	\$154,295	\$147,842	\$223,460
Average Duration	3.02	2.76	2.81
ARRA Awards			
Number of Awards			87
Average Annual Dollars			\$120,163
Average Duration			3.16

4. Does the overall Division portfolio (including ARRA funded awards) have an appropriate balance of innovative/potentially transformative projects?

ARRA Specific Question: Does the ARRA funded portfolio have an appropriate balance of innovative potentially transformative projects?

Innovative/potentially transformative are highly subjective terms. Innovative research may be finding new uses for existing instruments or the development of completely new instruments; the creation of new teaching paradigms; or research that leads to new perspectives on existing questions. The Division has provided examples of innovative research funded (see “Highlights - PTR” in the CoV module in eJacket).

5. Does the Division portfolio have an appropriate balance of Inter- and Multi-disciplinary projects?

Data regarding this question is essentially possible to pull directly from any of the NSF databases. One way to consider this, however, is the number of awards that are co-funded by DBI with other units across NSF. Information regarding co-funding is presented in the following table.

(Includes new and continuing awards)	FY 2007	FY 2008	FY 2009
Other units contributing to Human Resources Cluster	137	163	194
Other units contributing to Research Resources Cluster	217	222	226
DIVISION TOTALS	354	385	420
Human Resources Cluster contributing to other units	201	206	232
Research Resources Cluster contributing to other units	258	280	315
Human Resources Cluster contributing to other units (ARRA)			43
Research Resources Cluster contributing to other units (ARRA)			46
DIVISION TOTALS	459	486	636

6. Does the Division portfolio have an appropriate balance considering, for example, award size, single and multiple investigator awards, or other characteristics as appropriate for the Division?

The majority of awards made by DBI are to individuals or groups (here defined as a project with at least one CoPI on the cover page or a collaborative). Information with respect to award size is presented in this self-study document (Section A.3.3).

	FY 2007	FY 2008	FY 2009
Human Resources Cluster (36 jackets in sample)			
Single Investigator	7	11	6
Multiple Investigators	5	1	6
Research Resources Cluster (45 jackets in sample)			
Single Investigator	7	8	8
Multiple Investigators	8	7	7
ARRA Awards (15 jackets in sample)			
Single Investigator			9
Multiple Investigators			6

7. Does the Division portfolio have an appropriate balance of awards to new investigators?

N.B. A new investigator is defined as an individual who has not served as the PI or CoPI on any award from NSF (with the exception of doctoral dissertation awards, graduate or postdoctoral fellowships, research planning grants, or conferences/symposia/workshop grants).

ARRA Specific Question: Does the ARRA funded portfolio have an appropriate balance of awards to new investigators?

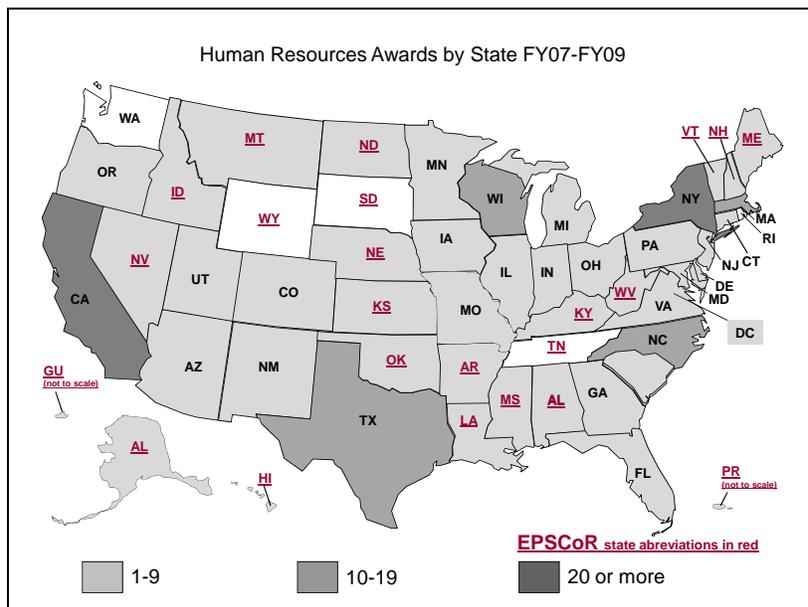
Data presented below were generated using EIS and are based on all awards made during the period under review. For comparison, data are also presented for overall funding rate.

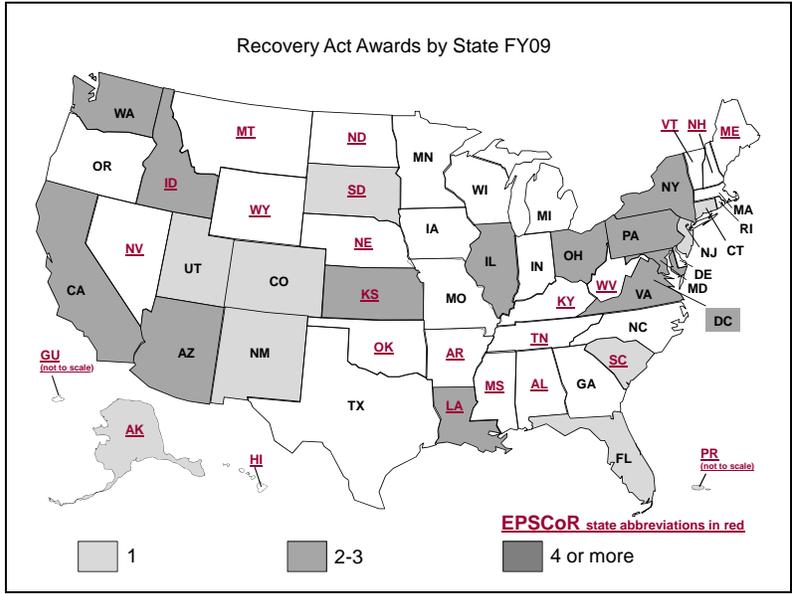
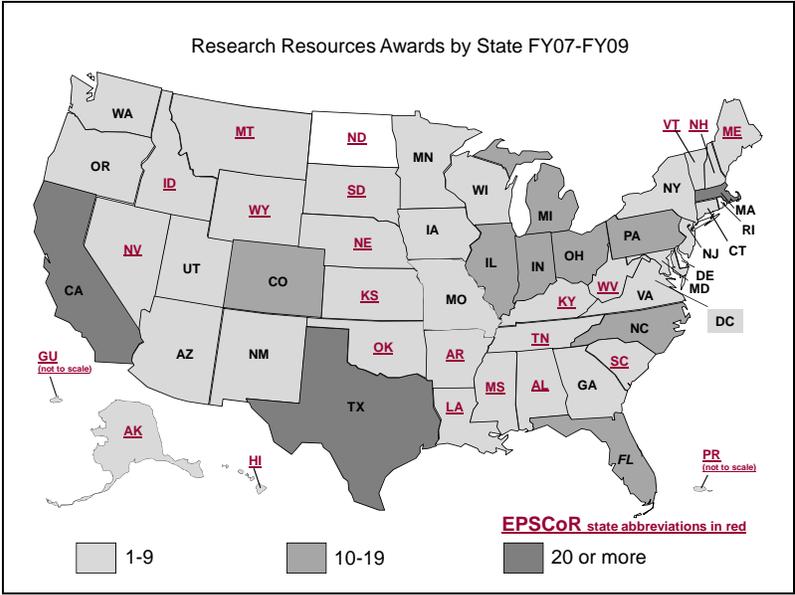
New Investigators (includes PIs and CoPIs)				
	FY 2007	FY 2008	FY 2009	TOTAL
Awards (%)	95 (20.9%)	119 (24.0%)	183 (39.6%)	397 (28.1%)
Declines (%)	359 (79.1%)	377 (76.0%)	279 (60.4%)	1,015 (71.9%)
Total # ARRA Awards			87	
ARRA Awards to New Investigators (%)			56 (64.4%)	

All Investigators				
	FY 2007	FY 2008	FY 2009	TOTAL
Awards (%)	208 (25.0%)	256 (28.5%)	364 (41.6)	828 (31.8%)
Declines (%)	623 (75.0%)	641 (71.5)	511 (58.4%)	1,775 (68.2%)

8. Does the Division portfolio have an appropriate balance of geographical distribution of Principal Investigators?

To ensure that DBI is serving the needs of the entire scientific community, the Division strives for a geographically diverse portfolio of PIs and CoPIs. The data in the following maps were obtained from EIS and includes all DBI awards made during the period under review. Note that PostDoctoral Fellowships are awarded to the individual rather than an institution and so are not reflected on the maps.





9. Does the Division portfolio have an appropriate balance of institutional types?

DBI works to create a balanced portfolio of awards to all types of institutions. The data presented below is derived from the EIS database and includes all awards for the period under review.

	FY 2007	FY 2008	FY 2009
Human Resources Cluster			
2 Year	0 (0%)	1 (1.4%)	1 (0.9%)
4 Year	1 (1.5%)	1 (1.4%)	1 (0.9%)
Business, State & Local, Foreign, Other	27 (41.5%)	36 (49.3%)	69 (62.7%)
Masters	11 (16.9%)	7 (9.6%)	9 (8.2%)
Ph.D. Institutions	8 (12.3%)	13 (17.8%)	14 (12.7%)
Research Intensive Ph.D. Institutions	18 (27.7%)	15 (20.5%)	16 (14.5%)
Total	65	73	110
Research Resources Cluster			
2 Year	1 (1.1%)	0 (0%)	0 (0%)
4 Year	3 (3.3%)	3 (2.7%)	2 (1.2%)
Business, State & Local, Foreign, Other	6 (6.6%)	16 (14.4%)	15 (9.3%)
Masters	5 (5.5%)	7 (7.2%)	15 (9.3%)
Ph.D. Institutions	13 (14.3%)	22 (19.8%)	29 (18.0%)
Research Intensive Ph.D. Institutions	63 (69.2%)	63 (56.8%)	100 (62.1%)
Total	91	111	161
ARRA Awards			
2 Year			1 (1.1%)
4 Year			0 (0%)
Business, State & Local, Foreign, Other			33 (37.9%)
Masters			9 (10.3%)
Ph.D. Institutions			11 (12.6%)
Research Intensive Ph.D. Institutions			32 (36.8%)
Unknown			1 (1.1%)
Total			87

10. Does the Division portfolio have an appropriate balance across disciplines and sub-disciplines of the activity?

Before funding decisions are made, the Program Directors review the portfolio of potentially fundable projects to ensure an adequate representation of the relevant scientific disciplines and biological sub-disciplines. 21st Century Biology is inherently multidisciplinary and is therefore creating natural linkages between disparate disciplines and reducing barriers between sub-disciplines.

The CoV is encouraged to refer to documents posted at the CoV module within eJacket and examine the list of awards and the Highlights to assess the portfolio.

11. Does the Division portfolio have appropriate representation of underrepresented groups?

The Division recognizes the importance of increasing the participation of underrepresented groups in all areas of science. DBI Program Directors do outreach activities at academic institutions, professional society meetings and conferences to encourage broader participation by members of underrepresented groups.

Data provided below were generated using the EIS database and includes all DBI proposals for the activities and period under review. A proposal is categorized as having “minority involvement” if the PI or CoPI self-identify as a minority at the time of proposal submission.

NB: FY 2009 data includes ARRA funded proposals.

	FY 2007			FY 2008			FY 2009		
	Actions	Awards	Funding Rate	Actions	Awards	Funding Rate	Actions	Awards	Funding Rate
Total	658	153	23%	647	179	28%	662	267	40%
White	308	95	31%	230	53	23%	318	45	14%
Unknown	145	20	14%	269	94	35%	236	188	80%
American Indian/Alaskan	1	0	0%	2	2	100%	2	1	50%
Asian	86	10	12%	56	12	21%	76	9	12%
Black/African American	10	1	10%	8	1	13%	10	2	20%
Hispanic	13	3	23%	10	0	0%	18	3	17%
MultiRacial	1	0	0%	1	1	100%	2	1	50%
Female	92	24	26%	71	16	23%	95	18	19%

12. Is the Division relevant to national priorities, agency mission, relevant fields and other constituent needs? Include citations of relevant external reports.

The CoV is encouraged to refer to documents posted at the CoV module within eJacket and examine the list of awards and the Highlights to assess the portfolio.

National priorities:

The Office of Science and Technology Policy (OSTP) and the Office of Management and the Budget (OMB) annually send all agencies a letter that identifies the administration’s scientific research and development priorities for future budget development. Since these letters provide guidance to all federal agencies that support scientific research and development, many of the priorities are not specifically relevant to NSF or DBI, but inform the overall budget preparation. Copies of these letters for the period under review are posted at the CoV module in eJacket.

Agency Mission:

A copy of the NSF Strategic Plan for FY 2006 – FY 2011 is posted at the CoV module in eJacket.

The NSF mission is to promote the progress of science; to advance the national health, prosperity, and welfare; and to secure the national defense. The Foundation’s organic legislation authorizes it to engage in the following activities:

- A. Initiate and support, through grants and contracts, scientific and engineering research and programs to strengthen scientific and engineering research potential, and education programs at all levels, and appraise the impact of research upon industrial development and the general welfare.
- B. Award graduate fellowships in the sciences and in engineering.
- C. Foster the interchange of scientific information among scientists and engineers in the United States and foreign countries.
- D. Foster and support the development and use of computers and other scientific methods and technologies, primarily for research and education in the sciences.
- E. Evaluate the status and needs of the various sciences and engineering and take into consideration the results of this evaluation in correlating its research and educational programs with other Federal and non-Federal programs.
- F. Provide a central clearinghouse for the collection, interpretation, and analysis of data on scientific and technical resources in the United States, and provide a source of information for policy formulation by other Federal agencies.
- G. Determine the total amount of Federal money received by universities and appropriate organizations for the conduct of scientific and engineering research, including both basic and applied, and construction of facilities where such research is conducted, but excluding development, and report annually thereon to the President and the Congress.
- H. Initiate and support specific scientific and engineering activities in connection with matters relating to international cooperation, national security, and the effects of scientific and technological applications upon society.
- I. Initiate and support scientific and engineering research, including applied research, at academic and other nonprofit institutions and, at the direction of the President, support applied research at other organizations.
- J. Recommend and encourage the pursuit of national policies for the promotion of basic research and education in the sciences and engineering. Strengthen research and education innovation in the sciences and engineering, including independent research by individuals, throughout the United States.
- K. Support activities designed to increase the participation of women and minorities and others under-represented in science and technology.

BIO Mission:

BIO's primary mission is to support the vitality of the biological sciences at US colleges and universities, especially in those areas where NSF has major responsibilities such as supporting young investigators, underrepresented groups, a diverse array of institutional types, the integration of research and education, and international collaborations.

13. Additional comments on the quality of the projects or the balance of the portfolio.

ARRA Specific Comments: Additional comments regarding the portfolio of ARRA awards addressing the NSF or program-specific priorities for ARRA funding.

The CoV is encouraged to refer to documents posted at the CoV module within eJacket and examine the list of awards and the Highlights to assess the portfolio.

A.4 Management of the Division under review.

1. Management of the Division.

2. Responsiveness of the Division to emerging research and education opportunities.

3. Division planning and prioritization process (internal and external) that guided the development of the portfolio.

4. Responsiveness of the Division to previous CoV comments and recommendations.

The 2007 CoV Report, Division response, and update on progress since that response are posted at the CoV module in eJacket.

5. Additional comments on Division management.

PART B. RESULTS OF NSF INVESTMENTS

The NSF mission is to:

- promote the progress of science;
- advance national health, prosperity, and welfare; and
- secure the national defense.

To fulfill this mission, NSF has identified four strategic outcome goals: Discovery, Learning, Research Infrastructure, and Stewardship. The CoV should look carefully at and comment on (1) noteworthy achievements based on NSF awards; (2) ways in which funded projects have collectively affected progress toward NSF's mission and strategic outcome goals; and (3) expectations for future performance based on the current set of awards.

NSF investments produce results that appear over time. Consequently, the CoV review may include consideration of significant impacts and advances that have developed since the previous CoV review and are demonstrably linked to NSF investments, regardless of when the investments were made.

To assist the CoV, DBI has posted award "Highlights" at the CoV module in eJacket. The CoV is not asked to review accomplishments under Stewardship, as that goal is represented by several annual performance goals and measures that are monitored by internal working groups that report to NSF senior management.

B. Please provide comments on the activity as it relates to NSF's Strategic Outcome Goals. Provide examples of outcomes ("highlights") as appropriate. Examples should reference the NSF award number, the Principal Investigator(s) names, and their institutions.

B.1 OUTCOME GOAL for Discovery

"Foster research that will advance the frontier of knowledge, emphasizing areas of greatest opportunity and potential benefit and establishing the nation as a global leader in fundamental and transformational science and engineering."

B.2 OUTCOME GOAL for Learning

"Cultivate a world-class, broadly inclusive science and engineering workforce, and expand the scientific literacy of all citizens."

This category includes K-12, undergraduate, graduate, and postdoctoral education and training; public understanding of science; and lifelong learning.

B.3 OUTCOME GOAL for Research Infrastructure

“Build the nation’s research capability through critical investments in advanced instrumentation, facilities, cyberinfrastructure and experimental tools.”

This category includes facilities, research instrumentation, and cyberinfrastructure.

PART C. OTHER TOPICS

C.1 Please comment on any Division areas in need of improvement or gaps (if any) within program areas.

C.2 Please provide comments as appropriate on the Division’s performance in meeting Division-specific goals and objectives that are not covered by the above questions.

Please see “Introduction to the Division” on Page One of this Self Study for background information.

C.3 Please identify agency-wide issues that should be addressed by NSF to help improve the Division’s performance.

C.4 Please provide comments on any other issues the CoV feels are relevant.

C.5 NSF would appreciate your comments on how to improve the CoV review process, format and report template.

SIGNATURE BLOCK:

For the [Replace with Name of COV]

[Name of Chair of COV]

Chair