Project No. E-19-506

Date: 7/10/81

Project Director: Dr. J. E. Husted

School/Dept: Chemical Engineering

Sponsor: U.S. Department of the Interior; Office of Surface Mining; Washington, DC 20240

Type Agreement: Allotment Grant No. G5114017

Award Period: From 7/1/81 to 6/30/82 (Performance) 9/30/82 (Reports)

Sponsor Amount: $110,000

Cost Sharing: $110,000 (E-19-202)

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

Administrative Data

OCA Contact: Duane Hutchison x4820

1) Sponsor Technical Contact: Dr. Lawrence Chase; U.S. Department of the Interior; Office of Surface Mining; 1951 Constitution Avenue, N.W.; Washington, D.C. 20240

(703) 756-6961

2) Sponsor Admin./Contractual Contact: Andrew V. Bailey, Acting Director; U.S. Dept. of the Interior; Office of Surface Mining; 1951 Constitution Ave., N.W.; Washington, D.C. 20240

Reports: See Deliverable Schedule

Security Classification: none

Defense Priority Rating: 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 than $500 or 12% of approved proposal budget category.

Equipment: Title vests with Georgia Institute of Technology

Comments:

Copies To:

Administrative Coordinator
Research Property Management
Accounting Office

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

EES Research Public Relations
Project File (OCA)

Other:
SPONSORED PROJECT TERMINATION SHEET

Date: June 2, 1983

Project Title: Allotment Grant for the Georgia Mining and Minerals Resources Institute

Project No: E-19-506

Project Director: Dr. J. E. Husted

Sponsor: U. S. Department of Interior; Office of Surface Mining

Effective Termination Date: 9/30/82

Clearance of Accounting Charges: 12/31/82 (Reports)

Grant/Contract Closeout Actions Remaining:

- ✔ Final Closing Documents
- ✔ Final Fiscal Report SF-269
- □ Final Report of Inventions
- ✔ Govt. Property Inventory & Related Certificate Form OSM-60 (6-80)
- □ Classified Material Certificate
- □ Other

Assigned to: Chemical Engineering (School/Laboratory)

COPIES TO:
- Administrative Coordinator
- Research Property Management
- Accounting
- Procurement/EES Supply Services
- Research Security Services
- EES Public Relations (2)
- Reports Coordinator (OCA)
- Legal Services (OCA)
- Library
- Computer Input
- Project File
- Other Husted
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<th>Grant Recipient</th>
<th>Type of Report</th>
<th>Reporting Period</th>
<th>Control Number(s)</th>
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<tr>
<td>Georgia Institute of Technology</td>
<td>Quarterly Technical</td>
<td>7/1/81-9/30/81</td>
<td>G-5114017</td>
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2. Project Title/Program

3. Investigator(s) / Fellowships Recipients

John E. Husted, Director

4. Performing Organization:

Georgia Mining and Mineral Resources Institute (GMMRI)

5. Summary:

Much of the period of July and August was devoted to travel by the Director which included:

1. Attending an Engineering Foundation Conference on Flotation (Ringe, N.H.), where the emphasis was on fine particle technology and surface chemistry.

2. A visit to the Asheville, N.C. laboratory of North Carolina State University for comparison of facilities for mineral processing and to discuss mutual areas of interest in the mineral processing field.

3. A visit to the phosphate industry of Florida to acquaint them with GMMRI and to discuss potential research, placement of students, corporate gifts, and problems of the industry. All major phosphate companies were visited, excepting U.S. Steel. In addition, the Florida Phosphate Council, the Florida Institute of Phosphate Research, and Zellars-Williams Corp., Inc. were visited also. Also on the Florida trip DuPont and Associated Minerals heavy mineral operations, and the Florida Rock Industries, Inc. were visited.

4. Georgia mineral operations east of I-75 from the Florida border north to I-85 were visited. Almost every member of the Georgia Mining Association plus other operators were included. This encompassed the major kaolin operations, glass sand operations, kyanite operations, mica operations, feldspar operations, and the like.

5. The American Mining Congress was attended in late September.

The Fall Quarter started September 21 and Dr. Husted taught a course each in Fossil Fuels and Origin of Mineral Resources.
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2. Project Title/Program

3. Investigator(s) / Fellowships Recipients

   Dr. John E. Husted, Director

4. Performing Organization:

   Georgia Mining and Mineral Resources Institute (GMMRI)

5. Summary:

   During the subject period the Director was half time as Director and half time teaching.


   2. Visited Georgia Kaolin Co. in company with student fellow under GMMRI and another staff member to set up slope stability project for a master's thesis.

   3. Attended Fall meeting of SME-AIME. Dr. Husted on request presented an outline for a new mining text to the Educational Publications Committee. He also is active in accreditation and wrote the new Supplemental Criteria for Geological Engineering and Mineral Engineering accreditation by ABET during the reporting period.

   4. In December Dr. Husted attended the annual meeting of the Association of Mineral Institute Directors held at Colorado School of Mines in Golden, Colorado.

   5. Dr. Husted and other members of staff of the Schools involved have been active in building our minerals program. The School of Chemical Engineering (includes the Metallurgy degree program) has actively sought a mineral process engineer.
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<td>5</td>
<td>Summary:</td>
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<td></td>
<td>During the subject period the Director was 3/4 time Director and 1/4 time teaching a course in Introductory Mining.</td>
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<td>1. Attended SME-AIME annual meeting in Dallas as active member of Accreditation Committee, Ad Hoc Committee on Educational Planning, Educational Publications Committee, and incoming Chairman of Hardinge Award Committee. Also chaired a session.</td>
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<td>3. Attended meeting as observer of the Advisory Board for the Mineral Institute Program to the Secretary of the Interior.</td>
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<td>4. Prepared first drafts of accreditation criteria for Geological Engineering and Mineral Engineering curricula as well as final draft of Mineral Engineering criteria for SME-AIME.</td>
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<td>5. Began draft of Introductory Text in Mining Engineering for SME.</td>
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<td>6. Interviewed an outstanding world class process engineer for the purpose of building a stronger mineral processing graduate program.</td>
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<td>7. Continuing effort to build our minerals program.</td>
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1. Grant Recipient
Georgia Institute of Technology
Atlanta, Georgia 30332

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)

5. Summary:

During the subject period the Director was 3/4 time Director and 1/4 time teaching an introductory course in Mineral Separations, Met. 4116.

1. A major effort during the subject period was in working with administrators, faculty, and students to build the mineral engineering program.

2. A meeting of the external Advisory Board, composed primarily of representatives from the mineral industries of Georgia, was held on June 23. Dr. Pettit, President of Georgia Tech, was in attendance as was all but one Board member. Industry enthusiasm and support was quite positive.

3. Conferences with representatives of industry on various problems were held during the period.
The Director was full-time during the summer of 1981 and three-quarters time during the Fall, Winter and Spring quarters of the 1981-82 school year. During this period a continued effort was in working with administrators, faculty, and students to build the minerals engineering program. Continued liaison was maintained with industry with site visits to a major portion of the mineral industries of Georgia and Florida as reported in quarterly reports. A no-cost extension was requested and made to September 30, 1982.

Faculty research included: structure of kaolin crystals and the relationship to obtaining aluminum from kaolin; various aspects of comminution; various aspects of fine particle technology particularly as related to clays; microporosity of surfaces; micromechanics instrumentation development and use pertaining to stress, surface alterations, and chemical induced change of mechanical properties and deformation characteristics; metal-hydrides; and the use of zunyite for high refractory mullite. Research directly related to the minerals industries has gone from near zero to the above in between two and three years.

One professor full-time, one professor quarter-time, and a part-time student were funded to work on problems of comminution. The initial effort was directed to a thorough literature search and preliminary laboratory tests in order to formulate approaches deemed optimum as the result of this work. Four approaches were found to be attractive. These were presented orally to Dr. Tom Hennie, U.S.B.M.-Washington, in late September.