15:10:47 OCA PAD AMENDMENT - PROJECT HEADER INFORMATION 09/04/91

Active

Project #: E-20-528 Cost share #: Rev #: 3
Center # : P5074-0A0 Center shr #: OCA file #:
Work type : INST
Contract#: NGT-50498 Mod #: 02 Document : GRANT
Prime #: Contract entity: GTRC

Subprojects ? : N CFDA: N/A
Main project #: 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

MR SAMUEL E MASSENBERG, MS 105-A
(000)000-0000

UNIVERSITY AFFAIRS OFFICER
NASA LANGLEY RESEARCH CENTER
HAMPTON VA 23665

Sponsor issuing office

MS ADRIENE WOODIN, CODE HWC-1
(202)755-1970

CONTRACTS & GRANTS DIVISION
NASA HEADQUARTERS
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

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	

CommentsBILLING 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 Managment	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 onsight 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 Quiocho 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.