

PROJECT ADMINISTRATION DATA SHEET

ORIGINAL REVISION NO. _____

Project No. E-19-512 DATE 6/14/82

Project Director: Dr. J. E. Husted School/Lab ChE

Sponsor: U. S. Dept. of Interior; Office of Surface Mining; Washington, D.C. 20241

Type Agreement: Grant No. G1124113

Award Period: From 7/1/82 To ~~6/30/83~~ 9/30/83 (Performance) 9/30/83 (Reports)

Sponsor Amount: \$150,000 Contracted through: _____

Cost Sharing: \$150,000 (E-19-222) XERI/GIT

Title: Allotment Grant for the Georgia Mining and Mineral Resources and Research Institute

ADMINISTRATIVE DATA

OCA Contact Linda H. Bowman x4820

1) Sponsor Technical Contact:
Dr. John D. Morgan
Chief Staff Officer
U. S. Dept. of the Interior
Bureau of Mines
2401 E. St., N.W.
Washington, D. C. 20241

2) Sponsor Admin/Contractual Matters:
Mr. Jeff Hatfield
Grants Management Office
U. S. Dept. of the Interior
Bureau of Mines
2401 E. St., N.W.
Washington, D. C. 20241
702-634-1313

Defense Priority Rating: none

Security Classification: none

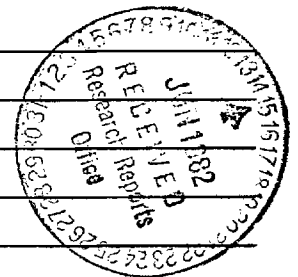
RESTRICTIONS

See Attached n/a Supplemental Information Sheet for Additional Requirements.

Travel: Foreign travel must have prior approval - Contact OCA in each case. Domestic travel requires sponsor approval where total will exceed greater of \$500 or 125% of approved proposal budget category.

Equipment: Title vests with GIT

COMMENTS:



COPIES TO:

Administrative Coordinator
Research Property Management
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Procurement/EES Supply Services
FORM OCA 4:781

Research Security Services
Reports Coordinator (OCA) ✓
Legal Services (OCA)
Library

EES Public Relations (2)
Computer Input
Project File
Other _____

SPONSORED PROJECT TERMINATION/CLOSEOUT SHEET

Date 1/27/84

Project No. E-19-512

School/~~ICS~~ C&E

Includes Subproject No.(s) E-18-501, E-26-501, G-35-503, and E-20-501

Project Director(s) Dr. J. E. Husted ~~XXX~~ / GIT

Sponsor U.S. Department of Interior; Office of Surface Mining
U.S. Bureau of Mines

Title Allotment Grant for the Georgia Mining and
Mineral Resources and Research Institute

Effective Completion Date: 9/30/83 (Performance) 12/31/83 (Reports)

Grant/Contract Closeout Actions Remaining:

- None
- Final Invoice or Final Fiscal Report
- Closing Documents
- Final Report of Inventions
- Govt. Property Inventory & Related Certificate
- Classified Material Certificate
- Other _____

Continues Project No. _____ Continued by Project No. _____

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- Research Communications (2)
- Project File
- Other _____

PROJECT ADMINISTRATION DATA SHEET

(subproject under E-19-512)

ORIGINAL

REVISION NO.

Project No. E-18-501

~~BY~~ GIT

DATE 4/18/83

Project Director: Dr. Alan T. Chapman

School/ESD ~~ESD~~ Ceramic Eng.

Sponsor: US Dept. of Interior, Bureau of Mines

Type Agreement: Grant No. G1124113

Award Period: From 3/28/83 To 9/30/83* (Performance) 12/31/83 (Reports)

Sponsor Amount: Total Estimated: \$ 12,680 Funded: \$ 12,680

Cost Sharing Amount: \$ 5,985 Cost Sharing No:

Title: Allotment Grant for the Georgia Mining & Mineral Resources and Research Institute

ADMINISTRATIVE DATA

OCA Contact Frank Huff x4820

1) Sponsor Technical Contact:

Dr. John Husted

2) Sponsor Admin/Contractual Matters:

Defense Priority Rating:

Military Security Classification:

(or) Company/Industrial Proprietary:

RESTRICTIONS

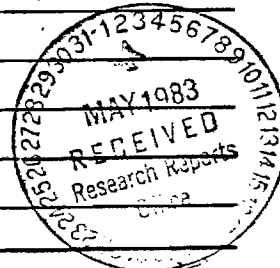
See Attached NA Supplemental Information Sheet for Additional Requirements.

Travel: Foreign travel must have prior approval - Contact OCA in each case. Domestic travel requires sponsor approval where total will exceed greater of \$500 or 125% of approved proposal budget category.

Equipment: Title vests with GIT; none proposed

COMMENTS:

*Original grant terminates 6/30/83; a no-cost extension request until 9/30/83 is in process.



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GTRI
Library

Research Communications (2)
Project File
Other Chapman
Other Husted

PROJECT ADMINISTRATION DATA SHEET

(subproject under E-19-512)

ORIGINAL

REVISION NO. _____

Project No. E-26-501

~~SPRIGIT~~

DATE 4/18/83

Project Director: Dr. G. G. Eichholz

School/Lab ~~XXX~~ Nuclear Eng.

Sponsor: US Dept. of Interior, Bureau of Mines

Type Agreement: Grant No. G1124113

Award Period: From 3/28/83 To 9/30/83* (Performance) 12/31/83 (Reports)

Sponsor Amount: Total Estimated: \$ 11,063 Funded: \$ 11,063

Cost Sharing Amount: \$ 5,477

Cost Sharing No: _____

Title: Allotment Grant for the Georgia Mining & Mineral Resources and Research Institute

ADMINISTRATIVE DATA

OCA Contact Frank Huff x4820

1) Sponsor Technical Contact:

Dr. John Husted

2) Sponsor Admin/Contractual Matters:

Defense Priority Rating: _____

Military Security Classification: _____

(or) Company/Industrial Proprietary: _____

RESTRICTIONS

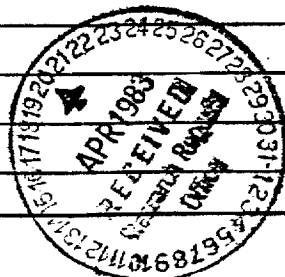
See Attached NA Supplemental Information Sheet for Additional Requirements.

Travel: Foreign travel must have prior approval - Contact OCA in each case. Domestic travel requires sponsor approval where total will exceed greater of \$500 or 125% of approved proposal budget category.

Equipment: Title vests with GIT; none proposed

COMMENTS:

*Original grant terminates 6/30/83; a no-cost extension request until 9/30/83 is in process.



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- Project File
- Other *Eichholz*
- Other *Newton*

PROJECT ADMINISTRATION DATA SHEET

(subproject under E-19-512) ORIGINAL REVISION NO. _____

Project No. G-35-503 ~~SPR/GIT~~ DATE 4/18/83

Project Director: Dr. Charles Pollard School/~~Lab~~ Geo Sci

Sponsor: US Dept. of Interior, Bureau of Mines

Type Agreement: Grant No. G1124113

Award Period: From 3/28/83 To 9/30/83* (Performance) 12/31/83 (Reports)

Sponsor Amount: Total Estimated: \$ 14,953 Funded: \$ 14,953

Cost Sharing Amount: \$ 7,058 Cost Sharing No: _____

Title: Allotment Grant for the Georgia Mining & Mineral Resources and Research Institute

ADMINISTRATIVE DATA

OCA Contact Frank Huff x4820

1) Sponsor Technical Contact:

Dr. John Husted

2) Sponsor Admin/Contractual Matters:

Defense Priority Rating: _____

Military Security Classification: _____

(or) Company/Industrial Proprietary: _____

RESTRICTIONS

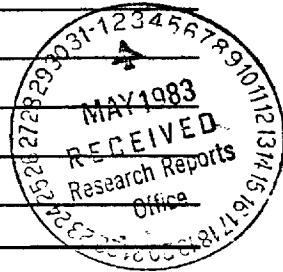
See Attached NA Supplemental Information Sheet for Additional Requirements.

Travel: Foreign travel must have prior approval - Contact OCA in each case. Domestic travel requires sponsor approval where total will exceed greater of \$500 or 125% of approved proposal budget category.

Equipment: Title vests with GIT; none proposed

COMMENTS:

*Original grant terminates 6/30/83; a no-cost extension request until 9/30/83 is in process.



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Research Communications (2)

Project File

Other Pollard



U.S. Department of the Interior
Office of Surface Mining
Division of Technical Services & Research
State Mining & Mineral Resources and Research Institutes
Washington, D.C. 20240

Quarterly SMMRRI Reports

Grant Recipient	Type of Report	Reporting Period	Control Number(s)
Georgia Institute of Technology Atlanta, Georgia 30332	Quarterly Technical Report	7/1/82-9/30/82	G-1124113

Project Title/Program
Allotment Program

Investigator(s) / Fellowships Recipients
Dr. John E. Husted, Director

Performing Organization:
Georgia Mining and Mineral Resources Institute (GMMRI)

Summary:

During the subject period the Director was full-time until September 20 when the Fall Quarter started. During the Fall Quarter the Director is teaching Ch.E. 4111, Fossil Fuels, for one-fourth time and three-fourths time as Director.

A major effort during the subject period was the continuation of work with administrators, faculty, and students to build the mineral engineering program.

Conferences with representatives of industry on various problems were held during the period. Visits to members of the mining industry within the state were made.

The search for new mineral processing personnel continued with letters to the Dean of Engineering recommending the employment of an internationally known surface chemist working in problems of mineral processing. Also interviewed was a young Ph.D. candidate with background in materials science and mineral processing.

Changes were made in the Advisory Board of the GMMRI in that Mr. Roy Richards, Chairman of the Board of Southwire Corporation, rotated off the Board. Mr. Jim Dellinger, President of New Riverside Ochre Corporation, was appointed for a new term of three years in his place. Other changes are anticipated when the Georgia Mining Association meets in October, as they appoint three members to the Board.

A new Carpco induced roll magnetic separator, capable of an 18,000 gauss field, was approved and an order submitted for purchase. Carpco also agreed to overhaul and recondition without cost our electrostatic-high tension electric separator. This is in process.



U.S. DEPARTMENT OF THE INTERIOR
Office of Surface Mining
DIVISION OF TECHNICAL SERVICES & RESEARCH
Washington, DC 20240

Approved by GAO
B-190462 (RO697)
Expires October 31, 1983

STATE MINING & MINERAL RESOURCES AND RESEARCH INSTITUTES

Program Narrative Statement Performance Report **SMMRRI Reports**

1. Grant Recipient	Type of Report	Reporting Period	Control Number(s)
Georgia Institute of Technology Atlanta, Georgia 30332	Quarterly Technical Report	10/1/82- 12/31/82	G-1124113
2. Project Title/Program Allotment Program			
3. Investigator(s)/Fellowships Recipients Dr. John E. Husted, Director			
4. Performing Organization: Georgia Mining and Mineral Resources Institute (GMMRI)			
<p>5. Summary:</p> <p>During the Fall Quarter the Director taught Ch.E. 4111, Fossil Fuels, for one-fourth time and served three-fourths time as Director.</p> <p>A continuing major effort during the subject period was work with administrators, faculty, and students to build the mineral engineering program.</p> <p>Conferences with representatives of industry on various problems were held during the period. Illness prevented attendance at the annual AMID meeting in Houston, Texas.</p> <p>The search for new mineral processing personnel continued with letters to the Dean of Engineering recommending the employment of an internationally known surface chemist working in problems of mineral processing. Also interviewed was a young Ph.D. candidate with background in materials science and mineral processing.</p> <p>The Advisory Board of the GMMRI met in October and will meet again in February, 1983.</p> <p>A new Carpco induced roll magnetic separator, capable of an 18,000 gauss field, was received as well as our reconditioned electrostatic-high tension electric separator.</p>			



U.S. DEPARTMENT OF THE INTERIOR
Office of Surface Mining
DIVISION OF TECHNICAL SERVICES & RESEARCH
Washington, DC 20240

Approved by GAO
B-190462 (RO697)
Expires October 31, 1983

STATE MINING & MINERAL RESOURCES AND RESEARCH INSTITUTES

Program Narrative Statement Performance Report **SMMRRI Reports**

1. Grant Recipient	Type of Report	Reporting Period	Control Number(s)
Georgia Institute of Technology Atlanta, Georgia 30332	Quarterly Technical Report	1/1/83-3/31/83	G-1124113
2. Project Title/Program Allotment Program			
3. Investigator(s)/Fellowships Recipients Dr. John E. Husted, Director			
4. Performing Organization: Georgia Mining and Mineral Resources Institute (GMMRI) Georgia Institute of Technology Atlanta, Georgia 30332			
5. Summary: <p>During the Winter Quarter the Director taught Ch.E. 4114, Introduction to Mining, for one-fourth time and served three-fourths time as Director.</p> <p>A continuing major effort during the subject period was work with administrators, faculty, and students to build the mineral engineering program.</p> <p>Conferences with representatives of industry on various problems were held during the period. Illness prevented attendance at the annual AMID meeting in Houston, Texas.</p> <p>An offer of employment as a full Professor was made to Eric Clayfield of Shell Research Ltd. in England.</p> <p>The Advisory Board of the GMMRI met in February and will meet at least once more in 1983.</p>			



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Program Narrative Statement

Performance Report

SMMRRI Reports

1. Grant Recipient	Type of Report	Reporting Period	Control Number(s)
Georgia Institute of Technology Atlanta, Georgia 30332	Quarterly Technical Report	4/1/83-6/30/83	G-1124113
2. Project Title/Program Allotment Program			
3. Investigator(s)/Fellowships Recipients Dr. John E. Husted, Director			
4. Performing Organization: Georgia Mining and Mineral Resources Institute (GMMRI) Georgia Institute of Technology Atlanta, Georgia 30332			
5. Summary: <p>During the Spring Quarter the Director taught Met. 4116, Separation Technology, for one-fourth time and served three-fourths time as Director.</p> <p>A continuing major effort during the subject period was work with administrators, faculty, and students to build the mineral engineering program.</p> <p>Conferences with representatives of industry on various problems were held during the period.</p> <p>An offer of employment as a full Professor was made to Eric Clayfield of Shell Research Ltd. in England. He has accepted the offer, to start approximately January 1, 1984. He visited the campus in May.</p> <p>Mr. Mark Pritzker, a doctoral candidate at V.P.I. was also interviewed concerning a teaching and research position, provided we have sufficient budget. This would strengthen our move to build in the area of mineral processing.</p> <p>Travel during the period included:</p> <ul style="list-style-type: none">5/12-5/15 - Visits to Thiele Kaolin and Crawford Mining Corporation in Sandersville and Perry, GA, respectively.5/11 - Plant trip (class) to New Riverside Ochre, Cartersville, GA.6/2-6/5 - AIME Meeting, Georgia Section, Thomasville, GA.6/27-7/1 - Attended Separation Science Symposium sponsored by DOE, Oak Ridge National Laboratory, and the American Chemical Society, Gatlinburg, TN.			



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Program Narrative Statement Performance Report **SMMRRI Reports**

1. Grant Recipient	Type of Report	Reporting Period	Control Number(s)
Georgia Institute of Technology Atlanta, Georgia 30332	Quarterly Technical	7/1/83-9/30/83	G-1124113
2. Project Title/Program Allotment Program			
3. Investigator(s)/Fellowships Recipients Dr. John E. Husted, Director			
4. Performing Organization: Georgia Mining and Mineral Resources Institute (GMMRI) Georgia Institute of Technology Atlanta, Georgia 30332			
5. Summary: Contract G-1124113 received a no-cost extension through Sept. 30, 1983. Expenditures on the contract were for completion of faculty and student research. Titles and faculty are as follows: "Rock Slope Stability of Quarries and Open Pit Mines," conducted by Dr. R. D. Barksdale, School of Civil Engineering. Three interactive user-friendly computer programs were developed for analysis of rock slope stability. A full report will be released in the near future. "Preparation of Simulated Chromite Ores," by Dr. A. T. Chapman, School of Ceramic Engineering. The objective of the work was to provide well characterized chromite powders for use as standards in extractive metallurgy leaching studies of domestic chromites. "Uranium Content in Georgia Phosphate Deposits, by Dr. Geoffrey G. Eichholz, Nuclear Engineering. A study of radiation effects of uranium content of Georgia coastal phosphates was examined. "A Study of the Potential for Producing Ultra-Hard Surface Coatings for Comminution Processes," by Dr. R. F. Hochman. This was a part of a continuing study using titanium carbide and titanium nitride. "Bauxite Residue Fractionation with Magnetic Separators," by Dr. D. W. Tedder. The study was on both domestic and foreign muds and sands and is part of continuing research. "Work on Predicting Physical Behavior of Coal Systems," by Gus K. Georgeton, doctoral candidate. Work is directed toward accurate predictions of physical characteristics of coal derived fluids. Work is under Dr. A. S. Teja. "The Effect of Physical and Chemical Characteristics of Coal on the Adsorption of 'Thiobacillus ferroxidans' to Coal," by Dr. A. S. Meyerson. This is part of a continuing study. "Search for Exposures of Ultramafic Rocks in Georgia by Landsat Imagery," by Dr. C. O. Pollard, Jr. and Nick Faust. So far the image techniques were not			

Quarterly Technical Report

G-1124113

7/1/83-9/30/83

Page 2

successful on known Georgia deposits.

"The Effects of Iron on the High Temperature Leaching of Chromite with Sodium Hydroxide," by L. M. Mohnkern. This is a master's thesis effort.

Reports resulting from the studies are expected to be included in a publication from the Georgia Mining and Mineral Resources Institute. A summary was given in the Institute Annual Report.



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STATE MINING & MINERAL RESOURCES AND RESEARCH INSTITUTES

Program Narrative Statement Performance Report **SMMRRI Reports**

1. Grant Recipient	Type of Report	Reporting Period	Control Number(s)
Georgia Institute of Technology Atlanta, Georgia 30332	FINAL	7/1/82-9/30/83	G-1124113
2. Project Title/Program Allotment Program			
3. Investigator(s)/Fellowships Recipients Dr. John E. Husted, Director			
4. Performing Organization: Georgia Mining and Mineral Resources Institute (GMMRI) Georgia Institute of Technology Atlanta, Georgia 30332			
5. Summary: <p>Under separate cover bound copies of research performed under this contract are being forwarded. Where work is in progress, such as incomplete thesis and dissertations, a summary progress report is included.</p> <p>Quarterly report for period July 1 - September 30, 1983 lists the research projects.</p> <p>During the period covered by this report active liaison was maintained with industry, both through the external Advisory Board and through direct contact with staffs of individual companies.</p> <p>Mr. Eric Clayfield, Principal Scientist of the Shell Oil Company, Thornton Research Centre, Chester, England, accepted a position as Professor and will replace Dr. Husted when he retires April 1, 1984.</p> <p>Due to severe financial limitations imposed by the University System of Georgia, no other new personnel were employed at this time for the mineral engineering program.</p>			

G-35-503

GEORGIA INSTITUTE OF TECHNOLOGY
SCHOOL OF GEOPHYSICAL SCIENCES

Atlanta, Georgia 30332
(404) 894-2857

October 12, 1983

Dr. John E. Husted
Georgia Mining and Mineral Resources Institute
School of Chemical Engineering
Georgia Institute of Technology
Atlanta, Georgia 30332

RE: Quarterly Report on Project G-35-503 "Search for Exposures
of Ultramafic Rocks in Georgia by Landsat Imagery"

Dear Dr. Husted:

Enclosed is a paragraph description of the status of the project as of this date. The resources are now available to us for Rochie Tschirhart to identify a "signature" for the ultramafic deposits, if it is going to be possible at all to apply these techniques in the Southeastern U.S. We have visited the best test localities (Buck Creek, Laurel Creek, Lake Burton, and Lake Chatuge), obtained pertinent maps and reports, obtained the Landsat imagery data set, and activated the correct computer algorithms to identify a signature.

Rochie Tschirhart continues as a Graduate Research Assistant with Nick Faust. Nick and I will continue to advise him as he completes work on this project for his Masters thesis.

Sincerely

C.O. Pollard, Jr.

xc: Nick Faust
Rochie Tschirhart
C.S. Kiang
L.T. Long

Search for Exposures of Ultramafic Rocks
in Georgia by Landsat Imagery

Co-Principal Investigators: C.O. Pollard, Jr. and Nick Faust
Graduate Research Assistant: Rochie E. Tschirhart

The purpose of this project was to evaluate the ability of Thematic Mapper data from the Landsat-4 satellite, and the techniques applied to the data, to provide information that could be of economic use in geological exploration of Georgia's olivine, nickel, and chromium deposits.

Two areas of known ultramafic deposits were studied in detail. One area was in the vicinity of Lake Chatuge in North Georgia and the other area was the Buck Creek deposit in North Carolina. After radiometric and geometric corrections were applied to the data, the digital images were rectified to topographic maps for accurate identification of the known deposits. By locating known deposits on the digital images, enhancement techniques were used in an attempt to make the ultramafic deposits "stand out" on the image. It is anticipated that, once the correct technique is identified, other areas that "stand out" will be checked to see if they are ultramafic deposits not yet identified.

So far, the image enhancement techniques that have been applied have not been successful in discriminating the known deposits. The search for the correct treatment of the data is continuing, principally by Rochie Tschirhart, who will complete a Master's thesis in connection with this effort.