AC 2007-504: NASA OPPORTUNITIES FOR FACULTY AT MINORITY INSTITUTIONS: REFLECTIONS OF NASA ADMINISTRATOR FELLOWS

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Paul Racette, NASA

As an adventurous adolescent, Paul grew up chasing severe thunderstorms across the plains of Kansas. And so he was quite excited after joining the Goddard Space Flight Center in July 1990 to learn that his first assignment was to prepare and install a suite of sensors on a DC-8 aircraft for an experiment to study typhoons. That fall while stationed at Kadena Airbase in Okinawa, Japan, he flew for the first time through the eye of a category 5 typhoon. That experience was the beginning of an exciting and fruitful career developing and deploying microwave remote sensors for studying Earth's environment. Since then Paul has been the principal engineer responsible for the overall instrument concept, development and deployment for five highly-innovative remote sensing instruments. Each of these instruments has produced unique, scientifically rich data. Paul has participated in fifteen major field experiments around the world pioneering techniques to observe the Earth. As a member of the senior technical staff at Goddard, he has initiated technology developments, research projects, and international collaborations that have advanced the state of the art in microwave remote sensing and instrument calibration. For these efforts and accomplishments Paul received the NASA Medal for Exceptional Service and was the first recipient of Goddard's Engineering Achievement Award established to publicly recognize Goddard's highest achieving engineers. In 2005 he completed the requirements for his Doctor of Science in electrical engineering from The George Washington University. Recognizing the critical needs in education and a desire to seek new adventures, Paul applied and was accepted into the NASA Administrator's Fellowship Program. As a NAFP fellow he returned to his home state to serve as a guest faculty at the Haskell Indian Nations University during the 2005 – 2006 academic year. Paul is currently in his second year of his fellowship working at NASA Headquarters as Special Assistant to the Deputy Assistant Administrator in the Office of Education.

Scott Askew, NASA

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Belay Demoz, NASA

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Paul Mogan, NASA

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NASA Opportunities For Minority Serving Institutions: Reflections Of NASA Administrator Fellows

Abstract

The NASA Administrator Fellowship Program (NAFP) is a highly-successful program established to improve the capacity of minority institutions and to respond to NASA's research needs by providing a two-year professional development program for faculty from Minority Institutions (MI) in science, technology, engineering and mathematics (STEM) disciplines as well as to NASA employees. The program does this by placing selected NASA employees in a minority institution and university faculty at a NASA facility.

Established in 1997, this year the program celebrates its 10 year anniversary. To date there are a total of 82 Fellows who are either in or have completed the two-year program. Each Fellow has made unique and substantial contributions to the partnering MI and NASA center. Many if not most of the alliances between NASA centers and MIs are maintained through continual partnering after the fellowship. A key factor contributing to the success of NAFP is the continued commitment of the Fellows to serve and develop the capacity of MIs after the fellowship ends.

This paper describes the NASA Administrator's Fellowship Program as a valuable opportunity for faculty at minority institutions to gain valuable research experience at a NASA center and for NASA employees to enhance their professional experience through engaging minority institutions and the students they serve. Accomplishments over the first ten years illustrate the success of the program. The paper discusses how to prepare for the experience by providing a list of best practices. Practical issues include how to identify a host institution and a research/teaching topic. The best practices also address how to maximize the program benefits both individually and for the institutions and ideas of how to sustain the benefits. Through first person testimonials from the contributing authors, the paper presents personal experiences from Fellow and what was done by Fellows, what we would do again and what we would do differently. The paper concludes by describing how to get involved.

Introduction

The challenges in STEM education are well documented.[1,2,3] For example, the Organization for Economic Co-operation and Development (OECD) Program for International Student Assessment evaluated and ranked 31 countries in their performance of math and science education. This study found that the US ranked #19 in mathematics and #14 in science. Science and education jobs play an increasingly important role in the U.S. economy; yet the US science and engineering degree production lags growth in science and engineering

occupations. Only about 50% of students who begin studying science, mathematics or engineering as undergraduates in US research universities, go onto complete baccalaureate degrees in these fields. Increasingly, a large number of the advanced degrees in STEM in the US are going to foreign nationals (~70% of engineering graduates at Berkeley, CA in 2005).[4] Nationally, about one in five scientists and engineers in the United States are immigrants, and 51% of doctorates in engineering go to foreigners.[5] It is believed that if America is to remain competitive as a nation – we need to reverse or slow the dramatic erosion of America's science and technology base.

There are a number of profound societal, moral, ethical and justice based reasons and arguments for why we should educate and focus our attention on MI. Here we will not address these arguments but instead we focus on the "business" aspects of the reasons. The reports mentioned above about the STEM "decline" point to a clear national mandate that the nation must educate a greater number of minorities if it is to meet the nation's future needs for additional scientists. This is because largest growth in the number of 18-24 year olds in the nation is among minorities (e.g. African Americans account for 19%)[3].Currently, women, African-Americans, Hispanics, Native Americans, and persons with disabilities comprise two-thirds of the overall workforce but represent only about one quarter of the STEM workforce.[6] To close this gap and to fulfill the nation's STEM workforce requirements, the education pipeline must garner greater participation of these under represented groups. Because a large number of minorities attend MI's (and the sense of one's place and purpose is essential for learning and performance which the MI's address well), developing the capacity of minority institutions to fill this gap is key. To that end in 1997 the NASA Administrator, Dan Goldin working through the Equal Opportunity Office, established the NASA Administrator's Fellowship Program (NAFP). For the past eight years the program was managed out of the NASA Office of Education and by the United Negro College Fund Special Programs Corporation (UNCFSP).

Program Accomplishments

Since its inception in 1997, the program has accepted 82 Fellows into the program. Each year between 6 and 12 Fellows are added to the fellowship.[7] Each year's cohort is like a family of its own. Lifetime friendships result from the bonding experience which the program provides through its extensive training and professional development activities. Uniting the cohorts in a lasting fellowship is the recognition of diversity as a societal virtue and the goal of advancing equity in education by strengthening the capacity of minority institutions.

In the first ten years there is a total of 72 participating institutions and organization that have participated in the program. Table 1 shows the list of participating institutions and organizations. All the NASA centers and NASA Headquarters have participated in the program. Forty minority institutions have participated either by hosting a NAFP Fellow or by providing a faculty member to participate in the program. Twenty-one other institutions and organizations have

participated as host for NAFP Fellows. Table 2 through Table 4 give more details regarding the participating centers and schools.

Figure 2 clearly illustrates the geographic extent of the program's impact across the country. The distribution of the participating institutions is consistent with the minority population density and reflects the success of the program to reach minority institutions. The map also shows few participating institutions in the mid-west and northwestern sections of the United States. In much of these regions, Native Americans represent the largest minority group. This lack of participation is reflective of the difficulties associated with American Indian education and inclusion of this minority group. Of the 82 Fellows, four NASA employees have served at a tribal college or university; none of the Faculty Fellows have come from TCUs. The program seeks to increase the participation of American Indians in the program and encourages faculty from TCUs to apply.

Each year NASA sponsors a joint symposium bringing together the NAFP Fellows, student fellows in the Jenkins Pre-doctoral Fellowship Program, and investigators and participating students in the Curriculum Improvement Partnership Award program. All the NAFP Fellows are encouraged to attend and participate. The program commences with a celebratory ceremony during which new Fellows are inducted and those completing the program graduate. The symposium provides group training in topics ranging from ethics to team building and networking skills. The symposium is hosted by one of the NASA Centers and leaders from the Center make informative presentations on the Center's activities. The symposium activities include a tour of the Center's facilities. The symposium not only provides these training activities, but serves as a venue to network among individuals engaged in improving STEM education for minorities. The UNCFSP which manages these three programs and organizes the symposium has developed mentoring opportunities among program participants. NAFP Fellows are encouraged to develop mentoring relationships with JPFP fellows and participating organizations. The net result of the networking and mentoring among the Fellows that occurs is a symposium which garners a collective family atmosphere. It is an experience that can only be understood by participating.

This professional development opportunity for NASA employees and for faculty at Minority Institutions (MI) has enhanced the research capability of several MIs.[8] Some other relevant statistics on the program follow:

- 82 Fellows have participated in the NAFP (46 NASA employees and 36 STEM faculty)
- Faculty Fellows have come from 26 Minority Institutions
- 27 Minority Institutions, 10 NASA Centers, and an additional 17 institutions have hosted NAFP Fellows.
- In all, 45 Minority Institutions have been either a host site for NASA employees or sponsored faculty in the program.

Beyond the program's numeric participation there have been several beneficial results for NASA employees, MI faculty, or the MI themselves:

- NAFP Fellows have facilitated student participation in several STEM-based research projects, including the Reduced Gravity Student Flight Program (KC-135), BallonSat, and ATLAS Mission (Puerto Rico).
- NAFP has supported MI's infrastructure by developing 26 partnerships and MOUs
- Examples of research funding acquired through NAFP collaborations and partnerships include: 2 NASA University Research Center (NASA URC) grants, 3 Faculty Awards for Research (FAR) grants, 1 Science, Engineering, Mathematics, and Aerospace Academy (SEMMA) grant, 1 Curriculum Improvement Partnership Award (CIPA) grant, and 1 Partnership Award for the Integration of Research (PAIR) grant.
- Five curriculum development initiatives have been created by NAFP Fellows. A NAFP Fellow was instrumental in the curriculum development of the first Bachelor of Science degree in Engineering to be offered at a Tribal College (Salish Kootenai College).
- NASA Employee and Faculty Fellows have used their NAFP experience to obtain additional research grants and fellowships. In 2004 alone, 32% of external proposal submissions from NAFP Fellows were awarded
- NAFP Fellows have gained national recognition and honors for their excellence in science, engineering and technology
- The female participants in the NAFP have formed the NAFP Women's Consortium, a new initiative that focuses on the recruitment, retention, education, and mentoring of women enrolled at minority institutions majoring in the STEM disciplines.

Another unique benefit of the NAFP Program is the training provided to both NASA and university Fellows. The United Negro College Fund's Institute for Advancement provides training opportunities in areas such as Leadership, science and technology policy, and strategic management. In addition, the annual symposium provides unique opportunities for learning from other colleagues in the NAFP as well as mentoring participants in the Harriett Jenkins Pre-Doctoral Fellowship Program (JPFP) and recipients of the Curriculum Improvement Partnership Award Grant.

The CIPA Program assists two-year and four-year Minority Institutions by strengthening their STEM academic fields and technical programs. Funding is used to increase the quantity and quality of STEM curricula, the number of minority students that study these curricula, and the number of minority students that choose careers in NASA-related fields. Some examples of CIPA activities include the development of an undergraduate minor in the field of computerized measurements and instrumentation, the creation of a Bioscience Improvement Center, and the implementation of community outreach, such as math and science enrichment programs for elementary, middle and high school students.

The current CIPA II Program is an expansion of the original CIPA Program and will integrate project management methodology to strategically enhance STEM curricula. Through innovative project management curricula and/or the infusion of project management methodology into existing STEM curricula, MIs will be able to groom STEM students for success in NASA and aerospace industry careers by providing both the theoretical knowledge and the "real-world" experiences necessary for thorough understanding and increased productivity. Students will gain the confidence, knowledge, and skills necessary to understand conceptual frameworks, apply skills to manage projects, and implement solutions to maximize efficiency.

During 2006 one NASA Fellow mentored two schools who had received the CIPA grant. In addition to providing project management information to the universities the Fellow also prepared and delivered two presentations to students, faculty and community partners. One of the presentations covered Project Management and its use in various academic and professional fields. The other presentation discussed how Project Management can be incorporated into university curricula. On November 21, 2006 these presentations were given at Atlanta Metropolitan College (Atlanta, Georgia) where the attendance was 81 students, 10 faculty and 3 community partners.

Looking Back – Perspectives from Fellows

"The Road from Alaska to Kansas"

Paul Racette, DSc, Cohort 9, assignment at Haskell Indian Nations University

I joined NASA Goddard Space Flight Center in 1990 after completing my Master of Science degree in electrical engineering from the University of Kansas in Lawrence, Kansas. During the winter of 1999, I was leading a team of researchers in an experiment in Barrow, Alaska to develop new techniques for using millimeter-wave remote sensing to measure very low amount of precipitable water vapor. During this period I had the opportunity to work with an Inupiat Alaskan Native to deploy and maintain the suite of sensors in the harsh arctic environment. One afternoon in a conversation it happened that the Alaskan Native mentioned that he went to school in Lawrence, Kansas. My first thought was that he must have gone to the University of Kansas; I subsequently learned that he went to Haskell Indian Nations Junior College, a tribal college in Lawrence run by the Bureau of Indian Education. That conversation stuck with me. Although Haskell is located a scant 2 miles from the KU campus, I had never really considered the school as an institute for higher education. It occurred to me that tremendous potential exists in developing an alliance between the two schools.

Several months later I saw an announcement for NAFP come through my email. That is when I first came up with the idea of going to Haskell to develop relations between Haskell, KU and NASA. It was not the right time in my career to apply

for the fellowship. I was working on my doctorate and had just accepted a promotion in a newly formed organization at Goddard. Several years passed and the idea remained in the back of my mind. In 2005, I finished my doctorate at the George Washington University and I considered more carefully my options for applying to the fellowship.

I didn't have any contacts at Haskell and so I called a former professor and mentor of mine at KU to discuss if he'd be interested in developing collaborations with Haskell. I learned that over the preceding 5 years his organization had partnered with Haskell on an NSF-sponsored project. Furthermore, NSF had just selected him to lead a new Science and Technology Center, the Center for Remote Sensing of Ice Sheets (CReSIS). Haskell is one of six partner universities in CReSIS headed by KU. Serendipitously, my fellowship tenure at Haskell would correspond with the inaugural year of the Center. Working with faculty at Haskell, I developed and proposed a plan which included teaching, research and program development between Haskell, KU and NASA.

"Turning Two Jobs into One"

Belay B. Demoz, Ph.D., Cohort 9, assignment at Howard University (HU)

I joined NASA Goddard Space Flight Center after spending several years working with private companies and the University of Maryland Baltimore County (UMBC). While at UMBC, I collaborated with Howard University on a grant to NOAA to do atmospheric research and was successful. But, by the time the grant was awarded – I had switched employer and was at NASA. The grant was used to establish an atmospheric science center at Howard (NCAS: NOAA Center for Atmospheric Study) and build instrumentation for the HU field site at Beltsville, Maryland. In the process of this activity, I found myself spending more and more time interacting with the graduate students and faculty in addition to my official task at NASA/GSFC. This was not convenient – it limited the time I can spend at HU as well as the time I spent on writing proposals at GSFC to fund my time. At about the same time, I was forwarded an announcement for NAFP by my supervisor in my email. I applied and was successful – as Cohort 9 of NAFP. I had already an established contact at HU and knew what I wanted to accomplish. In addition, I did not have to travel cross country – because HU is local.

In my first year, I organized six different proposals for a field campaign to be held at BRS – and three (one each from HU, UMBC, GSFC) got funded. We held the first collaborative research at BSR for satellite validation experiment called WAVES2006 which was very successful. In addition, I designed and taught two graduate level courses at HU (Aerosol/cloud physics and Instrumentation), served in the committee of Ph.D. and MSc students. By joining NAFP, I was able to combine several of my tasks as well as contribute to strengthening the atmospheric science program at HU. My involvement with HU has allowed several NASA scientists to use the BRS as a staging ground for field research

preparation and was of great value in satellite validation work for NASA. These are all, no doubt, a plus for HU and the NCAS program as well as NASA/GSFC.

"Mars is a Bit Too Far to Relocate but Pasadena is Just Right"

Louis J. Everett, Ph.D., Cohort 10, assignment at NASA Jet Propulsion Laboratory (JPL)

I initially thought of the NAFP program as a sabbatical; an opportunity to refresh and renew. I discovered the NAFP program is much more than a sabbatical. I found it to be a way to strengthen my home institution and help many of my colleagues.

Having administrative experience, I found myself looking for NASA opportunities for my colleagues. Many of these opportunities lie in fields completely disjoint from the project I initially proposed and I most likely would never have discovered them without spending an extended period at JPL. The opportunities at NASA are so diverse it is difficult to find connections in a short time period.

Some opportunities for my colleagues do lie in areas related to my NAFP research and by connecting colleagues with these opportunities; I am able to grow a research focus at my home institution in my chosen field of study. This will enhance the probability of my making an enduring change at home.

I have also found myself an ambassador for my home institution. Many minority institutions are so small their research impact can be easily overlooked. Some young NASA employees were completely unaware of my home institution; but by spending time at JPL and interacting with a large group of NASA employees, awareness has been enhanced.

I selected my research topic by intersecting previous research projects (my experience) with a project description I found on a NASA web page. Fortunately, the work also has an industrial application. My prior experience enabled me to write a convincing proposal and to be productive from the very start. The project is sufficiently different from my previous work so I can use it to enhance my knowledge and its industrial application should also contribute to its sustainability and potential for growth.

I plan to attend all the leadership development opportunities provided by the NAFP program. Being a former administrator, I have experienced many of the issues discussed in these training events and I wish I knew these things when I started as an administrator. In fact, the concepts are important for faculty at all levels, even those who have no desire to enter administration. All faculty have the obligation to lead their students to achieve greatness and the training programs make is easier to understand what this means and how to accomplish it.

"And They Will Pay Me to do This?"

Ray Bachnak, Ph.D., Cohort 9, assignment at NASA Johnson Space Center (JSC)

My relationship with NASA goes back to 1996 when I spent a summer at Johnson Space Center (JSC) as an ASEE-NASA Summer Fellow. This was followed by a second fellowship in summer 1998 and third assignment in summer 2002. These fellowships allowed me to establish a mutually beneficial relationship with JSC colleagues and strengthen my research skills. In 2002, for example, upon leaving JSC, I received a $17,250 grant from the center to continue working on the development of "*A Borescope for Extravehicular Non-Destructive Evaluation."* This project led to two publications, one with a JSC colleague. Also, in 2003 following the Space Shuttle Columbia disaster, I organized a presentation by a speaker from JSC at Texas A&M University-Corpus Christi (TAMUCC).

I learned about the NAFP through an email message I received from our sponsored research office. I got interested as soon as I took a close look at the program details and saw the many benefits it offers. I was ready for a one year away from the university and this seemed to be the perfect opportunity. After more than 12 years in an academic environment, this was a good professional development opportunity where I can further my technical knowledge as well as human skills. My already established relationship with NASA colleagues was invaluable in helping me with this adventure.

As I expected, my NAFP participation resulted in an increase in my awareness of opportunities of NASA's educational programs and improvement in my problem solving abilities. It gave me the opportunity to interact with NASA colleagues and led to establishing new relationships and learning about new administrative approaches and research projects. A benefit to the university is related to our goal in establishing "Strong" doctoral programs which include degrees in a discipline related to the Harte Research Institute for Gulf of Mexico Studies, education, computer science, and clinical psychology, bringing A&M-CC to the doctoral intensive institution classification. The NAFP helped me strengthen my research capabilities to make positive contributions to the proposed doctoral programs and be an active participant in their design and implementation. Earlier this year, I was designated as a Harte Research Associate in addition to being a support faculty of the Coastal and Marine System Science Ph.D. Program. I certainly believe that my NAFP participation made a tremendous difference in my research and administrative capabilities that help me contribute to our university goals.

Upon my return, I received three grants (one from JSC, another from NAFP, and the third from the Texas Space Grant Consortium), totaling $189,979. These grants have allowed me to involve students in my research projects and further the interests of NASA. The grant from Texas Space Grant Consortium (TSG), for example, is supporting a project with the following goals (http://entc.tamucc.edu/ISEPweb/index.htm):

- Increase K-12 educator knowledge of space research projects and educational opportunities
- Inspire students from the Corpus Christi ISD and surrounding schools and increase their interest in science, math and technology
- Increase public's knowledge of the benefits of space exploration programs
- Communicate to students at A&M-CC NASA educational activities and career opportunities
- Support our efforts in attracting and recruiting underrepresented students.

"Learning from Others while Inspiring the 'Next' Generation"

Scott Askew, Cohort 8, assignments at Salish Kootenai College (SKC) and Southwestern Indian Polytechnic Institute (SIPI)

As a technical engineer with NASA, over the past two decades I have had the opportunity to work with many bright college students and faculty on various technology development projects. Through NASA's education outreach programs I had also been involved in many extracurricular programs for K-12 students over the past decade. Most if not all of these interactions were on terms and in settings I was very familiar with and competent in. Moving 2,000 miles to teach and develop curriculum at SKC, a small tribal college in Montana, was to my world reference somewhat akin to taking a snow globe and shaking it vigorously. What I discovered on this journey was that many assumptions and the mental framework I'd been building throughout my career was insufficient for this new assignment.

Though warmly welcomed and introduced widely as the new "NASA guy" I quickly realized I needed to communicate on far more than technical terms and actually had much learning to do in order to understand how to best relate with the students, faculty, and staff of my new community. In a word I needed to be more human, which is not an area most engineers naturally excel in. Without intending to generalize broadly about Native Americans what follows are some anecdotal examples to illustrate some of the unique perspectives, relationships and experiences throughout my fellowship.

Early on I experienced some reluctance and lack of interest to ideas I suggested for changes or new initiatives, and eventually learned about the history the "helpful" outsider intent on fixing things on the Reservation. Many have come and gone with stated good intentions, yet have often left Native people shaking their heads and working to return the balance that was disrupted. Rather than employing my usual custom of firing off ideas left and right to see what might stick I learned that being a little more patient and deliberative, asking questions and listening to input from faculty and staff was a far more effective means of creating something of value for the college. Within a few months I had many projects underway, and several more in the planning stages.

While it is often said the education of our youth is our future, teaching at a tribal college put this in an entirely new perspective. Many students were approaching my age or older, were working towards second or third careers, many were employed and had kids or family to care for. NASA's mission speaks of inspiring the next generation, yet I found the current generation's active engagement in learning, and their sense of purpose and dedication quite inspiring. Since all student's achievement is quite literally the best hope for an enhanced future for the community, the school also demonstrated its passion and dedication to its own mission statement of putting education and students first. Having experienced a mostly sink-or-swim college education system myself, it was refreshing to see a different prevailing wind there.

Through connections I made during my first year at SKC I was able to travel to SIPI and meet some of its faculty. Although I barely knew anything about the school at the beginning of my fellowship, it soon became clear working in a different capacity with SIPI would be an excellent complement to my first year. The flexibility provided within the program to develop specific second year plans proved immensely valuable in allowing me to explore and expand my knowledge and network of connections. More importantly it allowed me to continue the collaboration with TCU's in developing engineering programs.

Perhaps the largest difference between the two schools is that SIPI has a national charter to serve Native American students, and is federally organized through the Bureau of Indian Affairs. Though its proximity to the Navajo reservation generates a significant portion of the student body, I benefited by the exposure to a wider variety of Native cultures and learned of many more challenges that the students face in attaining higher education degrees. Though sometimes separated by significant distances, family bonds, which can be very strong, often disrupt student's semesters mid-way, which can then extend the time required to complete a degree. One lasting lesson I learned from my TCU experience is that being flexible and creating alternative opportunities for students to learn and complete their required work is an essential quality for serving the needs of the students. I believe this approach can also apply to the broader population of educators and learners without diminishing the content and value of the results.

Best Practices

This section summarizes findings from our experiences; we refer to them as the best practices recommendations for the next set of NAFP Fellows.

1. Identify a mentor during the proposal process.
    a. Read information about mentor's mission (web pages, publications etc.)
    b. Provide a list of projects you feel qualified to perform
    c. Ask for advice on which project best fits the mentor.
    d. Ask your future mentor to review your proposal.
    e. Seek projects with broad application.

2. Discuss the opportunity with your supervisor.
    a. Explain the personal growth opportunities, leadership training for example.
    b. Help identify problems that may arise due to your absence. Help identify possible solutions.

3. Remain in contact with your home employer during the period.

4. Prepare a personal development plan after discussing the upcoming year with your mentor.

5. Expand your horizons at your temporary duty assignment.
    a. Look beyond work described in your proposal. Learn something new.
    b. Help your home institution by finding opportunities for your colleagues at home.

6. NASA Fellows need to consider early on what they are going to do during the second half of the fellowship
    a. Career exploration and evaluation are appropriate. If your center does not provide assistance for this, NASA Headquarters will.
    b. Depending on what career path you decide on, you may stay at a university or seek additional experiences in other government agencies or outside of Government.
    c. Seek advice from previous Fellows as well as participants from NASA's Leadership Development Program related to assignment opportunities.

If you choose a university near where you live it will make life simpler because there will be no need for monthly vouchers and no need to move BUT it is very important to select a university capable of and eager to partner with you to do the work you want.

Secondly, after the first academic year you can "write your own ticket", that is, you can get developmental assignments anywhere (including the option to stay at the university). The developmental assignments are arranged through filling out and getting signatures on the NASA Leadership Development Program agreements (either the one for assignment inside government or the one for assignment outside government).

Third, the Leadership Development Program Body of Knowledge book is a great resource regarding the relocation process.

The NASA employee's time and expertise offers significant benefit to the university. The employee should negotiate firm commitments from the university:

1. Letters of support for the employee's application

2. The type and scope of work to be performed

3. Resources required to support this work including laboratory space, equipment, monetary resources etc.

Now What – Actions YOU Need to Take

University Faculty

University faculty should consult with their administrators to identify an optimal time to leave. You will need letters of recommendation from your University president so you should gather information that clearly indicates how your participation benefits your institution. You should clearly indicate that your dean is supportive of the opportunity and that there are plans for handling your workload in your absence.

You should review NASA information to determine what center is most closely aligned with your vision for your career. Once you identify an appropriate center, focus on the division or group that has interests similar to yours.

Consult with former NAFP Fellows and the United Negro College Fund Special Programs staff to help identify NASA administrators within your chosen area who are supportive of the NAFP program.

Contact a NASA administrator or employee to discuss common areas of interest. Be open minded to find a close enough fit rather than expect a perfect fit.

Write your proposal and collect your letters of support. Pay close attention to the instructions in the application package.

University Administrators

University administrators can help faculty by encouraging them to participate in the NAFP program. It is an excellent personnel development program.

Additionally, administrators should identify areas in which NASA employees can assist at the university. NASA employees can help create new courses, teach existing courses, identify laboratory equipment, inject realistic problems into existing courses and help mentor research activities. It is important to consider how to sustain the program when the NASA employee leaves.

NASA Employees

Figure 1 shows a flow chart for NASA employees to follow who want to be considered for the program.

Discuss the opportunity with your supervisor and management chain. Do not be discouraged if some of your direct managers have difficulty understanding how NASA will benefit from your participation. Put together a solid case for the benefits. Part of the benefits to NASA come from the second half of the fellowship, so even though your NAFP application only covers activities in the first year, consider carefully what you are going to do in the second year.

If appropriate, seek to leverage your work experiences at NASA while at the MI. Increasing your skills in a competency needed at work or making progress on projects related to what you do at NASA will make it easy to show your managers how NASA will benefit from your participation.

It is important to make sure you find an appropriate MI early and stay in close contact. Your time is a huge benefit to the institution so make sure the institution is a solid partner and gives a written commitment to provide the resources you will need in order to accomplish your proposed work. Make sure to include letters of support from faculty as well as the Dean in your application package.

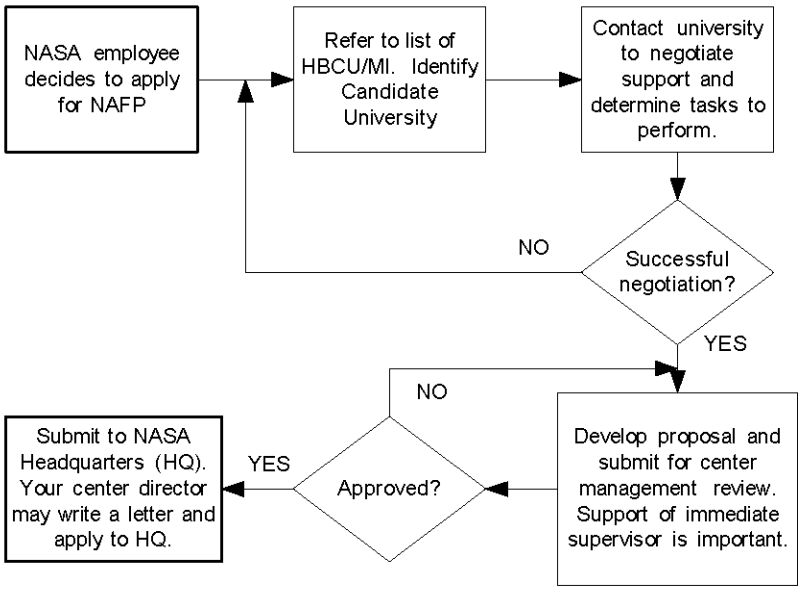

Figure 1 - Flow Chart for NASA Employees.

NASA Managers

NASA managers make a tremendous contribution to the NAFP program by supporting their employees and allowing their absence for up to two years, yet there are ways this program has benefits for their organizations also. Although the NAFP program emphasizes career growth for NASA employees, it also creates opportunities for NASA centers to develop new partnerships that can broaden the technical base of organizations. NASA managers can benefit their organizations by thinking strategically and being proactive in seeking out and supporting collaborations. Identify common interests with faculty and departments at

Minority Institutions. Several NASA organizations have taken advantage of geographic proximity to build excellent working relationships. This can present another avenue for conducting research and technical work. For organizations that have participated in summer faculty fellowships and graduate student research projects, NAFP can be seen as one more tool available to connect with capable university people. Given NASA's need to develop and maintain a diverse workforce, having greater connections with talented resource pools can only improve organizational strength into the future.

NASA managers should understand that while supporting employee participation in the NAFP program is beneficial to the broader long range interests of NASA they can also improve their own organizational strength in the short to mid-term. Since NASA employees spend their second year at a site of their choosing, this presents an opportunity for organizations to strengthen connections with other NASA centers and/or gain valuable exposure and expertise from relevant industry work assignments. While some employees may utilize NAFP as a means of exploring alternate career paths within NASA, the vast majority are also looking to increase their ability to contribute to the organization technically and programmatically.

Conclusions

This paper has described the numerous benefits of the NASA Administrator's Fellowship Program (NAFP). The long running program strengthens the Minority Institutions by exchanging faculty and NASA employees. Through personal testimonies, the paper has attempted to inspire others to participate in the program.

University administrators should encourage their faculty to become involved and to host a NASA employee. NASA employees should consider the tremendous personal contribution their experiences can make on campus. NASA administrators should encourage their employees to participate, although they may be missed for the duration of the fellowship, they return more capable as leaders and make an important contribution to future workforce development. NASA administrators should also consider hosting a faculty member.

To apply, download application materials.[8]
http://www.uncfsp.org/Application.doc

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Table 1 - NAFP participating institutions.

NASA Centers	Minority Institutions	Other Institutions and Organizations
NASA Headquarters	Alabama A&M University	Johns Hopkins University
NASA Ames Research Center	Alcorn State University	Lockheed Martin Aeronautics Company
NASA Dryden Space Flight Center	Bennett College	Moog, Inc.
NASA Glenn Research Center	Bethune-Cookman College	Mote Marine Laboratory
NASA Goddard Space Flight Center	California State Polytechnic University	National Academy of Public Administration
NASA Jet Propulsion Laboratory	California State University - Fresno	National Research Council
NASA Johnson Space Center	California State University - Fullerton	North Carolina State University
NASA Kennedy Space Center	Central State University	Pratt and Whitney
NASA Langley Research Center	Cheyney University	RAND Corporation
NASA Marshall Space Flight Center	Chicago State University	Sandia National Laboratories
NASA Stennis Space Center	Clark Atlanta University	Star Bridge Systems Inc
	Elizabeth City State University	The Boeing Company
	Essex County College	U.S. Army Research and Engineering Development Center
	Fisk University	University of Alabama
	Florida A&M University	University of Central Florida
	Florida International University	University of Florida
	Hampton University	University of Southern Mississippi
	Haskell Indian Nations University	Veridian Engineering
	Howard University	
	Institute of American Indian Arts (IAIA)	
	InterAmerican University of Puerto Rico	
	Morgan State University	
	New Mexico State University	
	Norfolk State University	**Minority Institutions - Continued**
	North Carolina A&T University	Texas Southern University
	Oakwood College	Tuskegee University
	Prairie View A&M University	University of New Mexico
	Salish Kootenai College	University of Texas-El Paso
	Southeastern University	University of Puerto Rico–Arecibo
	Spelman College	University of Puerto Rico–Humacao
	Tennessee State University	University of Puerto Rico–Mayaguez
	Texas A&M University, Kingsville	University of Puerto Rico–Rio Piedras
	Texas A&M University, Corpus Christi	Xavier University

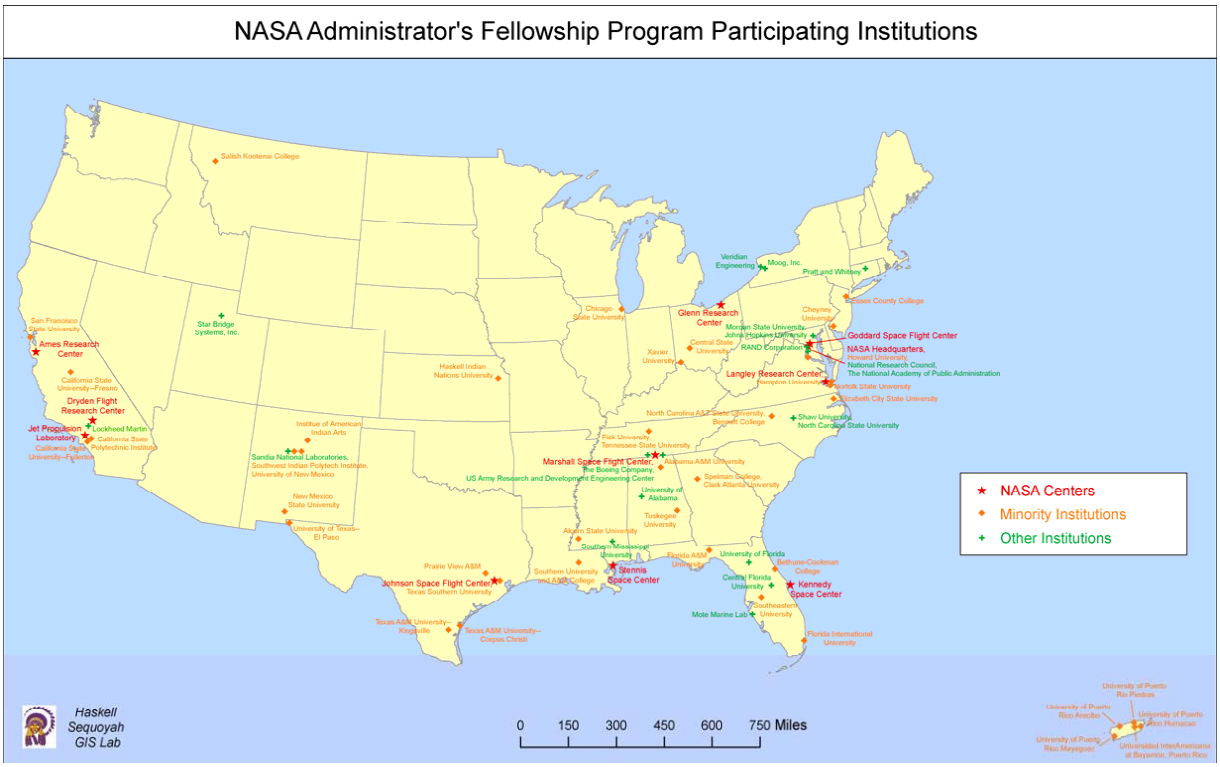

Figure 2 - Map illustrating the distribution of the NAFP participating institutions and organizations. (*map credit: Dr. John Kostelnick at the Haskell Indian Nations University's Sequoyah GIS Laboratory.*)

Table 2 - Employee Participation

NASA Center/Employee Participation	
1. Ames Research Center	1
2. Dryden Space Flight Center	2
3. Glenn Research Center	8
4. Goddard Space Flight Center	7
5. Headquarters	1
6. Johnson Space Center	5
7. Jet Propulsion Lab	1
8. Kennedy Space Center	8
9. Langley Research Center	3
10. Marshall Space Flight Center	11
11. Stennis Space Center	1
Totals	48

Table 3 - Center Participation by Fellow Classification.

NASA Host Center			Total
	NASA	Faculty	
1. Ames Research Center	0	3	3
2. Glenn Research Center	0	4	4
3. Goddard Space Flight Center	0	6	6
4. Jet Propulsion Laboratory	1	2	3
5. Johnson Space Center	1	5	6
6. Kennedy Space Center	0	1	1
7. Langley Research Center	1	5	6
8. Marshall Space Flight Center	0	8	8
9. NASA Headquarters	11	2	13
10. Stennis Space Center	0	1	1
11. Dryden Flight Research Center	1	0	1
Totals	15	37	52

Table 4 - Institution Participation by Fellow Classification.

Minority Institutions	Faculty	NASA
1. Alabama A&M University	3	4
2. Alcorn State University	2	
3. Bethune-Cookman College		2
4. Bennett College	1	
5. California State Polytechnic University, Pomona		1
6. California State University, Fullerton	1	1
7. Central State University, Ohio		1
8. Cheyney University	1	1
9. Chicago State University	1	
10. Clark Atlanta University	1	
11. Elizabeth City State University	1	
12. Essex County College	1	
13. Fisk University	1	1
14. Florida A&M University		2
15. Florida International University		1
16. Hampton University	1	1
17. Haskell Indian Nations University		1
18. Howard University	2	5
19. Institute of American Indian Arts		1
20. Morgan State University	2	1
21. New Mexico State University	1	1
22. Norfolk State University	1	
23. North Carolina A&T University	2	
24. Oakwood College		1
25. Prairie View A&M University		4
26. Salish Kootenai College		2
27. San Francisco State University	1	
28. Shaw University	2	
29. Southeastern University		1
30. Southern University and A&M College	1	
31. Southwestern Indian Polytechnic Institute		1
32. Spelman College	1	1
33. Tennessee State University		1
34. Texas A&M University, Corpus Christi	1	
35. Texas A&M University Kingsville		1
36. Texas Southern University	3	2
37. Tuskegee University	1	
38. Universidad InterAmericana at Bayamon, Puerto Rico		1
39. University of New Mexico		2
40. University of Puerto Rico, Arecibo		1
41. University of Puerto Rico, Humacao	1	1
42. University of Puerto Rico, Mayaguez		3
43. University of Puerto Rico, Rio Piedras	1	
44. University of Texas El Paso	1	
45. Xavier University		1
Minority Institutions:	36	47