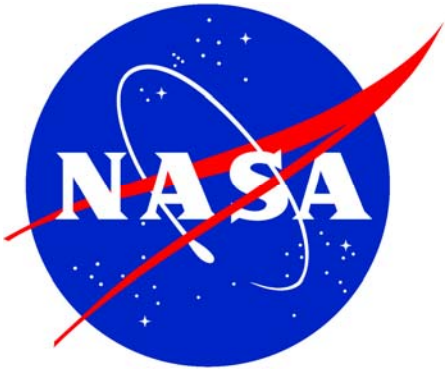
NASA Tribal Colleges and Universities Program

Fiscal Year 2006 Annual Performance Report to the White House Initiative on Tribal Colleges And Universities

National Aeronautics and Space Administration

Office of Education • NASA Headquarters • Washington, DC 20546-0001



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

FISCAL YEAR 2006 ANNUAL PERFORMANCE REPORT TO THE WHITE HOUSE INITIATIVE ON TRIBAL COLLEGES AND UNIVERSITIES

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A. EXECUTIVE SUMMARY

This Annual Performance Report for FY 2006 to the White House Initiative on Tribal Colleges and Universities (WHITCU) responds to Executive Order 13270, "Tribal Colleges and Universities," signed by President George W. Bush on July 3, 2002.

The Executive Order states: "It is the policy of the Federal Government that this Nation's commitment to educational excellence and opportunity must extend as well to the tribal colleges and universities that serve Indian tribes and Alaska Native entities…. Often they are the only postsecondary institutions within some of the Nation's poorest rural areas. They fulfill a vital role: in maintaining and preserving irreplaceable languages and cultural traditions; in offering a high-quality college education to younger students…. Tribal colleges provide crucial services in communities that continue to suffer high rates of unemployment and the resulting social and economic distress…."

NASA addressed its FY 2006 goals for the Executive Order by partnering with the Tribal Colleges and Universities (TCUs) to achieve the educational and cultural missions of the colleges while fulfilling NASA's mission. This report addresses objectives in NASA's three-year plan for FY 2004-2006. In FY 2006, NASA continued its cooperative agreement with the American Indian Higher Education Consortium (AIHEC), outreaching to the member TCUs with science, technology, engineering, and mathematics (STEM) enrichment grants, which enabled the colleges to meet critical needs for infrastructure, curricula, and research opportunities. Five NASA Centers provided the Summer Research Experience to 14 college interns. It is anticipated that additional Centers will host students from TCUs in FY2007.

Evidence of the Agency's commitment to TCUs is also shown through the Goddard Space Flight Center (GSFC) Applied Engineering and Technology Directorate's partnership with Salish Kootenai College (SKC) in assisting the college to establish the first bachelor's degree program in any form of engineering at a TCU. Two key elements of the partnership are a GSFC engineer teaching an engineering course for SKC students via distance education and the establishment of an external advisory committee including members from the Accreditation Board for Engineering and Technology, the group who approves engineering accreditation. As a result of these efforts, SKC has a newly formed engineering department.

B. AGENCY ACCOMPLISHMENTS

Working collaboratively with NASA's Mission Directorates and Centers, the Office of Education promotes education as an integral component of every major NASA research and development mission. As the Nation builds upon the accomplishments of its first century of flight and as NASA approaches its 50th year in 2008, the Office of Education is committed to providing opportunities for all to explore and develop their full learning potential. NASA engages the underrepresented and underserved communities of students, educators, and researchers in our Nation's TCUs by providing exciting research and internship opportunities that will "light the fire" and "fuel the passion" for a new culture of learning and achievement in the STEM fields.

The following accomplishments were achieved through our collaborations within NASA and with the TCUs.

1. Goals and measurable objectives achieved in FY 2006:

   NASA achieved three of its four objectives for TCUs as presented in the FY 2004-2006 Performance Plan. The fourth goal of increasing funding to TCUs was not achieved due to a realignment of funding to address the Agency's priorities.

   - Objective 1: Focus the Agency's attention on identifying and removing barriers to TCU participation in NASA programs that support STEM education and achievement.

     Objective 1 Accomplishment: Our goal to identify and remove barriers to TCU participation in NASA programs was accomplished by changing an eligibility requirement for participation in the Faculty Awards for Research (FAR) program. The previous eligibility requirement mandated that an applicant be a faculty member at a four-year college or university. The requirement has been changed to allow community college participation in the FAR program, thus enabling TCU faculty the opportunity to apply for the FAR program.

   - Objective 2: Expand outreach activities to improve the relationships between TCUs and NASA, with particular attention paid to activities designed to increase TCU familiarity with the Agency.

     Objective 2 Accomplishment: Four TCUs attended the three-day Pre-Service Teacher Program sponsored by Langley Research Center in February 2006 in Alexandria, Virginia. The event offered 59 workshops featuring NASA's educational resources, poster presentations, and a career fair. The goal of the program is to provide pre-service teachers and faculty members the opportunity to enhance their knowledge and skills in teaching mathematics and

science, using technology at the elementary and middle school levels.

- Objective 3: Assist TCUs in the creation of courses leading to a pre-engineering or engineering degree.

  Objective 3 Accomplishment: GSFC established and maintained a partnership with SKC to provide assistance with developing and implementing an engineering degree program at the college, including design and delivery of two courses via distance education.

- Objective 4: Increase the amount of funding in support of TCUs by $200,000 per year, so that during the three-year period from FY 2004 to FY 2006, the amount of funding will increase by $600,000 over the FY 2003 baseline of $3.3 million.

  NASA fell short of this goal because funds were redirected to address new priorities.

2. Programs implemented that exemplified increasing Federal opportunities for TCUs:

   The following programs are particularly noteworthy examples that exemplify increasing NASA opportunities for TCUs. Partnerships with AIHEC, which comprises all the TCUs and WHITCU, were instrumental in achieving our goals. AIHEC has facilitated collaborations with the TCUs, while WHITCU has facilitated collaborations with other Federal agencies.

   - In the second year of this five-year cooperative agreement, AIHEC has been successful in supporting STEM education and information technology infrastructure development efforts of individual TCUs, as well as providing the entire AIHEC membership with a wide range of information and technical support services through meetings, workshops, and the AIHEC STEM Resource Center portal.

     The NASA-AIHEC Cooperative Agreement has three goals:

     1. NASA-AIHEC outreach and information exchange.
     2. Expanded opportunities for the Nation's future STEM workforce.
     3. TCU STEM capacity building and infrastructure development.

     NASA's education mission is being significantly furthered through the NASA-AIHEC cooperative agreement, and the academic programming goals of the Nation's TCUs are continuing to advance.

     Under the NASA-AIHEC cooperative agreement, NASA provides: (1) individual TCUs the opportunity to receive modest "AIHEC-

NASA Enrichment Grants" intended to help meet critical needs for infrastructure, curricula, teacher preparation, and other initiatives to support their efforts to develop and enhance their STEM programs;
(2) summer research experiences (SRE) for TCU faculty and students;
(3) TCU-wide STEM strategic program planning; and
(4) various information and technical support services including meetings, workshops, and the AIHEC STEM Resource Center portal, which is available to the entire AIHEC membership.

The following summarizes relevant current NASA-AIHEC cooperative agreement projects:

- Bay Mills Community College (Brimley, Michigan) sponsored a summer STEM enrichment program for high school students.

- Blackfeet Community College (Browning, Montana) developed a science lab that is being used to provide professional development for science teachers and science education enrichment opportunities for K-12 students and also developed new geology and physics courses.

- Cankdeska Cikana Community College (Fort Totten,

North Dakota) acquired mobile presentation systems for eight classrooms, allowing instructors a high degree of mobility and flexibility in utilizing Web-based and other instructional resources in their STEM classes.

- Crownpoint Institute of Technology (Crownpoint, New Mexico) was the recipient of laser imaging equipment donated by Marshall Space Flight Center. The summer interns, already skilled in computer-aided design, learned to use NASA's advanced software and provided valuable assistance with assembly flow analysis and porosity simulations.

- Diné College (Tsaile, Arizona) is implementing a research-based summer Geographic Information System (GIS) project. GIS is computer technology that uses an analytic framework for managing and integrating data, solving a problem, or understanding a past, present, or future situation. The 25 Diné students conducted environmental health monitoring studies supplemented with GIS mapping tools.

- The Institute of American Indian Arts (Santa Fe, New Mexico) developed two courses for the Native Eyes curriculum that provide strategies for integrating and incorporating cultural concepts into the natural sciences.

- Keweenaw Bay Ojibwa Community College (Baraga, Michigan) established a watershed science outreach program with middle school students on the L'Anse Federal Indian Reservation using Global Learning and Observations to Benefit the Environment (GLOBE) educational materials. GLOBE is a worldwide, hands-on

primary and secondary school-based education and science program.

- Lac Courte Oreilles Ojibwa Community College (Hayward, Wisconsin) upgraded its GIS program facilities.

- United Tribes Technical College (Bismarck, North Dakota) continued implementation of its successful “Nakotas on the Prairie” math, science, technology, and culture camp project.

- White Earth Tribal and Community College (Mahnomen, Minnesota) implemented a technology literacy needs assessment for their service area and acquired smart boards and other equipment to upgrade their STEM classrooms.

- Stone Child College (Box Elder, Montana) conducted a bridge program for six high school students that provides college-level STEM courses to participants, as well as the opportunity to participate in a collaborative research project.

- Southwestern Indian Polytechnic Institute (Albuquerque, New Mexico) implemented a research, education, and outreach program using a mobile robot platform.

- Nebraska Indian Community College (Macy, Nebraska) conducted STEM planning activities that included information gathering visits to regional colleges and hired six part-time student tutors to increase the retention rates, graduation rates, and general academic success of students in STEM courses and programs.

- Tohono O’odham Community College (Sells, Arizona) implemented information infrastructure upgrades, including a new e-mail system. Previously, students and faculty relied on commercial e-mail services such as Yahoo and MSN.

- The Minority University and College Education and Research Partnership Initiative in Space Science (MUCERPI) is an initiative to actively engage minority institutions in developing substantial space science capabilities leading to active and full participation in major space science programs. MUCERPI awards support programs in two broad categories: (1) Academic Program Development or (2) Faculty-Student Professional Enhancement and Development through Partnerships and Exchange Programs. The capabilities developed under this three year award may include research, undergraduate or graduate courses or degree programs, precollege or public outreach programs, and/or other teacher training programs. Funding was renewed for Southwestern Indian Polytechnic Institute (SIPI) and SKC during the second series of MUCERPI awards.

  - SIPI is continuing its partnership with the Institute of Meteoritics and Meteorite Museum at the University of New Mexico. This project builds upon the partnership and includes Mars research with NASA-funded researchers at the New Mexico Museum of Natural History and the Astrogeology Branch of the U.S. Geological Survey.

  - SKC, in partnership with the Space Science and Engineering Laboratory (SSEL) at Montana State University (MSU)-Bozeman and Flathead Reservation K-12 schools, has implemented a broad new space science education and professional development program for K-12 and undergraduate Native American students and K-12 Flathead Reservation teachers and SKC faculty. The undergraduate and student and faculty portion of the program centers upon short- and long-term visits to MSU by SKC students and faculty, so that they can participate in the research and education activities of the SSEL and integration of space science research and education activities with SKC STEM courses and degree programs. The K-12 component focuses on summer camps that introduce Flathead Reservation students to space science and conduct professional development workshops for teachers.

- The NASA Administrator's Fellowship Program (NAFP), administered by the United Negro College Fund Special Programs (UNCFSP) for NASA, is designed to enhance the professional development of NASA employees and STEM faculty from Minority Institutions. The program also seeks to increase the ability of these universities to respond to NASA's overall research and development mission.

  The following highlights FY 2006 activities of the two NAFP fellows at TCUs -- a robotics engineer from Johnson Space Center, who worked with SKC and SIPI, and a senior systems engineer from GSFC, who taught various courses, such as College Algebra,

Electric Circuits II, Introduction to Robotics, Calculus III, and The Art of Math at Haskell Indian Nations University (HINU);

assisted in the development and successful submission of a NASA Curriculum Improvement Partnership Award (CIPA) proposal to integrate principles of project management into HINU's environmental science curricula; and

developed a Step 1 proposal to the National Science Foundation (NSF) Integrative Graduate Education Research and Traineeship Program (IGERT) by coordinating a partnership between HINU and the University of Kansas' Center for Indigenous Nations Studies.

- The Harriett G. Jenkins Predoctoral Fellowship Program (JPFP), administered by UNCFSP for NASA, provides full-time underrepresented graduate students in STEM disciplines with financial support for their education. Students are selected for fellowships that include a stipend and a six-week, hands-on research experience at a NASA Center or the Jet Propulsion Laboratory. Fellowship tenure is three years for candidates seeking either a master's or doctorate degree in a NASA-related field.

- JPFP currently supports the graduate education training of one Native American fellow who has a faculty appointment at Crownpoint Institute of Technology (Crownpoint, New Mexico) and is pursuing a Ph.D. degree in biology at the University of Colorado at Boulder. His research interests include the effects of radiation on plant growth and development.

- The CIPA program, administered by UNCFSP for NASA, funds innovative advances in the STEM instruction. CIPA assists minority colleges and universities in creating STEM programs that elevate institutional prestige and attract and prepare future generations of students for successful careers in STEM fields.

  CIPA provided funding to two TCUs in FY 2006:

  - Crownpoint Institute of Technology, Crownpoint, New Mexico.

  - Haskell Indian Nations University, Lawrence, Kansas.

- Universities Space Research Association (USRA) and Sinte Gleska University (SGU) partnered to provide opportunities for eight TCUs to enhance undergraduate curricula in Earth system science. Remotely sensed data and research from NASA and other sources will be used in conjunction with a Problem-Based Learning (PBL) approach to assist faculty with course enhancements. The PBL approach requires students to engage in a variety of research

strategies--data collection in the field and the lab, analysis of data, library research, and interviews with local experts and tribal elders. USRA provides expertise on the use and acquisition of NASA data and on remote sensing and image processing. SGU faculty provides instruction on the PBL technique to science faculty at eight other TCUs and expertise on cultural issues that relate to science curricula.

The goal of this three-year program is to introduce and enhance the use of NASA Earth-science data and products in TCU courses, thereby helping faculty inspire undergraduate students to pursue careers in Earth system science and related professions. The project objectives are to enhance Earth system science concepts in the TCU science teacher's classroom through integrating the system approach to Earth science and the Native-American cultural view of Mother Earth; to work with participating TCU science-teaching faculty; to develop "observational," hands-on, and problem-based teaching methods to draw students into the excitement of Earth system science; and to increase the use of spatial thinking in the classroom. This professional development program focuses on two- and four-year TCU undergraduate science-teaching faculty. Faculty members are expected to integrate their newly acquired Earth science information and teaching techniques into their classrooms via the development of amended or new course materials.

The TCUs that partnered were SGU, Little Priest Tribal College, Fort Berthold Community College, Oglala Lakota College, Fond du Lac Tribal and Community College, Sitting Bull College, Blackfeet Community College, Turtle Mountain Community College, and United Tribes Technical College.

- The Landsat Data Continuity Mission data resources were utilized by several summer research teams working at GSFC.

- The North Dakota Association of Tribal Colleges (NDATC) partnership supported two students in ten-week summer internships. NDATC also supported a group of TCU students' presentations at the American Geophysical Union fall meeting. The inclusion and experience for the students was invaluable and opens the door to future opportunities. The appointment of Dr. Bull Bennett to the staff of NDATC as Science Liaison demonstrated a deeper level of commitment to science by the five North Dakota TCUs. GSFC worked closely with Dr. Bennett as a focal point for engaging the students, faculty, and administration of the colleges.

- GSFC's Office of Higher Education and the Applied Engineering and Technology Directorate partnered with SKC in developing a computer engineering degree program. During FY 2006, GSFC engineers designed and delivered two courses, Computer

Organization and Signals and Systems. The engineers taught part of the classes on the SKC campus, and the balance of the classes used free IP-based video conferencing systems. GSFC established an advisory committee consisting of respected academicians, who are adept at creating programs that can secure accreditation, and local leaders, who can provide insight on employment opportunities. The advice of the committee is helping SKC outline a curriculum with a good chance of receiving accreditation.

- SGU is working with the Jet Propulsion Laboratory on the Earth Science – Research, Education, and Applications Solutions Network cooperative agreement titled, "Using Geospatial Information to Enhance Tribal Rangeland Management through Education and Understanding." Utilizing NASA's technology applications and information, SGU seeks to characterize the problem, explore solutions, and educate the tribal community with regard to impact of the relationships among tribal land resources, economic sustainability, community prosperity, and cultural preservation. A key aspect is to engage the minds of the young (K-12) students to be integrally involved in the education component through classroom/laboratory and field exercises to gather data.

3. Total awards to TCUs during FY 2006:

   A total of $3,613,260 was awarded to TCUs during FY 2006. Of particular note is $1,477,250 allocated for the AIHEC partnership.

4. Agency funding increases/decreases:

FY 2005 Awards	$4,032,530
FY 2006 Awards	$3,613,260
Amount of decrease in awards (Compared to FY 2005 awards)	- $ 419,270
Percent of decrease in awards (Compared to FY 2005 awards)	- 10%

C. SUMMARY OF FY 2006 AGENCY AWARDS BY CATEGORY

Agency/Organization National Aeronautics and Space Administration

Name, Title, Phone, Fax, and email address of Agency representative preparing report:

Dr. Carl S. Person, Manager, Minority University Research and Education Program (202) 358-2378, fax (202) 358-3472, carl.s.person@nasa.gov

FY 2006 Total Funding for all Institutions of Higher Education (IHE)

CATEGORY	TOTAL AWARDS TO IHE	TOTAL AWARDS TO TCUs	% OF AWARDS TO TCUs
1. Research and Development		$225,000	
2. Direct Institutional Subsidies			
3. Program Evaluation			
4. Training and Technical Assistance		712,823	
5. Facilities and Equipment		5,000	
6. Fellowships, Internships Recruitment, and IPAs		158,573	
7. Student Tuition Assistance, Scholarships, and Other Aid			
8. Economic Development			
9. Administrative Infrastructure		196,000	
10. Third Party Awards		2,178,564	
11. Private Sector Involvement		95,000	
12. Other Activities		42,300	
Total	$1,097,318,828	$3,613,260	.33%

Michael D. Griffin, Administrator
Agency Head (Typed)

_____ _____

Agency Head (Signature) Date

D. SUMMARY OF FY06 AGENCY AWARDS TO INDIVIDUAL TRIBAL COLLEGES AND UNIVERSITIES

Tribal Colleges and Universities	St.	Research & Development	Direct Institutional Subsidies	Program Evaluation	Training & Technical Assistance	Facilities & Equipment	Fellowships, Internships, Recruitment, IPAs	Student Tuition Assistance, Scholarships	Economic Development	Administrative Infrastructure	Third Party Awards	Private Sector Involvement	Other Activities	Grand Total
BAY MILLS COMMUNITY COLLEGE	MI													
BLACKFEET COMMUNITY COLLEGE	MT													
CANKDESKA CIKANA COMMUNITY COLLEGE	ND													
CHIEF DULL KNIFE COLLEGE	MT													
COLLEGE OF MENOMINEE NATION	WI													
COMANCHE NATION COLLEGE	OK													
CROWNPOINT INSTITUTE OF TECHNOLOGY	NM					5,000								$5,000
DINE COLLEGE	AZ				14,700									$14,700
FOND DU LAC TRIBAL & COMMUNITY COLLEGE	MN													
FORT BELKNAP COMMUNITY COLLEGE	MT													
FORT BERTHOLD COMMUNITY COLLEGE	ND													
FORT PECK COMMUNITY COLLEGE	MT													
HASKELL INDIAN NATIONS UNIVERSITY	KS												24,300	$24,300
ILISAGVIK COLLEGE	AK													
INSTITUTE OF AMERICAN INDIAN ARTS	NM													
KEWEENAW BAY OJIBWA COMMUNITY COLLEGE	MI													
LAC COURTE OREILLES OJIBWA COMMUNITY COLLEGE	WI													
LEECH LAKE TRIBAL COLLEGE	MN													
LITTLE BIG HORN COLLEGE	MT													
LITTLE PRIEST TRIBAL COLLEGE	NE													
NEBRASKA INDIAN COMMUNITY COLLEGE	NE													
NORTHWEST INDIAN COLLEGE	WA													
OGLALA LAKOTA COLLEGE	SD										125,000			125,000
SAGINAW CHIPPEWA TRIBAL COLLEGE	MI													
SALISH KOOTENAI COLLEGE	MT				448,123		6,684			196,000				$650,807
SI TANKA/HURON UNIVERSITY	SD													$225,000
SINTE GLESKA UNIVERSITY	SD	225,000												
SISSETON WAHPETON COMMUNITY COLLEGE	SD													
SITTING BULL COLLEGE	ND													
SOUTHWESTERN INDIAN POLYTECHNIC INSTITUTE	NM				250,000									$250,000
STONE CHILD COLLEGE	MT													
TOHONO OODHAM COMMUNITY COLLEGE	AZ													
TURTLE MOUNTAIN COMMUNITY COLLEGE	ND													
UNITED TRIBES TECHNICAL COLLEGE	ND													
WHITE EARTH TRIBAL AND COMMUNITY COLLEGE	MN													
AMERICAN INDIAN HIGHER ED. CONSORTIUM	VA						31,889				1,427,361		18,000	$1,477,250
AMERICAN INDIAN SCIENCE & ENGINEERING SOCIETY	NM										85,520			$85,520
NASA RESEARCH & EDUCATION SUPPORT SVCS. (NRESS)	DC											95,000		$95,000
NORTH DAKOTA ASSOC. OF TRIBAL COLLEGES (NDATC)	ND						120,000							$120,000
UNITED NEGRO COLLEGE FUND SPECIAL PROGRAMS	VA										$540,683			$540,683
Category Totals		$225,000	$0	$0	$712,823	$5,000	$158,573	$0	$0	$196,000	$2,178,564	$95,000	$42,300	$3,613,260

Notes:

Name of Agency Liaison: Dr. Carl S. Person **Title: Manager, Minority University Research & Education Program**

Phone: (202) 358-2378 **Fax: (202) 358-3472** **Email: carl.s.person@nasa.gov**

Signature of Agency Head:

Date: