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OCA PAD AMENDMENT - PROJECT HEADER INFORMATION

09/04/91

Active

Project #: E-20-528
Center #: P5074-0A0

Cost share #:
Center shr #:

Rev #: 3
OCA file #:
Work type : INST
Document : GRANT
Contract entity: GTRC

Contract#: NGT-50498
Prime #:

Mod #: 02

Subprojects ? : N
Main project #:

CFDA: N/A
PE #: N/A

Project unit: CIVIL ENGR Unit code: 02.010.116
Project director(s):
KANGARI R H CIVIL ENGR (404)894-2296

Sponsor/division names: NASA / LANGLEY RESEARCH CTR, VA
Sponsor/division codes: 105 / 001

Award period: 890801 to 920731 (performance) 920731 (reports)

Sponsor amount	New this change	Total to date
Contract value	22,000.00	62,000.00
Funded	22,000.00	62,000.00
Cost sharing amount		0.00

Does subcontracting plan apply ? : N

Title: ROBOTIC FABRICATION OF SPACE STRUCTURES AND SYSTEMS: AN INVESTIGATION OF...

PROJECT ADMINISTRATION DATA

OCA contact: Ina R. Lashley 894-4820

Sponsor technical contact Sponsor issuing office

MR SAMUEL E MASSENBERG, MS 105-A MS ADRIENE WOODIN, CODE HWC-1
(000)000-0000 (202)755-1970

UNIVERSITY AFFAIRS OFFICER CONTRACTS & GRANTS DIVISION
NASA LANGLEY RESEARCH CENTER NASA HEADQUARTERS
HAMPTON VA 23665 WASHINGTON DC 20546

Security class (U,C,S,TS) : U ONR resident rep. is ACO (Y/N): N
Defense priority rating : N/A N/A supplemental sheet
Equipment title vests with: Sponsor GIT

USE OF FUNDS FOR EQUIPMENT PURCHASE IS NOT PERMITTED.

Administrative comments -

→ SUPPLEMENT #2 INCREASES FUNDING BY \$22,000 AND EXTENDS TRAINING GRANT ONE YEAR. **ANY RENEWAL PROPOSAL IS DUE BY 2/1/92**



GEORGIA INSTITUTE OF TECHNOLOGY
OFFICE OF CONTRACT ADMINISTRATION

NOTICE OF PROJECT CLOSEOUT

2- N-
SR 342

Closeout Notice Date 08/26/92

Project No. E-20-528 _____ Center No. P5074-0A0 _____

Project Director KANGARI R H _____ School/Lab CIVIL ENGR _____

Sponsor NASA/LANGLEY RESEARCH CTR, VA _____

Contract/Grant No. NGT-50498 _____ Contract Entity GTRC

Prime Contract No. _____

Title ROBOTIC FABRICATION OF SPACE STRUCTURES AND SYSTEMS: AN INVESTIGATION OF.

Effective Completion Date 920731 (Performance) 920731 (Reports)

Closeout Actions Required:	Y/N	Date Submitted
Final Invoice or Copy of Final Invoice	N	_____
Final Report of Inventions and/or Subcontracts	Y	_____
Government Property Inventory & Related Certificate	N	_____
Classified Material Certificate	N	_____
Release and Assignment	N	_____
Other _____	N	_____

Comments BILLING PER LINE OF CREDIT PROVISIONS. _____

Subproject Under Main Project No. _____

Continues Project No. _____

Distribution Required:

Project Director	Y
Administrative Network Representative	Y
GTRI Accounting/Grants and Contracts	Y
Procurement/Supply Services	Y
Research Property Management	Y
Research Security Services	N
Reports Coordinator (OCA)	Y
GTRC	Y
Project File	Y
Other _____	N
_____	N

NOTE: Final Patent Questionnaire sent to PDPI.

NASA
Administrative Report

NASA Contract No. 50498
Georgia Tech Project No. E20-528

Graduate Student (Grantee): Brian C. Moore
Faculty Advisor (PI/PD): Dr. Roozbeh Kangari

Georgia Institute of Technology
School of Civil Engineering
Atlanta, GA 30332

May 21, 1992

NASA Administrative Report

Contract No. 50498

As a result of NASA's support, the grantee has successfully researched the use of automation technologies for constructing space-based structures. Included in these research efforts were onsite visits to the Johnson Space Center.

These research efforts also led to investigations into the types of facilities which might be constructed on the Moon as well as the equipment which might be used to construct the facilities. A 122-page report was prepared and submitted as a Special Problem Report, to the faculty of Georgia Tech's School of Civil Engineering. Also included in this report was a chapter dealing with the application of artificial intelligence in space. A copy of the report was submitted to Mr. Les Quioco at Johnson Space Center (JSC).

Based on previous research conducted by the grantee, it was decided that an effort should be put forth to animate various space-based construction scenarios. The grantee began this effort by learning the Neovisuals software package provided by Georgia Tech's Scientific Visualization Laboratory. This software was used to generate a lunar facility assembly sequence using telerobotic hardware. The grantee was subsequently introduced to the SSM (Solid Surface Modeler) and the OOM (Object Orientation Manipulator) software packages by the IGOAL group at JSC.

The grantee was provided with two revisions of both the OOM and SSM software packages. Two training sessions held at JSC were attended by the grantee. The most recent of these training sessions was held at the end of October 1991. The grantee has been using the

packages to generate scenarios which depict the LEVPU (Lunar Excursion Vehicle Payload Unloader), as shown in the Lunar/Mars 90 Day Study, and the Enabler, a multi-purpose lunar vehicle project being conducted by students in Georgia Tech's School of Mechanical Engineering. A paper was presented by the grantee in April of 1991 at the Construction Congress, sponsored by the American Society of Civil Engineers. The paper was entitled, "Animation of Automated Space Construction."

Efforts will be made by the grantee to train other students in the use of the JSC developed software, so that the work which has begun, can continue. Although the grantee will not be eligible to receive further GSRP funding, he will continue to dedicate time to the development of space-based construction scenario animations.

The grantee successfully completed an M.S. degree in December of 1989. The M.S. degree was granted under the Construction Management Department in Georgia Tech's School of Civil Engineering. He anticipates completing the requirements for a Ph.D. in Civil Engineering at Georgia Tech in December of 1992. The grantee also teaches a senior level "Construction" lab. During one lab period, time is spent discussing construction in space including the associated technologies and issues.

Finally, the grantee has received one offer of employment by a firm in the construction industry and will be seeking additional offers from industry and government agencies over the next six months. Offers for university teaching positions will also be pursued.