Staff Response to Committee of Visitors (COV)
Selected HRD Programs
COV Meeting Date: November 18-19, 2004

INTRODUCTION

Firstly, we must express our deep gratitude to the Committee of Visitors (COV) for their extraordinary and meticulous FY 2004 evaluation of the selected programs of the Division of Human Resource Development (HRD), including, the Louis Stokes Alliance for Minority Participation (LSAMP), the Historically Black College and University – Undergraduate Program (HBCU-UP), the Alliances for Graduate Education and the Professoriate (AGEP), the Centers of Research Excellence in Science and Technology (CREST), and the Model Institutions of Excellence (MIE). The panelists reviewed records for *five* (5) programs in order to produce a COV report that provides both synthesized and individual program commentary for HRD's diversity programming continuum.

Secondly, the very design of this COV for multiple HRD programs, has given the Division, the Directorate and the NSF as a whole a new model for contemplating the operation of related programs and the COV processes generally.

Thirdly, in some cases NSF has begun to address the COV's concerns. For programs that have been sunset (e.g. MIE), however, some recommendations, for example, suggestions for changes in proposal review practices cannot be implemented because there will be no competitions or new awards made. However, the COV suggestions will inform NSF management of other programs.

Our response to individual concerns and recommendations that the COV members expressed in the report begin in the next section. For the sake of brevity, we refrain from responding to the affirmative comments. Some concerns are expressed in different contexts across the report's entirety. We respond to such remarks only once following their initial presentation.

In short, the Committee "found the overall quality of the projects supported by these five HRD programs to be very high. . . . With respect to program management, the COV was very favorably impressed; these are large, complex, multi-facetted initiatives that are highly challenging from an administrative point of view. The program leadership is doing an outstanding job." (COV report page 4.) HRD Programs Officers and all HRD staff members remain committed to continue their excellence in "best-practice" by constantly finding ways to improve operations and communicate them within the Foundation and beyond.

NSF thanks the COV for their extensive and thoughtful analyses and support for program continuity.

RESPONSES TO CONCERNS OR RECOMMENDATIONS IN THE COV'S EXECUTIVE SUMMARY

COV's Primary Recommendation: **"***these programs be further expanded so as to serve yet greater numbers of students and institutions". (Page 5)*

NSF Response: Funding levels for AGEP, CREST, HBCU-UP and LSAMP have increased significantly since FY 2003. NSF's FY 2005 budget includes an increase of 30% for AGEP, 26% for CREST, 36% for HBCU-UP, and 13% for LSAMP. These budget increases have allowed for new awards and supplements, as well as the establishment of new initiatives. LSAMP established the Bridge to the Doctorate activity that provides direct support to students pursuing graduate degrees in STEM fields. CREST continues the new initiative to support STEM research capacity building at doctoral degree granting HBCUs. In collaboration with NSF's Engineering Directorate, CREST also supports partnerships between minority-serving institutions and small business. NSF's FY 2006 budget request includes increased allocations for these programs in addition to an $8 million fund to integrate these programs across NSF's research directorates.

ORGANIZATIONAL EXCELLENCE:

COV writes: "*We stress that increased focus should be placed on assuring that the experience gained within HRD is broadly disseminated throughout the Foundation." (Page 5) and*

"We are convinced that the "best practices" emerging from the HRD programs should be shared widely and should inform the structure of a wide variety of other initiatives. . . . The COV believes that a concerted effort should be made to assist the staff of the HRD to increasingly link with other directorates across the Foundation. (page 6)

NSF Response: It is standard practice in HRD to invite all division directors from outside the EHR Directorate to attend the HRD's annual Principal Investigators/Project Directors Meeting. In addition Dr. Johnson (AGEP) and Dr. Ted Conway (Research on Disabilities Education -- RDE) worked with the NSF Academy to include a module on HRD programs in the three-day program officer training NSF requires of all new program officers. Moreover, for ten of the eleven-year (1995-2006) initiative, the MIE received 75% of its approximate $100M funding from the Foundation's Research and Related Activities (RRA). Acknowledging the import of that long-term investment, as well as to advance cross-directorate communications and support, MIE Program Officer David Temple has briefed key RRA administrators on the purposes and findings of the American Institutes for Research (AIR) MIE Impact Study: " Creating and Maintaining Excellence: The Model Institutions for Excellence. At the Principal Investigators/Project Directors 2005 Meeting, a 105-minute session for the MIE Principal Investigators and NSF's RRA leaders outlined each individual campus's achievements in science and engineering, and initiated discussions on ways to establish a cross-directorate structure for planning and communications between HRD and the administrators of NSF's research and related activities. As indicated above, NSF's FY 2006 budget request includes an $8 million fund to integrate the AGEP, CREST and LSAMP programs best practices across NSF's research directorates. HRD staff will explore other mechanisms to increase linkages with other NSF directorates.

C. Other Topics

Concern: Understanding the HRD Programs within a System: "*We do feel that additional focus should be placed, though, on understanding the interactions between the suite of HRD programs on a systems level. Such a comprehensive focus needs support that is sustained long enough to produce viable and reliable data. NSF should implement a strategy to collect the necessary data in a timely manner to assure that the system as a whole is operating as effectively as possible." (Page 5)*

NSF Response: For the past five years HRD has held joint annual meetings that bring together the program officers and the principal investigators of the entire HRD portfolio. These meetings provide opportunities to explore cross-program interactions at the state, regional, and institutional levels. Outcomes from these discussions continuously inform HRD program management. In addition, during the past five years, HRD has twice convened the chancellors and presidents of minority-serving institutions to discuss overarching, cross program issues such as research and educational capacity building as well as improving student retention and progression at minority-serving institutions. Both events have produced reports containing specific recommendations that have and continue to inform HRD program solicitations, as well as program management. Recent reports are:
1) Acceleration: Highlights of a Summit for Chancellors and Presidents, Chief Academic Officers and Research Officers" North Carolina State A & T University, 2003
2) Expanding the Human Frontiers of Science: Bringing Minority-Serving Institutions into the Mainstream. North Carolina State A & T University, 2001 which is available on-line at: http://fac.ncat.edu/pr/hotnews/pdf/humanfrontiers.pdf
Ongoing and scheduled external evaluations of the AGEP, LSAMP, CREST and HBCU-UP programs should yield valuable information concerning the overall impact of this diversity portfolio. Existing outcome data such as the 24,176 STEM bachelor's degrees reported by LSAMP institutions during the 2004 academic year suggest a positive impact.

Concern: A Hispanic/Latino Gap: *"As far as gaps within program areas, the COV noted that while institutional capacity building initiatives are in place for HBCU's and for tribal colleges there is currently no focused effort on institutions serving Hispanic populations. This is a major gap that should be addressed." (Page 6)*

NSF Response: While it indeed true that no program in HRD contains the words Hispanic, Latino, or Hispanic-serving institution (HSI) in the title, HSIs are eligible and do participate in LSAMP, AGEP, CREST, MIE and in other HRD programs that were not subjected to this COV. Indeed, all NSF programs welcome proposals from Hispanic-serving institutions. At present HRD has no plans to launch a program that focuses exclusively on Hispanic Serving institutions, but staff members agree that more outreach can be done to attract applicants from these institutions. Already, HRD is working with the Division of Human Resource Management's and the Directorate for Engineering's exhibiting activities to make sure that organizations such as the Hispanic Association of Colleges and Universities (HACU) and the Society for Hispanic Professional Engineers (SHPE) are aware of the HRD programmatic portfolio.

Furthermore, while the HRD program portfolio does not include a program that *exclusively* focuses on Hispanic-serving institutions, HSIs are very well represented among LSAMP, AGEP, CREST and MIE funded institutions. One third of the CREST centers are HSIs as are a third of the current MIE institutions. AGEP alliances include 15 HSIs as lead institutions or primary

partners. Thirty-eight HSIs are partners within LSAMP alliances. These projects also significantly impact and serve Hispanics. Of the 24,176 STEM baccalaureate degrees awarded by LSAMP alliances during the 2003-2004 academic year, 48% (11,498) were awarded to Hispanic or Latino students. That 48% represents the largest percentage among all the underrepresented groups in STEM.

NSF is currently funding a HACU lead effort to conduct a national study of HSIs that will produce in-depth information on these institutions and outline their unique role in the education of Hispanic students, as well as their STEM related needs. Project outcomes will include specific recommendations to broaden the participation of Hispanics in STEM fields.

RESPONSES TO CONCERNS OR RECOMMENDATIONS NOTED IN: PART A. INTEGRITY AND EFFICIENCY OF THE PROGRAMS' PROCESSES AND MANAGEMENT

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

***COV Overall Comment and Concern*:** *The review mechanisms for all 5 programs were deemed to be appropriate and effective, with the exception of one major weakness. It was noted that, at least for the LSAMP program, the racial balance of reviewers is inadequate, most strikingly with zero participation of Hispanic reviewers over the three-year period under review. . . . According to the document provided the racial balance of the panels is inadequate. It reports only one American Indian and one Pacific Islander in three years and no Hispanic reviewer at all. Data for ad hoc reviews are not available and no data are given regarding site visits. However, the panels and the process seem to be consistent with the procedure described although the threshold for funding seems to be questionable. (Page 9). . . The program officer needs to insure that all ethnic groups are represented in the review process. (Page 16)*

NSF Response: HRD diversity program panels traditionally include representation from multiple racial and ethnic groups. However, NSF cannot legally require reviewers to provide demographic information. The NSF Program Officers share the same frustration that the COVs face in not having accurate demographic data captured in the NSF panel system.

The COV report notes about LSAMP in a section entitled **UNDERGRADUATE PROGRAMS** on page 22*:"There was a noticeable lack of Hispanic reviewers for all three years. It should be noted that reviewers from Hispanic-serving institutions were present on the panels for each of the years reviewed."* Furthermore, LSAMP review panels held during 2004 and 2005 included Hispanic American reviewers. LSAMP regrets the perception the NSF data gave regarding the participation of Hispanic reviewers on its panels. The HRD program officers do take demographic considerations into account when inviting reviewers, however, there is no way to require reviewers to disclose in FastLane their races or ethnicity or disability status. The Programs are aware of this concern and also broaden the reviewer pool when conducting outreach or site visits. The LSAMP reviewer pool includes members of all underrepresented groups, MSIs, and both small and large schools.

Funding thresholds for LSAMP alliances are clearly established in the LSAMP solicitation. Basically, phase I alliances that produce 500 B.S. degrees or more annually are eligible for $700,000 per year. Alliances that produce between 300 and 500 B.S. degrees are eligible for $500,000 to $700,000. Alliances that graduate less than 500 B.S. students per year are eligible for less that $500,000 per project year. Award size varies by project phase.

COV MIE Concerns and Recommendations: *Reviews are inconsistent with priorities and criteria stated in the program's solicitations. It is not clear that the reviewers consistently addressed the announcement criteria in the review process. A review of jackets indicates variable responses to the announcement criteria. (See Form 7 Supplements) We recommend the establishment of guidelines for reviewers that align explicitly to the announcement criteria and to the proposals submitted by the institution. (Page 11). . . Individual reviews appear to address only two questions: Intellectual merit and broader impact. A template that is broadened to address additional questions would contribute to more comprehensive reviews and consistency among reviewers of the different institutions (Page 12) Although, two of the three reviews were substantive and comprehensive, the Oglala review needed to address the issues more conclusively and provide specific strategies to strengthen implementation processes and outcomes. (Page 13) Two of the three Form 7s provide a good analysis of reviews. The Form 7 could be improved by presenting information in categories instead of long paragraph format, example, Educational Infrastructure, Professional Development, Student Support, etc. Structure the review in subtopics that address the concern and accomplishments in easily identifiable sections. Summarize the strengths by topic areas, then give rationale for funding. (Page 14) We recommend that the merit review process continue. A major program objective is to facilitate capacity-building in order to make PIs and their institutions more competitive among their peers. (Page 16)*

NSF Response: HRD agrees that instructions for reviewers that align with program requirements and other criteria would be an important improvement to the review process in general. Although the MIE program has been terminated, the Division will begin a process of creating some general guidelines for reviewers that meet the COV recommendations above.

COV HBCU-UP Program Concern: *A question is raised about why there were no 3rd year conferences or site visits undertaken. (Page 16)*

NSF Response: The summary sheet titled "HBCU-UP Program Outreaches" included in the COV materials inadvertently omitted several activities. In FY 2003 the fourth annual HBCU-UP student research conference was held at Tuskegee University (11/21/03 to 11/22/03). In addition, the HBCU-UP program director presented information on funding opportunities at NSF for faculty from Hispanic-Serving Institutions that were participating in the US Department of Agriculture's HSI Fellows program (7/14/03). In addition, a "reverse site visit" was held in FY 2002 where six grantees came to NSF to present on their project progress to a panel of peers and NSF program staff. Another "reverse site visit" for six more grantees was held in the beginning of FY 2004 that was outside the time period covered by the COV report.

COV AGEP Concerns and Recommendations: *This COV* has *some concern about the parallel submissions of alliance proposals and recommends that NSF carefully monitor the process. We recommend that HRD explore ways to involve the research directorates in the AGEP program to ensure that valuable lessons learned through the HRD initiatives are shared throughout the Foundation. (page 16). In reference to AGEP, the COV report states: "Despite timeliness of decision, actual notification of award has been consistently delayed beyond NSF's recommended six-month window, due to slowness in the Congressional budgeting process". (page 11).*

NSF Response: NSF regulations permit parallel submission and the e-jacket makes it easier to monitor the process. The parallel submissions reflect institutional preferences for fiscal control

of resources, rather than decentralized project activities. Dr. Johnson closely monitors such submissions to assure that the administrative infrastructure is in place for appropriate coordination of alliance activities.

Dr. Johnson has developed several ways to involve the non-EHR Directorates into the AGEP program, including serving on both the NSF-wide IGERT and GK-12 coordinating committees and working with the NSF Academy to train the continually changing NSF program officers in the disciplinary programs at NSF.

The following are recent examples of successful efforts to engage the research directorates in the AGEP program:

- In FY 2004, AGEP and SBE co-funded a model alliance of three (3) AGEP institutions to focus on broadening participation at the graduate level specifically in SBE-funded disciplines. Plans are in progress to fund four (4) additional model alliances in FY 2005. The SBE/AGEP model alliances will involve almost all of the twenty five (25) top producers of minority Ph.D.s in the social sciences.

- CISE has developed a *Broadening Participation in Computing* initiative (NSF 05-562). The initiative is based on the AGEP program model, and the program announcement clearly reflects the strong influence of AGEP's collaborative approach to increasing diversity through the establishment of formal alliances.

- A recent (FY 2005) review of linkages between AGEP projects and other programs within NSF revealed that there are formal partnerships between AGEP projects and the following NSF programs: LSAMP, HBCU-UP, TCUP, IGERT, ADVANCE, VIGRE, GK-12, ERCs, STCs, MRSECs, STEP, REU and RDE.

AGEP program staff will continue to explore strategies to integrate NSF's research directorates into AGEP efforts to enhance diversity in graduate STEM education and the professoriate.

Any delay in award notification can be explained by the lag between the decision to fund a project and the negotiations associated with a) pre-award negotiations (budget and scope of work), b) drafting of cooperative agreement language, and c) getting final approval of cooperative agreement language by alliance partners. DGA provides the award notification that is referenced in the COV report. It is not uncommon for programs with complex award structures to exceed the 6-month dwell time target. The Congressional budgeting process has not impacted dwell time.

A.2 Questions concerning the implementation of the NSF Merit Review Criteria (intellectual merit and broader impacts) by reviewers and program officers

COV LSAMP CONCERNS: *The merit review criterion on intellectual merit was generally addressed by discussions of the quality of the activity and the commitment to or sustainability of the project. The panel reviews discussed the broader impacts, specifically, how well the proposed activity would broaden the participation of underrepresented groups. Given that the criteria are listed separately on the review sheet, it may be helpful during the orientation session to provide reviewers with specific examples as to how these criteria may be addressed relative to the Program focus. (Page 17) . . . It seems the proposals do meet criteria yet not to the*

definition as provided in the directions for reviewers. Suggest that be looked at when it comes to specific program reviews and other scientific reviews. (Page 18)

NSF Response: These suggestions will be implemented in the FY 06 competition.

Issues or Concerns the COV identified with respect to the NSF's merit review system:
The only concern that emerged with respect to NSF's merit review system is that the community, both of reviewers and PIs, continues to have some confusion with respect to the issue of what constitutes "intellectual merit" and what constitutes "broader impact". As projects supported through these HRD programs are quite different in character from more typical NSF research-focused proposals, it would be useful to provide the community with more guidance in the interpretation of the criteria. (Page 20)

NSF Response: In order to clarify NSF review criteria, HRD program officers will provide more guidance to panel reviewers, as well as ad hoc reviewers. Orientation sessions and written materials will include examples applicable to HRD educational and research programs.

COV LSAMP Concern and Recommendation: *There do not appear to be any procedures that require reviewers to match proposal activities with the merit criteria. There is little to no discussion in either the reviewer comments or the review analyses that specifically relates to either. The criteria used to evaluate these proposals could be expanded to reflect the difference between assessment of programmatic proposals and the other strictly NSF type research proposals. The criteria seems obtrusive to the intent of the program. The definition of intellectual merit has more of a research connotation (advancing knowledge in a field). For LSAMP, the definition should be more narrowly defined. One COV member suggested that the weaknesses and recommendations section should be further delineated to reflect what this final assessment means. (Page 20)*

NSF Response: HRD program officers will provide additional guidance to panel reviewers, as well as ad hoc reviewers. Orientation sessions and written materials will include examples applicable to HRD educational and research programs

COV MIE Concerns and Recommendations: *Impact should be broadened to include capacity for institutionalization. Goals, where possible, should be quantifiable with timelines for achievement. The MEI is a diversity program, yet three of the items on the Merit Review criteria address diversity. When documenting diversity programs, we suggest that the merit review criteria be broadened to include elements such as infrastructure alignment to sustain the initiative, student support, professional development, etc. (Page 20)*

NSF Response: NSF merit review criteria are consistent across NSF programs. However, during HRD review panel orientations, reviewers will be instructed to adopt a broad interpretation of the NSF review criteria to include elements including those recommended by the COV. HRD staff agrees with the COV concerning the importance of institutionalization and sustainability of successful practices supported by NSF. All HRD diversity focus programs including AGEP, CREST, HBCU-UP, LSAMP and MIE require that awardees submit annual quantitative performance data to NSF. These indicators are linked to program and project goals stated in the solicitation and referenced in the approved proposals. These performance data are used to determine whether NSF will continue to support the projects as well as the level of continuing support for the projects.

A.3 Questions concerning the selection of reviewers.

COV HBCU-UP Recommendations: *The COV suggests that disabled individuals be recruited as panelists if this is not already being done. (Page 22). . . "Other Sciences" as an expertise seems to be heavily favored. Is this true science and if not, how do they fit into the mix of reviewers? That category probably refers to the social sciences and one would encourage the participation of those in this group who are concerned with HRD. (Page 26)*

NSF Response: HRD is committed to inclusive diversity and does it's best to recruit reviewers who are representative of excellence in science and engineering. Persons with disabilities are particularly under-employed in S&E fields, and although attempts were made to have them participate in review panels, their schedules did not permit. Since the time period included in the 2004 COV report, potential reviewers have been identified from HRD's Research in Disabilities Education (RDE) program from contacts made at the HRD Joint Annual Meeting for Principal Investigators.

Given the diversity of the types of activities supported by the HBCU-UP program, peer reviewers with general higher education experience and administrative experience in addition to the traditional STEM disciplines are extremely valuable in the review of proposals. "Other Sciences" does NOT refer to the Social Sciences. NSF offers a category called "Other Social Science." *Other Sciences* refers to disciplines not listed among the approximately 50 choices in NSF's electronic reviewer system. In EHR, "other sciences" is the usual choice of those with an EdD or advanced degree in assessment or administration. However, a biochemist also might choose "other science" because the information system does not permit multiple answers: for example, a reviewer may *only* select one type of discipline biology or chemistry and not both.

COV MIE and Overall HRD Recommendation: *Upon receipt of a "non review", the COV panel recommends the NSF program officers solicit input from an additional reviewer with expertise in the relevant area. We commend the use of NSF Program Officers to augment reviews from external panelists. . . . For programs such as the MIE, the COV stresses that it is important to include senior reviewers with expertise in institutional capacity building. (Page 22) Given the institutional capacity building goals of many of the programs, it is also important that senior reviewers, with significant leadership experience, be increasingly incorporated into the process. (Page 26)*

NSF Response: HRD staff agrees with the COV recommendation concerning the use of senior reviewers for institutional capacity building programs such as those managed through HRD. Review panels for HRD's capacity building programs typically include academic officials such as deans and provosts to ensure consideration of institutional perspectives in addition to disciplinary expertise. This practice will continue to be employed in NSF's diversity focus institutional capacity building programs.

COV's Overall Recommendation: *Efforts should be made to increase the numbers of American Indian, Pacific Islander and Hispanic reviewers. The geographic distribution of reviewers could also be improved by drawing more from individuals from western states. (Page 24)*

NSF Response: HRD is strongly committed to ensuring that reviewers are drawn from a broad array of institutions, experiences, field of expertise, and to establish recruiting practices for

reviewers to ensure that participation is broadened geographically, institutionally and individually. These programs are committed to broadening the reviewer pool to include all members of underrepresented groups, minority serving institutions, from all regions of the country and from small and large schools. HRD staff will continue broadening the pool of NSF reviewers by inviting additional faculty and administrators from minority-serving institutions to serve on HRD review panels.

A.4 Questions concerning the resulting portfolio of awards under review.
Does the program portfolio have an appropriate balance of: Projects that integrate research and education?

COV's MIE Recommendation: *COV recommends that the Program Officer extract case studies from MIE implementation in order to document and disseminate best practice in the integration of research and education in order to facilitate replication within other institutions.*

NSF Response: MIE's case studies are well documented in the AIR Impact Study's findings and report. The evaluators devoted an average of three days at all six institutions to identify and report these studies. Among the findings was the strongest affirmation that the MIE student successes would not have occurred had it not been for the sustained student-faculty undergraduate research program requirements. Dissemination will begin when the MIE National Report is released in June 2005. Release will be at the two-day MIE National Conference where all best practices will be fully discussed and disseminated. Moreover, the new site dissemination projects, which were developed by the MIE sites, will then be underway.

A.5 Management of the program under review.

COV's Overall Recommendation: *These are large, complex, multi-facetted initiatives that are highly challenging from an administrative point of view. The program leadership is doing an outstanding job. They are very short-staffed though; efforts should be made to increase the level of staff support. (Page 42)*

NSF Response: HRD program officers are encourages by the COV's praise. The suggestion to increase the level of staffing for HRD diversity focus programs will be considered in overall NSF staffing needs.

COV LSAMP and HBCU-UP Concern: *As the programs grow and the NSF staff remain the same, there might be some need from projects that might go unmet. Site visits might be minimized as well as on-site assistance in program management and goals clarification.* (Page 42)

NSF Response: As the HRD program portfolio grows and staffing remains constant, program staff complement their efforts to provide pre-and post-award guidance to eligible institutions through contracts and special awards to third parties. For instance, HBCU-UP provides two-day pre-award technical assistance workshops organized by the Quality Education for Minorities Network. HBCU-UP also offers post-award on-site and off-site project management assistance through the QEM Network. Until recently, the American Indian Higher Education Consortium provided on and off-site project management assistance to Tribal Colleges through a special TCUP award. ORC Macro Inc., an NSF contractor, provides guidance and support on performance data collection and management to CREST and LSAMP awardees. Systemic Research provides performance data management workshops to TCUP and HBCU-UP

awardees. NSF's Grants and Agreements division provides grant management workshops at all HRD PI meetings. In addition, Grants and Agreements Division staff members visit selected awardee institutions to assess financial operations and provide guidance.

COV's MIE Concern and Recommendation: *The Program Officer should facilitate the transfer of good ideas in research or in teaching among or to the grantees. Future solicitations should include a dissemination component.*

NSF Response: The "life" of the MIE program concludes in 2006. There will be no future solicitations beyond 2003. The Program Officer has ensured that all six MIE Principal Investigators are called together at least annually for the transfer of ideas and practices, and they have participated in vigorous two-day discussions at the HRD Program Directors Principal Investigators' annual meeting cited above.

PART B. RESULTS : OUTPUTS AND OUTCOMES OF NSF INVESTMENTS

B1 Outcome Goal for People:

COV's recommendation: The primary recommendation of this COV is that these programs be further expanded so as to serve yet greater numbers of students and institutions.

NSF Response: We are pleased that the COV noted several positive outcomes from the programs under review and believes in their continuity and expansion. Funding levels for AGEP, CREST, HBCU-UP and LSAMP increased significantly since FY 2003. NSF's FY 2005 budget represents an increase of 30% for AGEP, 26% for CREST, 36% for HBCU-UP, and 13% for LSAMP over the FY 2003 levels. These budget increases have allowed for program expansion through new awards and supplements, as well as the establishment of new initiatives. LSAMP established the Bridge to the Doctorate activity that provides direct support to students pursuing graduate degrees in STEM fields. CREST continues to support STEM research capacity building at doctoral degree granting HBCUs. AGEP increased the level of support available to new alliances. The HBCU-UP investment has reached $97 million in support of STEM programs at 59 Historically Black Colleges and Universities.

NSF's FY 2006 budget request includes increased allocations for these programs in addition to an $8 million fund to integrate these programs across NSF's research directorates

PART C. OTHER TOPICS

COV's Concern: *One of the key challenges facing HRD programs is the question of institutionalization of innovation. Documenting institutional change is, of course, challenging. Typically, institutions are asked to provide evidence of change based on the efforts of a single program. Many institutions, and among them some of our most creative and dynamic, enjoy the benefits of multiple, interacting awards. The COV feels that effort should be placed on understanding the interactions of multiple programs on individual campuses, particularly with respect to the sustainability of institutional change. (Page 53)*

NSF Response: The Alliances for Graduate Education (AGEP) program reports success at improving graduate education in ways that benefit all graduate students by coordinating previously unlinked academic activities, improving the quality of graduate support systems, expanding graduate curriculum options, engaging in a wider variety of academic partners, and

improving the preparation of graduates for a broader array of career options. Throughout the AGEP community, there are reports of increased communication among departments, increased synergy across institutions, innovative interactions across projects/alliances, broad-based faculty support or AGEP activities and strategies, institutionalization of AGEP infrastructure, and improved moral (students, faculty, and administrators).

At the undergraduate level, MIE institutions have developed successful models of high quality STEM education that can be replicated at other colleges and universities. These institutions (4 NSF, 2 NASA) have shown great progress in retaining and graduating more than 8,000 STEM students, educational infrastructure development through enhancements in curriculum, in strategic purchases of new computers and laboratory equipment. At Oglala Lakota/Oyate Consortium, MIE funds have enabled the updating of an extensive distance learning system that serves much of the state. Across the MIE sites more than 72 STEM faculty were recruited and hired, which has also enabled significant and key advances in faculty-student undergraduate research activities, and faculty development. In the original 1994 solicitation, it was expected that the sites would “institutionalize” their programs before completion of the eleven-year initiative. Most have sustained or are well underway. The Oyate Consortium began from a status of a virtually nonexistent infrastructure and is now in an ongoing development phase. The American Institutes for Research (AIR) MIE Impact Study (discussed elsewhere in this response) advance copy cites that “this lasting value of changes in the physical infrastructure cannot be overstated. Whether it meant transition from a trailer that could accommodate only 14 students to a fully-integrated, well-equipped classroom for 30 students at Sitting Bull College, or the purchase of a confocal microscope at Spelman, MIIE funds were concentrated at every project on the renovation of classrooms and laboratories and the purchase of equipment that will serve STEM students long after MIE funding ends.”