Supporting Statement (3145-0136)

REQUEST FOR CLEARANCE OF DATA COLLECTION FOR THE SCHOLARSHIPS IN SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS (S-STEM) PROGRAM
Attachment B

Section A

Introduction

This request for Office of Management and Budget (OMB) review asks for renewal of the Data Collection for the Directorate of Education and Human Resources' (EHR) Division Of Undergraduate Education Scholarships in Science, Technology, Engineering, and Mathematics (S-STEM) Program (formerly known as the Computer Science, Engineering, and Mathematics Scholarship Program) in conjunction with the EHR Generic Clearance OMB 3145-0136. The EHR Generic Clearance collects data about education and training programs of the National Science Foundation (NSF) and will expire in January 2008.

A.1. Circumstances Requiring the Collection of Data

The S-STEM program, part of the Division of Undergraduate Education (DUE) in EHR, supports scholarships for low-income academically talented students, enabling them to pursue associate, baccalaureate, or graduate-level degrees in computer science, computer technology, engineering, engineering technology, or mathematics. Academic institutions apply for the awards to support scholarship activities and are responsible for selecting scholarship recipients.

The program was established by NSF in accordance with the American Competitiveness and Workforce Improvement Act of 1998 (P.L. 105-277) as modified by P.L. 106-313. The Act reflects the national need to increase substantially the number of American high technology workers and to develop high-quality professionals in these fields.

The S-STEM program is a key part of NSF's efforts to achieve the strategic goals of Discovery and Learning described in the FY 2006-2011 Strategic Plan (http://www.nsf.gov/pubs/2006/nsf0648/NSF-06-48.pdf). Primarily, the program addresses the strategic goals under NSF's Learning mission. These include NSF's goals of developing methods to effectively bridge critical junctures in STEM education pathways; preparing a diverse, globally engaged STEM workforce; and integrating research with education and building capacity.

Data collected from S-STEM awards through the monitoring system are needed by NSF for project and program monitoring, to fulfill policy and program reporting needs, and to serve as preliminary work for future impact assessment and evaluation activities. Screenshots from the system can be found in Appendix A. These screenshots still display the previous name of the program; changes to the system to reflect the program's new name are underway, although screenshots are not currently available.

A.2. Purposes and Uses of the Data

The information collected in this task is required for effective administration, communication, and program and project monitoring; for meeting reporting requirements; for measuring attainment of NSF's program, project and strategic goals as laid out in NSF's Strategic Plan; and as a baseline for future program evaluations.

The primary purpose of this collection is to provide data for program management. The data collection activity is designed to track fellowship recipients in computer science, mathematics, and engineering fields and establish whether the S-STEM project has been successful in attracting students. Within DUE this information is used to monitor the administration of the program in the various institutions, including the number and academic status of fellows in each institution that has an award. The information also is used to determine the types of individuals receiving fellowships, their academic status and standing, and their academic interest in the fields of interest to the S-STEM program. The primary focus of the collection is on descriptive data of fellows receiving support under the program provided by a single award to an institution. The intent is to determine the types of individuals, in the

aggregate, that receive fellowships, and the extent of the support in subsequent decisions to further their education and/or pursue work in those fields. Findings are used to recommend, among other things, administrative changes in program functions, level of fellowship support, individual program focus and emphasis, and recruiting efforts.

The S-STEM program also uses the data to fulfill reporting requirements. As a part of its performance assessment activities, NSF relies on the judgment of external experts to maintain high standards of program management. Directorate and Office advisory committees (ACs) meet twice a year, while Committees of Visitors (COVs) for divisions or programs meet once every three years. Data collected may be used to report to these committees on program activities. In addition, NSF is required to measure the attainment of its program, project and strategic goals by the President's Management agenda as represented by the Office of Management and Budget's (OMB) Program Assessment Rating Tool (PART), by the Government Performance and Results Act (GPRA) of 1993, and by the NSF's Strategic Plan. Data collected helps NSF management examine their progress towards the Foundation's goals and respond to these reporting requirements.

Finally, the data can also be used as a preliminary step in more detailed future evaluation efforts, such as the sort of rigorous evaluations described in the May 2007 Report of the Academic Competitiveness Council, which was established by the Deficit Reduction Act of 2005 (P.L. 109-171) to serve as a multi-agency effort to identify federal STEM education programs and establish their effectiveness. The full ACC report can be accessed at http://www.ed.gov/about/inits/ed/competitiveness/acc-mathscience/index.html. REC makes these data available to NSF staff, EHR contractors with responsibility for the collection, and DUE program managers and their staff and contractors. The aggregate data will be shared with researchers at Temple University who are conducting an evaluative study on the S-STEM program, a task under NSF Generic Clearance 3145-0157, and may be published in the report of their results. Information collected may also be disseminated, in aggregate form, to current and prospective applicants to the S-STEM program and to the broad undergraduate science, mathematics, engineering, and technology education community.

A.3. Use of Information Technology To Reduce Burden

This data collection effort makes use of computer and information technology to reduce the burden on respondents and deliver timely information to those who need it. Data are collected using electronic forms via the Internet. Responses are compiled in an electronic database. The form enables initial entry for each fellow by academic period. Subsequent "student modification" allows for efficient updates of individual student status and grades. EHR tends to favor Web-based systems because they can facilitate respondents' data entry across computer platforms. Web-based surveys employ user-friendly features such as automated tabulation, data entry with custom controls such as checkboxes, data verification with error messages for easy online correction, standard menus, and predefined charts and graphics. All these features facilitate the reporting process, provide useful and rapid feedback to the data providers, and reduce burden. See Appendix A for a copy of the data collection instrument.

A.4. Efforts To Identify Duplication

The S-STEM data collection form does not duplicate other NSF efforts and the data requested is not available elsewhere. Whenever possible, EHR will use internal sources of information rather than request the same from participants.

For all multiyear grants (including both standard and continuing grants), the PI at each institution must submit an annual project report to the cognizant Program Officer at least 90 days before the end of the current budget period. As part of the reporting responsibility, the PI is expected to provide NSF, using the attached form, with an accurate list of all scholarship recipients and their demographic characteristics within 30 days of the beginning of each semester/quarter, and to ensure that appropriate documentation (e.g., verification of eligibility, educational progress) on the scholarship recipients is maintained throughout the life of the program.

A.5. Small Business

No information is to be collected from small businesses.

A.6. Consequences of Not Collecting the Information

Without this information, NSF would be restricted in managing and reporting on the activities of awards in the S-STEM program. Without this feedback, NSF would have no way of making systematic modifications to the program (e.g., adequacy of funding amount, duration of award, and institutional supports needed). These data will

ensure that NSF makes informed decisions about future directions of the S-STEM program. The information requested here is not available elsewhere.

Additionally, without this information NSF would find it difficult to meet agency data requests, as well as GPRA and PART reporting requirements and would be unable to comply fully with congressional and presidential mandates that the Foundation asses its STEM education programs.

A.7. Special Circumstances Justifying Inconsistencies with Guidelines in 5 CFR 1320.6

The data collections will comply with 5 CFR 1320.6.

A.8. Consultation Outside the Agency

The notice inviting comments on the EHR Generic Clearance (OMB 3145-0136) was published in the Federal Register August 24, 2007, Volume 72, Number 164, page 48694. No comments were received.

Modifications have been made in the application over the time it has been in operation in response to user comments and suggestions.

A.9. Payments or Gifts to Respondents

No payments or gifts will be provided to respondents.

A.10. Assurance of Confidentiality

Respondents will be advised that any information on specific individuals will be maintained in accordance with the Privacy Act of 1974. Data collected are available to NSF officials and staff, evaluation contractors, and the contractors hired to manage the data and data collection software. To protect individuals' privacy, NSF will produce only composite data or graphical representations. No personal data will be released to the general public. Data are processed according to Federal and State privacy statutes. Detailed procedures for making information available to various categories of users are specified in the Education and Training System of Records (63 Fed. Reg. 264, 272 January 5, 1998). That system limits access to personally identifiable information to authorized users. Data submitted will be used in accordance with criteria established by NSF for monitoring research and education grants and in response to Public Law 99-383 and 42 USC 1885c. The information requested may be disclosed to qualified researchers and contractors in order to coordinate programs and to a Federal agency, court or party in a court, or Federal administrative proceeding, if the government is a party.

A.11. Questions of a Sensitive Nature

The S-STEM system collects data that may be considered of a private nature, including the name, address, date of birth, and grade point average (GPA) of participating students. These data are collected in order to monitor the sites, assess the success of the program, and track recipients of funding. Individualized data are provided only to NSF program staff and to consultants conducting studies using the data as authorized by NSF, and any public reporting of the data is in aggregate form. Fellows may also choose not to have any information that they feel is privileged reported.

A.12 Estimates of Response Burden

A.12.1. Number of Respondents, Frequency of Response, and Annual Hour Burden

The total number of annual respondents is 12,400. The estimated annual response burden is 3,200 person-hours. The frequency of response is once per year for Fellows and an average of three times per year for PIs.

Respondents are Principal Investigators (PIs) of S-STEM awards and student recipients of fellowships. There are an average of 400 active awards each year, with 400 total PIs (1 per award) and 12,000 total graduate students

(approximately 30 students per award). Students are asked to submit demographic data about themselves, and PIs then enter contact information and GPA data for each student. PIs must report on each student at the end of each semester or quarter, depending on the system used by their institution, for an average of three responses per year per PI. Because of the nature of the project, PIs will have most of the data on fellows readily available and need to spend an average of only 5 minutes per fellow collecting and completing basic contact information on students. The PIs also spend an average of 6 minutes per Fellow per year to collect and enter GPA information for the Update Reports. PIs therefore spend an average of 11 minutes per year entering data on each fellow, for a total annual burden of 5.5 hours (330 minutes) per PI. The burden was calculated as follows:

Respondent Type	Number of Respondents	Burden Hours Per Respondent	Annual Person Hour Total
PIs	400	5.5 hours	2,200
Fellows	12,000	5 minutes	1,000
Total Respondents	12,400		3,200

A.12.2. Hour Burden Estimates by Each Form and Aggregate Hour Burdens

The S-STEM data collection consists of one form. As mentioned above, respondents will be faculty serving as project PIs and fellows. The estimated total annual response burden is 3,200 person-hours. Burden is minimized by the fact that the Web-based screens request data in simple data entry fields, including radio buttons, drop-down menus and text boxes, so little if any time is required for familiarization with the system. The annual burden by form was calculated as follows:

Form	Number of Respondents	Annual Person Hour Total
S-STEM data collection form	12,400	3,200
Total Respondents	12,400	3,200

A.12.3. Estimates of Annualized Cost to Respondents for the Hour Burdens

The overall annualized cost to the respondents is estimated to be $76,000. The estimated cost to respondents is estimated using an average hourly rate of $30 for PIs, who range from college professors to junior college instructors, and $10 for fellows, who are students.

Respondent Type	Number of Respondents	Hourly Wage Rate of Respondent	Average burden per respondent	Total Annualized Cost
PIs	400	$30	5.5 hrs	$66,000
Fellows	12,000	$10	5 minutes	$10,000
Total	12,400			$76,000

A.13. Estimate of Total Capital and Startup Costs/Operation and Maintenance Costs to Respondents or Record Keepers

There is no overall annual cost burden to respondents or record keepers that results from the S-STEM data collection other than the time spent responding to the instrument attached as an appendix to this request.

It is usual and customary for individuals involved in education and training activities in the United States to keep descriptive records. The information being requested is from records that are maintained as part of normal educational or training practice. Furthermore, respondents are recipients of awards funded by NSF. In order to receive this funding, institutions must follow the instructions in the NSF Grant Proposal Guide (GPG) that is cleared under OMB 3145-0058. The GPG requires that all applicants submit requests for NSF funding and that all

active NSF awardees do administrative reporting via FastLane, an Internet-based forms system. Thus, S-STEM PIs make use of standard office equipment (e.g., computers), Internet connectivity that is already required as a startup cost and maintenance cost under OMB 3145-0058, and free software (e.g., Netscape or Microsoft Explorer) to respond.

A.14. Estimates of Costs to the Federal Government

The estimated annual cost to the Federal Government is approximately $48,000 for data collection and analysis. This figure is based on an estimated 1 person-hour for reviewing data, performing data entry, and doing follow-up with each of the 400 PIs. This assumes an average $40.00 hourly wage rate for the government employee reviewing the data and 3 responses per PI per year.

Average person-hours per PI		Number of PIs		Number of annual responses		Hourly Rate		Total Cost
1	X	400	X	3	X	$40	=	$48,000

A.15. Changes in Burden

This burden of 3,200 hours represents an increase over the requested 2001 burden of 2,134. This change is due to an increase in the number of respondents due to program growth. There have been no programmatic changes.

A.16. Plans for Publication, Analysis, and Schedule

The S-STEM data collection is on-going, with respondents submitting data each semester/quarter that an award is active and we anticipate this schedule to continue.

Like many agencies, NSF is reducing its reliance on formal (i.e., traditional) publication methods and publication formats. Often it is only after seeing the quality of the information delivered by the study that NSF decides the format (raw or analytical) and manner (in the NSF-numbered product Online Document System (ODS) or simply a page on the NSF Web site) in which to publish.

NSF may use preliminary data to improve management and performance. For example, data generated by this study may appear as inputs to other internal and external NSF reports (e.g., the GPRA Annual Performance Plan). In addition, statistics from this collection may be used in the publication of results from the Evaluation of Customer Satisfaction with the Computer Science, Engineering, and Mathematics Scholarship (CSEMS), a task under NSF Generic Clearance 3145-0157. The evaluation is being conducted under contract by Temple University.

A.17. Approval to Not Display Expiration Date

Not applicable.

A.18 Exceptions to Item 19 of OMB Form 83-I

No exceptions apply.

Section B

Introduction

B.1. Respondent Universe and Sampling Methods

The S-STEM data collection will involve approximately 12,400 PIs and fellows at 400 awards sites annually. As this represents the entire universe, no statistical sampling will be employed.

Collection Title	Respondent Universe	Sample Size
Data Collection For Division Of Undergraduate Education Scholarships in Science, Technology, Engineering, and Mathematics (S-STEM) Program	12,400	12,400

B.2. Information Collection Procedures/Limitations of the Study

This data collection uses a Web-based system. Each respondent will provide answers each year during the duration of their NSF funding.

NSF understands the limitations of the this data collection, particularly in terms of using the data to determine program effectiveness. Data collected through the S-STEM system are not used to determine the ultimate effectiveness of its STEM educational interventions, but are used in program planning and management, to report on agency activities and goals, and to lay the groundwork for future evaluations.

B.2.1. Statistical Methodology for Stratification and Sample Selection

This data collection is a census, so no sampling is required.

B.2.2. Estimation Procedure

Not applicable.

B.2.3. Degree of Accuracy Needed for the Purpose Described in the Justification

Not applicable.

B.2.4. Unusual Problems Requiring Specialized Sampling Procedures

Not applicable.

B.2.5. Use of Periodic (Less Frequent Than Annual) Data Collection Cycles

Not applicable.

B.3. Methods for Maximizing the Response Rate and Addressing Issues of Nonresponse

Submitting this data is required by the terms of the awards; a response rate of greater than 90 percent is expected. PIs are contacted if they fail to enter data for each semester in which their award is active.

B.4. Tests of Procedures or Methods

During the inital desing of the application, select PIs were asked to test and comment on the system and its ease of use. During the years it has been available, the program has made changes to the application in response to suggestions for improvements from users.

B.5. Names and Telephone Numbers of Individuals Consulted

Agency Unit

Duncan McBride, National Science Foundation, 703-292-4630

DUE will be responsible for data collection and analysis under the direction of Duncan McBride.