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EXTENDING THE JOVE PROGRAM THROUGH UNDERGRADUATE RESEARCH

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EXTENDING THE JOVE PROGRAM THROUGH UNDERGRADUATE RESEARCH

My summer activities spanned several projects, the most prominent of which involved the JOVE program. Each effort will be reported under a separate heading.

I. THE JOVE PROGRAM

A. UNDERGRADUATE RESEARCH

The JOVE program was initiated in 1988 to develop NASA-related research capabilities in colleges and universities which had had little or no previous experience with NASA. Any institution which was not currently funded at more than $100 K annually by NASA was eligible. In an open competition six universities were selected for participation in the first year. NASA supplied funds, access to its facilities and data, collaboration with its researchers and a hookup to the internet. In return the university was expected to match NASA's investment by giving its participating faculty members time off of their teaching schedules to perform research during the school year, by waiving it overhead charge and by putting up real funds to match those supplied by NASA. Each school was eligible for three years after which they were expected to seek funds from other sources. Over the span of the program more than 100 colleges and universities have participated. Fifteen have finished their eligiblity.

Since one of the strong components of the program was the direct involvement of undergraduate students in active research, it was decided to develop a followon program which would provide stipends to undergraduate students at the institutions who had used up their JOVE eligiblilty. Though the program has not yet been completely defined, important features require that:

The University will:

1. Continue to grant the faculty member release time from the classroom during the academic year to pursue his/her research.

2. Supply housing in dormatories for students in summer programs.

3. Continue to develop new aerospace related curricula.

4. Continue to do educational outreach.

5. Waive indirect costs.

6. Match NASA's contributions toward student stipends, travel and any faculty salaries with real or like-kind funds.

NASA will supply:

1. Liason support to its laboratories and mentors.

2. Data.

3. Faculty Summer Salary.

4. Student Support.

5. Internet Link.

6. Travel.

7. Supplies, Software and Publications costs.

It is noteworthy that NSF has a program (the Research Experiences for Undergraduates program) which rather closely parallels that proposed above. A particular difference is that the REU program brings undergraduate students from smaller colleges and universities to large universities for the summer, whereas the proposed JOVE followon program would make research experiences available to undergraduates at their own institutions where the JOVE faculty members have already put research programs in place using NASA's help. The JOVE followon program could be conducted in either the school year or in the summer. A joint NASA/NSF program would serve in the best interests of both agencies inasmuch as the administration is pushing interagency collaboration. In addition NSF stands to expand its outreach because it will:

1. Reach into institutions which pride themselves primarily in providing outstanding undergraduate (rather than graduate) education. Their current REU programs are run out of the large research universities.

2. Gain access to institutions which have projects directly linked to ongoing research at NASA's ten field centers. NASA's advantage is that it has world-class research facilities whereas NSF has to rely on those in the universities.

B. PAVE

NASA's desire to transfer its technologies to the private sector now permeates all of its programs. Therefore a Partnering Venture program is now being discussed in which JOVE-like rules will be applied to small companies which do not now do much business with NASA. I participated in these discussions and prepared transparencies to be used in presentations to prospective funding sources.

C. OTHER

I participated in the preparation of materials for and helped manage the JOVE annual retreat which was held in Monterey, CA. July 5-8, 1995.

II. SPACE GRANT

One of the goals of NASA's Space Grant program is to build relationships between NASA, Industry and Space Grant Universities. Since I had participated in the formation of Space Grant's Industrial Task Force (SGITF), I was asked to present the results of the SGITF organizational meeting to the Space Grant Directors at their annual meeting which was held in Washington, DC., May 15, 1995. Two days later I addressed the Florida Higher Education Consortium at their annual meeting in St. Petersburg, FL where I discussed the Hubble Space Telescope.

III. TECHNOLOGY TRANSFER

On several occasions I have discussed NASA technologies with interested participants:

1. I spoke frequently with Jerry Mastromarino, an entrepeneur from Sarasota, FL, who is interested in forming a company which will market NASA technologies. He visualizes raising up to $100 M to fund the completion and commercialization of up to 50 products, processes and technologies. He plans to visit the MSFC Technology Transfer office in the next few weeks. He is also very interested in developing a company to fund and commercialize NASA's Reusable Launch Vehicle (RLV) provided his first venture is successful.

2. I participated with Tony Phillips, an MSFC Summer Fellow who is attempting to commercialize educational virtual reality arcade games, in his discussions with the MSFC Technology Transfer people. I also participated in his discussions with Dr. David Powe, Director of NASA's Tri-State Education Initiative, who is interested in including Virtual Reality techniques in the classroom.

IV. LOW FREQUENCY TELESCOPE (LOFT)

Larry Scott, a University of Florida alumnus, challenged me to design a large low frequency radio telescope which could produce world-class observations. I assembled a group of astronomers; Dr. Bob Backer, University of California at Berkley; Dr. Tom Carr, University of Florida; Dr. Bill Erickson, University of Maryland and University of

Tasmania; Dr. Namir Kassim, Navy Research Laboratory; Dr. Shri Kulkarni, California Institute of Technology; Dr. George Lebo, University of Florida; and Dr. Tony Phillips, California Institute of Technology, to design such a facility. It will be a T-shaped array with legs 500 kilometers long. Each of the up to 20 array elements will be a sub-array of low frequency antennas which will cover about two acres. Mr. Scott has indicated that he is reasonably confident that he can raise from $3 M to $4 M from private sources for such an effort.