

GEORGIA INSTITUTE OF TECHNOLOGY
Engineering Experiment Station

PROJECT INITIATION

Date: July 30, 1969

Project Title: **Cooperative Service for Oceanographic Development**
Project No.: **A-1199**
Project Director: **David C. Morgan**
Sponsor: **Ocean Science Center of the Atlantic Commission**
Effective **June 25, 1969** Estimated to run until: . . . **September 25, 1969**
Type Agreement: . **Agreement dated June 25, 1969** Amount: \$ **2,500.00**

Reports: Final Report - upon completion

Contact Person: Mr. L. K. Abbott, Chairman
Ocean Science Center of the Atlantic Commission
507 American Building
Savannah, Georgia 31401

Assigned to **Industrial Development** Division

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GEORGIA INSTITUTE OF TECHNOLOGY

Engineering Experiment Station

PROJECT TERMINATION

Date October 7, 1969

PROJECT TITLE: Cooperative Service for Oceanographic Development

PROJECT NO: A-1199

PROJECT DIRECTOR: David C. Morgan

SPONSOR: Ocean Science Center of the Atlantic Commission

TERMINATION EFFECTIVE: September 25, 1969

CHARGES SHOULD CLEAR ACCOUNTING BY: October 31, 1969 (which were incurred prior to 9-25-69)

Items in contract file noted as incomplete on date of this action:

1. Final Report

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GEORGIA INSTITUTE OF TECHNOLOGY
Engineering Experiment Station

PROJECT INITIATION

Date: October 7, 1969

Project Title: **A Program of Oceanography-Related Industrial Development**

Project No.: **A-1199-001**

Project Director: **David C. Morgan**

Sponsor: **Ocean Science Center of the Atlantic Commission**

Effective **September 26, 1969** Estimated to run until: . . . **December 26, 1969**

Type Agreement: **Industrial Development** Amount: \$ **2,500.00**

Reports: **Interim reports on findings as circumstances dictate.**

Final Report - at the discretion of the sponsor; to be determined.

Contact Person: **Mr. L. K. Abbott, Chairman**
Ocean Science Center of the Atlantic Commission
507 American Building
Savannah, Georgia 31401

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GEORGIA INSTITUTE OF TECHNOLOGY
Engineering Experiment Station

PROJECT TERMINATION

Date January 15, 1970

PROJECT TITLE: A Program of Oceanography-Related Industrial Development

PROJECT NO: A-1199-001

PROJECT DIRECTOR: D. C. Morgan

SPONSOR: OSCAC

TERMINATION EFFECTIVE: December 26, 1969

CHARGES SHOULD CLEAR ACCOUNTING BY: All acceptable charges have cleared.

Note: Charges incurred after 12/26 or in excess
of contract budget must be transferred to
Division accounts.

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GEORGIA INSTITUTE OF TECHNOLOGY
Engineering Experiment Station

PROJECT INITIATION

Date: July 20, 1970

Project Title: **A Program of Industrial Development Assistance to
the Ocean Science Center of the Atlantic Commission**

Project No.: **A-1199-002**

Project Director: **Mr. B. Sanford Ulmer**

Sponsor: **Ocean Science Center of the Atlantic Commission**

Effective **June 30, 1970** Estimated to run until: **June 30, 1971**

Type Agreement: **Industrial Development Research Project** Amount: \$ **11,166.13**

**Reports: Interim Reports on findings as necessary
Final Report - upon completion**

**Contact Person: Mr. T. H. Suddath or Mr. J. F. McGowan
Ocean Science Center of the Atlantic Commission
507 American Building
Savannah, Georgia 31401**

Assigned to **Industrial Development** Division

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GEORGIA INSTITUTE of TECHNOLOGY

ENGINEERING EXPERIMENT STATION

A-1199
Final Report

Industrial Development Division

Savannah Area Branch
P.O. Box 2847
36 East Bay Street
Savannah, Georgia 31401
232-0281 Area Code 912

October 6, 1969



Mr. Laurie K. Abbott, Chairman OSCA
507 American Building
Savannah, Georgia 31401

Dear Laurie:

With this letter I am sending you two copies of a report which corresponds to the first part of our contract with your organization. As you know, the \$5,000 had to be split up into two \$2,500 parts to permit the use of funds still available from OSCA's previous budget period. Somewhat arbitrarily, it was decided that the first part should cover the recommendation of seven companies as prospects for the OSCA properties and the second part thirteen prospects.

To determine who could be good prospects among the enormous number of companies active in the vast field of oceanography a number of criteria had to be developed. We also had to collect and go through much material on those companies, and on recent trends and developments in the field. If there had not been an artificial split up of the contract we would have devoted at least half the time it bought to those activities. This means that under the actual contract conditions the first seven (actually nine) prospects had to be selected somewhat in a rush, and on some we could not finish the initial telephone contacts.

John McGowan asked us to build up a filing and card system on companies active in oceanography on which OSCA could draw for its contacting and visiting of prospects. We are in the process of doing this now. John also asked us to develop an outline for a brochure on the OSCA properties. As a basis for such an outline we developed a list of locational advantages of those properties which was given to John, and forms a part of this report. It served as a basis for developing our criteria for prospect selection.

John has suggested that we prepare the material for the brochure for printing. We will try to do this under the present contractual agreement. If we find time will not allow this we suggest that the terms of the contract be changed officially or that we make a small amendment to the contract for a small sum to cover the time required to produce that brochure draft without changing the existing agreement.

Very truly yours,

Robert E. Van Geuns

REVG/jh

cc: Mr. Thomas H. Suddath
Mr. John F. McGowan
Dr. Thomas W. Jackson
Mr. David C. Morgan

Project A-1199

PROSPECTS FOR THE OSCA
FACILITIES ON
SKIDAWAY ISLAND
SAVANNAH, GEORGIA

Preliminary, draft report

Prepared for the
Ocean Science Center of the Atlantic



by
Robert E. Van Geuns

Savannah Area Branch
Industrial Development Division
Engineering Experiment Station
GEORGIA INSTITUTE OF TECHNOLOGY
September 1969

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INTRODUCTION

This brief report, which covers the first half of our contract with OSCA, is only a draft for the final report, which will cover the total contract. It suggests seven prospects for the OSCA properties on Skidaway Island, as required by the contract. Actually nine prospects are listed. The draft report also contains a list of criteria for selecting such prospects from the enormous number of companies active in the vast field of oceanography. The basis for the development of those criteria were the locational advantages of the OSCA properties, the present expertise and capabilities of the Skidaway Institute of Oceanography and the present day trends and developments in Oceanography. A list of the locational advantages of the OSCA properties and a list of the present expertise and capabilities of SI also are included in this report. Furthermore, it contains a list of incentives for companies to use the OSCA properties classified according to the focus of interest of those companies.

Under the contractual agreement with OSCA thirteen more prospective names will be supplied under the second part of the contract. Our final report will contain the names of the twenty prospects and also the listings of criteria, advantages, etc. of the present report. Therefore, we request that all those who study this first draft report supply us with suggestions for improvements, additions to or deletions from those listings. That will permit us to produce the final report as a more finished, and we expect, more valuable tool. The final report also will contain a listing of the present trends in Oceanography.

Extensive use has been made and still will be made of the material on companies engaged in oceanography collected by the Industrial Development Division of Georgia Tech for the study Arthur D. Little did for OSCA.

CRITERIA FOR JUDGING WHETHER A COMPANY MIGHT BE A GOOD PROSPECT FOR THE
OSCA PROPERTIES ON SKIDAWAY ISLAND

Note: Figures between parentheses refer to the list of locational advantages of the OSCA properties included in this report.

1. Companies interested and/or active in the field of Aquaculture.

The OSCA properties are centrally located towards an area well adapted to experimental or commercial fishfarming. (4) SI has expertise and capabilities in this field.

2. Companies interested and/or active in the field of producing equipment and/or chemicals to combat water and air pollution.

The OSCA properties are centrally located towards an area which presents a wide variety of water and air pollution problems, consequently offers an excellent opportunity for experiments with pollution combatting equipment and chemicals. SI has expertise and analytical capabilities in this field and facilities to build or modify experimental equipment of medium or small size. Large size equipment could be built or modified by Savannah based fabricators. (2)

3. Companies active in the field of oceanography which already have manufacturing operations in the Savannah area.

Much manufacturing activity in oceanography is still tentative and experimental. Therefore, many companies follow a cautious approach and do not make huge investments until they get the feel of this new field. Consequently, they prefer to go to a locality where they are already active, which permits sharing of personnel and services. An example of this are the temporary facilities which Grumman has at West Palm Beach, Florida.

4. Smaller companies active in the field of oceanography.

Such companies, for the same reasons as under 3, and also because of their size, want to keep initial investments down and therefore would be interested in using all the facilities offered by OSCA and SI and draw as much as possible on the expertise available at the latter.

5. Companies interested in mining operations on the continental shelf and/or the Blake Plateau facing Savannah or mining operations in the Savannah coastal zone, including the marshes.

The OSCA properties face the broadest part of the Southeastern continental shelf and also of the Blake Plateau. (4) In this area exist phosphorite deposits and manganese nodules. (7) In the coastal area, including the marshes, phosphate deposits have been found. For the actual mining it will be an advantage to have a land base as close as possible to those mining operations. It also would be advantageous to establish such a base before the actual mining starts, to serve as the point from where experimental operations are directed.

6. Companies interested in antibiotics and drug production.

Because of its extremely diversified nature the Savannah coastal region (2) would be an extremely interesting field for searching for organisms with antibiotic properties. The OSCA property would be an excellent base for such searches. They also might want to utilize the capabilities of SI and the several Georgia medical schools it is connected with.

Companies which are interested in extracting medically interesting products from sea animals and plants again would find the OSCA properties an attractive location because it faces the broadest part of the South Atlantic continental shelf. (5,11) The nearness to the SI facilities and the possibilities for cooperation which it offers also would constitute an attraction.

7. Companies interested in producing fishmeal from trash fish.

The fisheries of the Savannah region could bring in considerable quantities of trash fish. Therefore, the OSCA properties constitute a fine base for experimental production of fishmeal from the trash fish. (5) The nearness of the SI facilities would be very valuable because of engineering and machine shop support. SI is interested in designing small size aboard fishmeal production plants.

8. Companies interested in the manufacture of improved commercial fishing gear.

Because of the fisheries in the Savannah region the OSCA property would be a good base for the designing and building of and experimenting with improved commercial fishing gear. (3) It seems likely that an arrangement could be made with Savannah region commercial fisheries to try out the equipment. The engineering and machine shop facilities of SI and the many machine shops available in Savannah would form additional valuable attractions.

FIRMS ACTIVE IN THE FIELD OF OCEANOGRAPHY SELECTED SO FAR AS GOOD PROSPECTS
FOR THE OSCA PROPERTIES BASED ON THE CRITERIA DEVELOPED IN THE PREVIOUS
CHAPTER

1. Because of their interest in Aquaculture

- a. Long Island Oyster Farms, Inc.
- b. Aqua Mar Culture Corp.
and possibly
- c. Hydrospace Research Corp., a subsidiary of EG&G

(Details on these firms are listed on the individual data sheets which follow)

2. Because they are familiar with our area and have already manufacturing operations here which would permit sharing of personnel and services

- a. American Cyanamid
They are looking for a location for a Southeastern research facility.
- b. Grumman Aircraft Engineering Corp.
It would be of interest to them to be in the vicinity of their Gulfstream plant as also of SI. Their present Florida based oceanographic facilities are only temporary.

3. Because an OSCA location would be close to mineral deposits they are interested in

- a. Kerr-McGee
They are interested in the coastal deposits of phosphates
- b. at a later date
Deep Sea Ventures, a Tenneco Subsidiary.
Once Tenneco becomes real serious about the mining of the manganese nodule on the Blake Plateau they will recognize the advantage Savannah has over their present location at Newport News, Va. for actual mining operations. Savannah is strategically located to the Blake Plateau, which will simplify such mining operations.

4. Because they have their headquarters in Georgia

- a. Scientific Atlanta
They are interested in a research operation near SI in a couple of years.

5. Because they are interested in a product developed by SI and are interested in a subject SI wants to explore

- a. Allis Chalmers

They are interested in

1. the underwater mobility device developed by SI
 2. sources of power for underwater devices. SI wants to explore reactive light metals as such sources.

These mutual interests should be used as a basis for contacts with Allis Chalmers and an opening wedge for the exploration of their possible use of the OSCA and SI facilities.

Last minute information:

General Dynamics Corp.

OSCA and SI might have an entrance here because:

1. Mr. Roger Lewis, their President, has visited Savannah
 2. Mr. William Ruth, Corporate Director, coordinator of oceanographic activities is a good friend of Dr. E.D. Harrison, former President of Georgia Tech. They have discussed SI at their last business meeting and plan to discuss it again at the next.

Data Sheets on Prospects
Arranged Alphabetically

FIRMS ENGAGED IN OCEANOGRAPHIC ACTIVITIES

1. Name: Allis-Chalmers Mfg. Co.

Date: Sept. 1969

Address: 1205 So. 70th St. West Allis, Wisc. 53214

Telephone: 414-475-2000

Name of contact: Dr. Clare P. Stamford, V. Pres. Research
414-475-2875

2. Research and development function formalized and conducted by especially designated personnel?

Yes

3. Research and development headquarters located?

Advanced Electrochemical Products Division West Allis, Wisc.

4. Research and development activities presently carried out --
In Southeast:

No

Other:

West Allis, Wisc.

5. Nature of interest in ocean-related activities:

Interested in power sources for submersible equipment

Interested in underwater mobility equipment

6. Interest in Skidaway Island?

Research:

Yes, because of interests indicated under 5. Those interests should be used as a means of acquainting Allis-Chalmers with the OSCA and SI facilities. It will permit making repeated contacts which could lead to some cooperative effort.

Manufacturing/processing: Have no oceanographic production facilities in the southeast. Their Standard Steel Corp. with plants in Decatur, Ill. and Los Angeles, Calif. builds fish meal plants. They might be interested in development work on small, aboard fishmeal plants.

7. Names/addresses of other persons in the firm who should be contacted:

Richard L. Davis, Program Manager, Advanced Electrochemical Products Division

1. Name: American Cyanamid Co.

Date: 9/69

Address: Wayne, N.J. 07470

Telephone: (203) 348-7331 (Research)

Name of contact: Dr. Ernest Ohsol, Dir.

Dr. J.F. Flagg, V.P. Research

2. Research and development function formalized and conducted by especially designated personnel?

yes

3. Research and development headquarters located?

1937 Main St. Stanford, Conn.

4. Research and development activities presently carried out --

In Southeast:

Not so far as oceanography is concerned

Other:

5. Nature of interest in ocean-related activities:

Water pollution, especially estuarial pollution, shellfish culture

(completed extensive report for State of Conn.)

Chemical luminescent for underwater use

6. Interest in Skidaway Island?

Research:

They are interested in a research facility in the Southeast. They recommended keeping in touch with them.

Manufacturing/processing:

7. Names/addresses of other persons in the firm who should be contacted:

Dr. Clyde Scanlay, Industrial Chemicals Division. Polymeres effective in combating water pollution.

(See also next page)

INDUSTRIAL INTERVIEWS

1. Name: Chemical Engrg. Dept - American Cyanamid Co. Date: 7/3/68
Address: Stamford, Conn. G. A. Hanson
Telephone: (203) 348-7331
Name of contact: Dr. Ernest Ohsol, Dir.

2. Research and development function formalized and conducted by especially designated personnel?
3. Research and development headquarters located:
4. Research and development activities presently carried out --
In Southeast:

Other:

Extensive research headquarters located at Stamford.

5. Nature of interest in ocean-related activities:

Savannah contact has covered general interests. Dr. Ohsol will check, however, and advise us of any additional areas of interest. Company has just completed extensive report on shellfish culture for State of Conn. Asked if Ga. involved or interested in such activity. He appeared interested in Sapelo marine biology projects and noted that engrg. and biology both are required for success in shellfish culture.

6. Interest in Skidaway Island?
Research:

Manufacturing/processing:

7. Names/addresses of other persons in the firm who should be contacted.

1. Name: Aqua Mar Culture Corp.

Date: 10/69

Address: 29 E. Fairfield Dr. Pensacola, Fla.

Telephone:

Name of contact: Ray Monroe, Jr.

2. Research and development function formalized and conducted by especially designated personnel?

3. Research and development headquarters located?

4. Research and development activities presently carried out --
In Southeast:

Pensacola, Fla., farming of Pompano

Other:

5. Nature of interest in ocean-related activities:

Aquaculture

6. Interest in Skidaway Island?

Research:

Address obtained from the Oyster Institute of North America. Mr. Monroe has not been directly contacted yet.

Manufacturing/processing:

7. Names/addresses of other persons in the firm who should be contacted:

INDUSTRIAL INTERVIEWS

1. Name: General Dynamics Corp. Date: June 20, 1968
Address: 1 Rockefeller Plaza, N. Y., N. Y. 10020
Telephone: (212) 245-5000
Name of contact: R. H. Prothro, Acting Dir. of Marine Systems
2. Research and development function formalized and conducted by especially designated personnel?
3. Research and development headquarters located:
4. Research and development activities presently carried out --
In Southeast:

Other: President's Council on Oceanography has made recommendations - should be
- Spends \$100 million on ocean activities, mostly submarines. checked.

- Scripps & Woods Hole.

- ADL is working on project to direct Gen. Dyn. long-range plans for involvement in oceanography.

5. Nature of interest in ocean-related activities:

- Explorations for oil through government contract now.
- Undersea stresses, corrosion, nuclear propulsion, undersea manipulators & controls, hydrodynamics, communications, acoustic terrain followers needed, underwater vision or navigation systems.
- Wide range of oceanographic activities.

6. Interest in Skidaway Island?

Research:

Asked for info/literature or visit regarding purposes, capabilities of SIO.

Will make grants for graduate research (\$10,000 to \$75,000) for oceanography & management work, similar to grants now issued to MIT, Scripps, other institutions, for fundamental R & D that will benefit-supplement their mfrg. activities.

Manufacturing/processing:

7. Names/addresses of other persons in the firm who should be contacted.

- 7 -

FIRMS ENGAGED IN OCEANOGRAPHIC ACTIVITIES

1. Name: Grumman Aircraft Engineering Corp. Date: 9/22/69
Address: South Oyster Bay Road, Bethpage, N.Y. 11714
Telephone: (516) 5/5-0574
Name of contact: Mr. Walter Scott, Director Ocean Systems Division
2. Research and development function formalized and conducted by especially designated personnel?
3. Research and development headquarters located?
4. Research and development activities presently carried out --
In Southeast:

Other:

5. Nature of interest in ocean-related activities:

6. Interest in Skidaway Island?
Research: and manufacturing
Could develop because their Savannah Gulfstream plant and SI are definite attractions. For oceanographic activities or equipment related to the continental shelf or the Blake Plateau they agree Savannah has an excellent location. Their operation at W. Palm Beach, Fla. is only temporary. Mr. Scott advised to keep in touch every 6 months.

Manufacturing/processing:

7. Names/addresses of other persons in the firm who should be contacted:

(See also next page)

INDUSTRIAL INTERVIEWS

1. Name: Grumman Aircraft Engineering Corp. Date: 7/12/68
Address: South Oyster Bay Rd., Bethpage, N. Y. 11714
Telephone: (516) 575-0574, Ext. 3507
Name of contact: Dr. Charles Mack, Director of Research

2. Research and development function formalized and conducted by especially designated personnel?

Yes

3. Research and development headquarters located: Bethpage, L. I.
Tend to do most research inhouse, but uses some consultants (20-30 of them) from many disciplines in universities. Utilizes few outside contracts.

4. Research and development activities presently carried out --
In Southeast:

West Palm Beach (telephone 842-4828)
(844-3482)

PX-15 assembly and testing

Hydrofoil Assembly and testing

(lease small shop-type building from W.P.B. Port Authority)

Other:

5. Nature of interest in ocean-related activities:

Largest corporate interest in ASW -- detection, classification, ocean scattering properties, currents, light layers, temperature gradients.

6. Interest in Skidaway Island?

Research:

Small possibility of interest in establishing research facility on Skidaway, but Mack is not really certain as to the full extent of the company's interest in oceanography.

Manufacturing/processing:

Proximity of Gulfstream plant in Savannah would provide some degree of incentive for establishment of additional manufacturing and/or research operations. Grumman now working on hovercraft development. Bidding on Dept. of Commerce study contract on high speed cushion track-held vehicle. Dept. of Commerce looking for site for track testing -- straight track and oval - totaling 10 to 15 miles. Need flat land, stable subsoil-thought to be looking in Arizona.

7. Names/addresses of other persons in the firm who should be contacted.

FIRMS ENGAGED IN OCEANOGRAPHIC ACTIVITIES

1. Name: Hydrospace Research Corp. subsidiary of EG&G Date: 9/29/69
Address: 5541 Nicholsen Lane, Rockville, Md. 20852
Telephone: 301-881-5000
Name of contact: Mr. John Hess
2. Research and development function formalized and conducted by especially designated personnel?
3. Research and development headquarters located?
4. Research and development activities presently carried out --
In Southeast:

Other:

5. Nature of interest in ocean-related activities:
The section of Mr. Hess is interested in aquaculture
6. Interest in Skidaway Island?
Research:
Mr. Hess was on vacation, will return Oct. 8. We were referred to him by
Mr. Ross Yeiter, Gen. Mgr.

Manufacturing/processing:

7. Names/addresses of other persons in the firm who should be contacted:

(see next page)

FIRMS ENGAGED IN OCEANOGRAPHIC ACTIVITIES

1. Name: EG&G International, Inc.

Date: June 13, 1968

Address: 95 Brookline Ave., Boston, Mass.

G.A. Hanson

Telephone: 617-267-9700

Name of contact: Mr. Kenneth J. Germeshausen, Chrm. & Dir. Research

2. Research and development function formalized and conducted by especially designated personnel?

3. Research and development headquarters located?

4. Research and development activities presently carried out --
In Southeast:

Oak Ridge, Tenn. is facility nearest Ga.
Fort Lauderdale, Fla.

Other:

Labs in New England & California (Santa Barbara - EG&G is forming a
bio. project with Scripps).

5. Nature of interest in ocean-related activities:

- Instrumentation - underwater location & seeing, measuring temp., Sal. Turb.
- Underwater camras, lighting.
- Hydrodynamics, hull design, ship board sounds are being studied for military
- Aids to fishermen.
- Ocean survey, oil, minerals (floor & ocean subsurface)
- Developing marine farming

6. Interest in Skidaway Island?

Research:

On new instrumentation for above areas. EG&G will be pleased to learn more
about SI through correspondence or visits by Ga. or SI reps.

Manufacturing/processing:

Now building products for ASW, instrumentation - may expand into new areas.
Ocean farming may develop into production level and SI may be considered
as farm area by EG&G.

7. Names/addresses of other persons in the firm who should be contacted:

Ross Yerter, Gen. Mgr. of subsdy., EG&G International, Bedford, Mass.
Handles oceanographic activities.

FIRMS ENGAGED IN OCEANOGRAPHIC ACTIVITIES

1. Name: Kerr-McGee

Date: 9 & 10/69

Address: Kerr-McGee Bldg., Oklahoma City, Okla. 73102

Telephone: 405-236-1313

Name of contact: Mr. A.T.F. Seale, Sr. V.P.

Mr. W.R. Ford, box 6361, Savannah, Ga. 31405 355-6551

2. Research and development function formalized and conducted by especially designated personnel?

3. Research and development headquarters located?

4. Research and development activities presently carried out --
In Southeast:

Other:

5. Nature of interest in ocean-related activities:

6. Interest in Skidaway Island?

Research:

So far it has not been explored whether Kerr-McGee is interested in the OSCA properties. Mr. Ford indicated this might be useful. Dr. E.L. Cheatum is exploring the possibilities of research work for SI. Whether it would be politically advisable for OSCA to explore this possibility is not for us to decide.

Manufacturing/Processing:

Names/addresses of other persons in the firm who should be contacted:

(See also next page)

INDUSTRIAL INTERVIEWS

1. Name: Kerr-McGee Corp. Date: 7/9/68
Address: Kerr-McGee Building
Telephone: 405-236-1313
Name of contact: Dr. V. L. Mattson, Vice President-Research
2. Research and development function formalized and conducted by especially designated personnel?
Directed by: Dr. Mattson
3. Research and development headquarters located:
Usually contacted.
4. Research and development activities presently carried out --
In Southeast:
None

Other:

Company does not have research capabilities for developing new off-shore minning techniques, therefore interested in learning more about SIO.

5. Nature of interest in ocean-related activities:

Oil-gas exploration has been project since World War II. Also, mineral development of off-shore and estuarial properties, which is of particular interest at Savannah.

6. Interest in Skidaway Island?
Research:

Develop new and improved methods of hydro dredging, processing of material after extraction, recovery and reuse of land. Very willing to discuss R & D project needs of company and SIO capabilities.

Manufacturing/processing:

7. Names/addresses of other persons in the firm who should be contacted.
Mr. A. T. F. Seale, Sr. Vice President, working on Savannah project now.
→ 7/10/68 Contacted Mr. Seale, who stated the company would be very interested in R & D projects in mineral mining of the ocean. He feels the coastal zoning proposed by University of Georgia has much merit.

FIRMS ENGAGED IN OCEANOGRAPHIC ACTIVITIES

1. Name: Long Island Oyster Farms Date: Sept. 1969
Address: Box 94, West Sayville, N.Y.
Telephone: 516-AN1-6380/516-LT9-0259
Name of contact: Mr. George Vanderborgh, Jr.
2. Research and development function formalized and conducted by especially designated personnel?
3. Research and development headquarters located?
Long Island, N.Y.
4. Research and development activities presently carried out --
In Southeast:

In the Florida area

Other:

In Louisiana

5. Nature of interest in ocean-related activities:
Aquaculture

6. Interest in Skidaway Island?
Research:

Yes, especially the work they are doing in aquaculture.

Manufacturing/processing:

He is interested in the possibilities of commercial fish farming in our area especially of the type of fin fish or shell fish which command a high price on the market.

7. Names/addresses of other persons in the firm who should be contacted:

FIRMS ENGAGED IN OCEANOGRAPHIC ACTIVITIES

1. Name: Scientific Atlanta, Inc.

Date: 9/69

Address: 3845 Pleasantdale Road

Telephone: 404-938-2930

Name of contact: Mr. Glen R. Robinson, Pres.

2. Research and development function formalized and conducted by especially designated personnel?
3. Research and development headquarters located?
4. Research and development activities presently carried out --
In Southeast:

Other:

5. Nature of interest in ocean-related activities:

6. Interest in Skidaway Island?

Research:

They are still interested in putting up independent research facilities on Skidaway Island in a couple of years. Mr. Robinson is a member of the OSCA board, therefore automatically keeps in contact with developments.

Manufacturing/processing:

7. Names/addresses of other persons in the firm who should be contacted:

(See also next page)

INDUSTRIAL INTERVIEWS

Date: 5/15/68

1. Name: Scientific Atlanta, Inc.
Address: 3345 Pleasantdale Rd., Doraville, Ga.
Telephone: (404) 938-2930
Name of contact: Glen R. Robinson, Pres.
2. Research and development function formalized and conducted by especially designated personnel?
Yes
3. Research and development headquarters located:
Atlanta
4. Research and development activities presently carried out --
In Southeast:
Atlanta - principally defense-oriented electronic tracking systems

Other:

Plastic containers

5. Nature of interest in ocean-related activities:

Underwater sound research and instrument development
Marine communications
Sonar echo testing

6. Interest in Skidaway Island?

Research:

Same as #5. Could do independent research or provide contract support to SIO
Anticipate staff of 100 people in next 3 to 4 years. 20 professional engineers/scientists; 60 skilled technicians; 20 administrative support personnel.

Manufacturing/processing:

7. Names/addresses of other persons in the firm who should be contacted.

None

LOCATIONAL ADVANTAGES OF THE OSCA PROPERTIES ON SKIDAWAY ISLAND FOR FIRMS
INTERESTED IN OCEANOGRAPHIC RESEARCH AND/OR PRODUCTION WORK

(Basis for selecting companies interested in doing oceanographic research
or production work at Savannah, Georgia, and also basis for a brochure on
the Institute to be sent to such companies)

1. Firms located on the OSCA Skidaway properties are in an excellent position to study the South Atlantic coastal waters, the South Atlantic continental shelf, the Blake Plateau, and that part of the Atlantic Ocean which extends beyond them because they will have easy access to those areas via the Skidaway and Wilmington rivers and the 36-foot channel (authorized depth 40 feet) extending over the bar from the mouth of the Savannah River and because they will be centrally located to them. Most oceanographic research vessels now afloat can utilize the Institute's docks on the Skidaway River. Larger vessels can utilize the nearby Savannah harbor facilities.
2. Firms operating from the OSCA Skidaway properties are well located to do research on water composition and water pollution. Furthermore, SI has competence and is already active in this field. Skidaway Island is close to both polluted and unpolluted rivers and creeks and is relatively close to important sources of water pollution. The extremely varied nature of the South Atlantic coast close to Savannah, presenting innumerable estuaries, inlets, lagoons, sandbanks, beaches, marshes, small and large islands -- many covered with dense vegetation, creates the possibility to investigate the effects of water and air pollution on a great number of different coastal environments, including life in the ocean on and above the continental shelf.
3. Firms on the OSCA property will be well located to do research on ways and means to improve present day methods of fishing, catching, or collecting marine and coastal water animals. The Savannah region has well developed commercial fishing activities consisting of important catches of shrimp, crab, and oysters. It also possesses several seafood industries. Those seafood industries, like most seafood industries along the South Atlantic coast, have a larger production than corresponds with the Savannah based fishing activities. In other words, they have to bring in fresh fish from other areas to satisfy the demand. This points to opportunities to increase the efficiency of those fishing activities. SI has expertise in the basic

engineering sciences as well as the design capabilities to handle such assignments. It also possesses a machine shop capable of handling most machine work, fitted out with a 10" lath, a milling machine, several small laths, band saws, etc. Another factor is the proximity of the Marine Institute of the University of Georgia on Sapelo Island. This institute concentrates on basic biological research, with special emphasis on how the existing ecologies function; SI is oriented towards basic and marine engineering and oceanography and concentrates more on how existing environments can be changed through those sciences to bring aquaculture to peak production. This means that the two institutes complement one another in a very effective manner.

4. Skidaway Island is ideally located for firms which want to engage in fish farming (aquaculture) research. SI is well equipped to do this; in fact, is already active in this field. The island offers a strategic location for experimental fish farming on a semicommercial scale and also for full scale commercial fish farming because it is surrounded by almost endless marshlands and innumerable shallow estuaries, inlets, lagoons, sandbanks and islands -- parts of which are regularly flooded, which at relatively small expense could be transformed into fish farms. There are also opportunities for aquaculture in the relatively shallow water over the continental shelves.^{1/} Here, again, the proximity to the Marine Institute of the University of Georgia on Sapelo Island (see under 3) is extremely valuable.
5. Firms on the OSCA property will be well located to carry out research in connection with the production of fishmeal, for animal and human consumption, as a by-product of fishing activities or as a product of fish farming. (See under 3 and 4) Important quantities of fishmeal are constantly imported into Savannah harbor from Peru which shows that Savannah is close to important markets for this product. One is Gainesville, Georgia, perhaps the county's largest concentration of broiler industries. SI is interested in research on the creation of small aboard plants to produce fish meal from trash fish.

^{1/} Sam Barnes, "Farming the Sea - The Arriving Age of Aquaculture", Machine Design, December 1967, p 22.

6. Skidaway Island is a strategic base to investigate the food and mineral producing potentials of the South Atlantic continental shelf and also the Blake Plateau. Savannah, and consequently the island, faces the broadest part of that shelf and the plateau, measuring from Savannah in a direction perpendicular to the coastline. (See Map , a reduced copy of part of a map published by the Geological Survey.) Gordon J.F. MacDonald who was chairman of President's Science Advisory Committee panel that studied the most effective use of the sea writes of the continental shelves: ".....the economically important continental shelves. In addition to the minerals on them, their shallow plant-rich waters are also the preferred habitat of most of the world's presently commercially desirable fish."^{1/} In the same vein, John P. Craven, Chief Scientist of the Navy's Special Project Office and Chief Scientist of the Navy's Deep Submergence Systems Project, writes: ". . . the continental shelf area where a large share of the ocean's exploitable resources are to be found."^{2/} The island also would be a good location to study the weather in the air and in the ocean above the continental shelf. This is of great importance for short term weather predictions which are urgently needed for mining and oil exploration and production operations on the shelf.
7. A Skidaway Island based operation will be well located to investigate the opportunities for mining manganese and phosphorite nodules. The map on page 4/ of Gordon J. F. MacDonald's article "What's in the Ocean," International Science and Technology, April 1967, reproduced here shows a broad band of phosphorite facing Savannah on the edge of the continental shelf, as also an extensive field of manganese nodules just off the continental shelf on the Blake Plateau. (For the manganese nodules, the indications are tentative because they are based on limited samples taken at widely separated locations.)
8. For companies which want to experiment with and design oceanographic vessels and large pieces of oceanographic equipment and components, Savannah

^{1/} "What's in the Ocean?" International Science and Technology, April 1967, p 43.

^{2/} "Working in the Sea," International Science and Technology, April 1967, p 53.

CLASSIFICATIONS BY FOCUS OF INTEREST OF INCENTIVES FOR A FIRM TO UTILIZE THE
OSCA PROPERTIES

A research or industrial organization active in the field of oceanography might contemplate a Savannah, Ga. based operation on the OSCA property because:

- A.) SI has expertise and capabilities in their field of interest and because Savannah offers them some locational advantages available at few other locations.
- B.) SI has expertise and capabilities in their field but a Savannah location does not offer them special advantages.
- C.) A Savannah location gives them special advantages not available at most other locations, but SI cannot offer them expertise or capabilities in the field they are interested in.

It will be clear that in most cases the reasons under "A" present the strongest incentive. Fields of interest, grouped according to the incentives above are:

Note: the numbers between parentheses refer to the corresponding number of the list of the OSCA properties' locational advantages.

- A.)
 - 1. Aquaculture (fish farming) (4)
 - 2. Advanced equipment for commercial fishing (3)
 - 3. Equipment and chemicals used to combat water and air pollution (2)
 - 4. Small, aboard, low cost processing systems to convert trash fish into fishmeal. (5)
 - 5. Research on mining manganese nodules from the Blake Plateau and phosphorite from the slope of the continental shelf. (6) Also phosphate from the coastal area, including the marshes.
 - 6. Research into the possibilities of producing antibiotics from organisms living in marshes, lagoons, estuaries, inlets, coastal waters or on or above the continental shelf. Extraction of drugs generally from sea animals and plants. (16, also same reasons as apply to 4)

- B.)
1. Small size mobility equipment
 2. Light, reactive metal based power systems for submersibles and mobility equipment
 3. All equipment the design of which utilizes to a considerable extent the basic engineering sciences of heat transfer, fluid flow, thermodynamics and applications of underwater acoustics.
- C.)
1. Coastal protective works, especially protection of beaches (9)
 2. Testing out of submersibles and other large scale underwater equipment to be used on the Blake Plateau.

PRESENT CAPABILITIES OF THE SKIDAWAY INSTITUTE OF OCEANOLOGY

ENGINEERING SCIENCES

1. Design and construction of experimental aquaculture equipment
2. Research on and experimental construction of improved commercial fishing equipment
3. Designing, building and testing small submersible mobility equipment
4. Research on the suitability of light, reactive metals as underwater power sources
5. Research on and design and experimental construction of oceanographic equipment based on the applications of:
 - a. fluid flow
 - b. heat transfer
 - c. thermodynamics
 - d. acoustics

LIFE SCIENCES

1. Experimental fish farming
2. Research on:
 - a. Environmental requirements for fish farming (aquaculture)
 - b. Nutrition
 - c. Control of diseases
 - d. Genetics
3. Economic evaluation of aquaculture programs
4. Assistance to freshwater and oceanic fisheries
5. Effects of marine food on human nutrition

PHYSICAL SCIENCES

1. Marine Chemistry
 - a. Water and air pollution
 - b. Effectiveness of equipment and chemicals to combat water and air pollution
 - c. Chemistry of sea water, chemical reactions in the sea, at the sea-air interface and at the sea-sediment interface
 - d. Analysis of marine minerals and sediments
2. Marine Physics
 - a. Marine geophysics and geophysical prospecting
 - b. Study of ocean and coastal currents, temperature distribution and other physical properties

3. Marine Geology

- a. Exploitation of mineral resources
- b. Formation of marine sediments
- c. Marine volcanism

A-1199-001-002

PROSPECTS FOR THE OSCA FACILITIES ON SKIDAWAY ISLAND
SAVANNAH, GEORGIA

Prepared for the
Ocean Science Center of the Atlantic Commission

By
Robert E. Van Geuns



Project A-1199-001-002



Engineering Experiment Station
GEORGIA INSTITUTE OF TECHNOLOGY
Atlanta, Georgia

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Industrial Development Division
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December 1969

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INTRODUCTION

This report covers a study done for the Ocean Science Center of the Atlantic Commission (OSCA) under contracts A-1199-001 and A-1199-002. Its object was to indicate some 20 good prospects for the OSCA research and industrial park, adjacent to the Skidaway Institute of Oceanography (SI) on Skidaway Island. It includes and extends the preliminary draft report issued September 1969. Based on a discussion with Captain Thomas H. Suddath, the new Executive Director of OSCA, of the preliminary draft report, it was decided to change somewhat the approach and instead of concentrating on exactly 20 prospects to indicate promising fields of oceanographic activity and specialized fields of interest in the Savannah area for some companies and to indicate for each field a number of promising prospects. As a result, Chapter II of this final report is different from the corresponding section of the preliminary draft report. Prospects enumerated in that section are now classified under the following fields of interest:

1. Aquaculture
2. Water pollution and water pollution abatement
3. Antibiotics and drugs from organisms living in the ocean and from coastal waters
4. Suits for commercial and semi-commercial diving
5. Electronic gear
6. Mining from the sea
7. Companies which already have facilities in the Savannah area and are active in the field of oceanography
8. Companies with miscellaneous interests

The selection of those fields of interest was based largely on the list of criteria for selecting prospects developed in Chapter I of this report. That list in turn was developed from the locational advantages of the OSCA properties (Chapter IV), the present expertise and capabilities of the Skidaway Institute of Oceanology (Chapter VIII) and the present-day trends and developments in oceanography (Chapter VI). Some use also was made of a list of incentives for firms to utilize the OSCA properties classified by focus of interest of those companies (Chapter V).

Extensive use has been made of the material on companies engaged in oceanography collected by the Industrial Development Division of Georgia Tech for the study Arthur D. Little did for OSCA.

I. CRITERIA FOR JUDGING WHETHER A COMPANY MIGHT BE A GOOD PROSPECT
FOR THE OSCA PROPERTIES ON SKIDAWAY ISLAND

Note: Figures between parentheses refer to the list of locational advantages of the OSCA properties included in this report.

1. Companies interested and/or active in the field of aquaculture

The OSCA properties are centrally located toward an area well-adapted to experimental or commercial fish farming. (4) SI has expertise and capabilities in this field.

2. Companies interested and/or active in the field of producing equipment and/or chemicals to combat water and air pollution

The OSCA properties are centrally located toward an area which presents a wide variety of water and air pollution problems and, consequently, offers an excellent opportunity for experiments with pollution-combating equipment and chemicals. SI has expertise and analytical capabilities in this field and facilities to build or modify experimental equipment of medium or small size. Large-size equipment could be built or modified by Savannah-based fabricators. (2)

3. Companies active in the field of oceanography which already have manufacturing operations in the Savannah area

Much manufacturing activity in oceanography is still tentative and experimental. Therefore, many companies will follow a cautious approach and will not make huge investments until they get the feel of this new area of activity. Consequently, they will prefer to go to a locality where they are already active, which permits sharing of personnel and services. An example of this are the temporary facilities which Grumman has at West Palm Beach, Florida.

4. Smaller companies active in the field of oceanography

Such companies, for the same reasons as under 3, and also because of their size, want to keep initial investments down; therefore, they would be interested in using all the facilities offered by OSCA and SI and would draw as much as possible on the expertise available at the latter.

5. Companies interested in mining operations on the continental shelf and/or the Blake Plateau facing Savannah or mining operations in the Savannah coastal zone, including the marshes

The OSCA properties face the broadest part of the southeastern continental shelf and also of the Blake Plateau. (4) In this area exist phosphorite deposits and manganese nodules. (7) In the coastal area, including the marshes, phosphate deposits have been found. For actual mining, it might be an advantage to have a land base as close as possible to those mining operations from which to direct them. It also could be advantageous to establish such a base before the actual mining begins, to serve as the point from which experimental operations would be directed. Closeness to SI could be an asset.

6. Companies interested in antibiotics and drug production

Because of its extremely diversified nature, the Savannah coastal region (2) would be an extremely interesting field for searching for organisms with antibiotic properties. The OSCA property would be an excellent base for such searches. Firms in this field also might want to utilize the capabilities of SI and the several Georgia medical schools with which it is connected. Companies which are interested in extracting medically interesting products from sea animals and plants again would find the OSCA properties an attractive location because it faces the broadest part of the south Atlantic continental shelf. (5, 11) The nearness to the SI facilities and the possibilities for cooperation which it offers also would constitute an attraction.

7. Companies interested in producing fishmeal from trash fish

The fisheries of the Savannah region could bring in considerable quantities of trash fish. Therefore, the OSCA properties constitute a fine base for experimental production of fishmeal from the trash fish. (5) The proximity of the SI facilities would be very valuable because of engineering and machine shop support. SI is interested in designing small-size ship-board fishmeal production plants.

8. Companies interested in the manufacture of improved commercial fishing gear

Because of the fisheries in the Savannah region the OSCA property would be a good base for designing, building, and experimenting with improved commercial fishing gear. (3) It seems likely that an arrangement could be

made with commercial fisheries in the Savannah region to try out the equipment. The engineering and machine shop facilities of SI and the many machine shops available in Savannah would form additional valuable attractions.

9. Companies which use in their manufacturing processes a great deal of female help

Because Savannah's industry uses mainly men workers, the area has a certain surplus of female help. (See "Coastal Labor Survey: A Statistical Analysis of the Available Labor Supply in Five Coastal Counties," published by the Industrial Development Division of Georgia Tech.) The most likely candidates are companies which presently manufacture in high-wage areas.

a. Companies producing electronic gear

That part of their production which has become more or less standardized can be manufactured in low-wage areas by female workers.

(See "Micro Electronic Circuits," published by the Industrial Development Division of Georgia Tech.)

b. Companies producing suits for commercial and non-commercial diving

Suits for commercial and non-commercial diving are manufactured mainly by women. Savannah's potential female labor supply could be of interest to such manufacturers. West Coast manufacturers might be interested in an additional East Coast plant to reduce transportation costs to the large eastern market.

II. PROSPECTS ARRANGED BY PROMISING FIELDS OF OCEANOGRAPHY AND BY SPECIALIZED INTERESTS IN THE SAVANNAH, GEORGIA, AREA

Note: Numbers between parentheses refer to the list of criteria on pages 1-3 of this report. Data sheets for most of the companies listed in this chapter are supplied in Chapter III.

1. Aquaculture

The OSCA properties should be attractive to companies who want to practice aquaculture in the Savannah area on a semi-commercial or commercial basis. Skidaway Island would become the base from which they directed such operations. This would enable them to draw on SI's expertise and experimental facilities on a continuing basis. (1)

Companies to be contacted:

General Foods

Long Island Oyster Farms, Inc.

Aqua Mar Culture Corporation

H. J. Heinz Company

Castle & Cook, Inc. (Bumble Bee Seafoods Division)

2. Water Pollution and Water Pollution Abatement

Companies active in the field of water pollution abatement could use the OSCA properties as a base to:

- a. assemble and test water purification equipment in the Savannah area;
- b. test water-purifying chemicals in the Savannah area;
- c. study the effect of water pollution on the many different types of natural surroundings present in the Savannah region and on the coastal waters. (2)

They could draw on the expertise and experimental facilities of SI and utilize their vessels.

Companies to be contacted:

American Cyanamid

Hercules

Comtel Corporation (Oceanography & Pollution Research Corporation, Springfield, Michigan, is a subsidiary)

Glow Corporation

Trans Union Corporation (Fluor Products Company, subsidiary)

3. Antibiotics and Drugs from Organisms Living in the Ocean and in Coastal Waters

Companies active in those fields could use the OSCA properties as a base from which to conduct the search for such organisms in the rivers, creeks, estuaries, inlets, marshlands, and coastal waters of the south Atlantic coast and in the ocean over the southeastern continental shelf. SI could supply valuable assistance by making available vessels and their experimental facilities. Through SI such companies could draw on the resources of the medical school of Emory University and the Medical College of Georgia. (6)

Companies to be contacted:

Lederle Laboratories (a division of American Cyanamid)
Abbot Laboratories
Charles Pfizer & Company, Inc.
Squibb Beech-Nutt, Inc.
Merck & Company, Inc.

4. Suits for Commercial and Semi-Commercial Diving

Diving suits generally are made by women. Consequently, Savannah's potential supply of female workers could be of interest to such manufacturers, especially those in high-wage areas. (9b)

Companies to be contacted:

Parkway Fabricators (South Amboy, N. J.)
Dacor Corporation (Skokie, Illinois)
Aqua Terra, Inc. (Coatsville, Pennsylvania)^{1/}
White Stag Manufacturing Company (Portland, Oregon)
Harvey's Wet Suits (Seattle, Washington)^{1/}
Sea Suits of California (Costa Mesa, California)^{1/}
Sportsways (Paramount, California)^{1/}

Companies on the West Coast should be approached on the basis of saving transportation costs to the eastern market and on the basis of lower labor costs. Companies in southern California probably also have low labor costs

^{1/} No details on these companies are available. For addresses, see page 6.

because of the availability of Mexican labor. They should be approached on the basis of savings in transport costs alone.

A list of wet suit manufacturers is presented below.

WET SUIT MANUFACTURERS

Ski'N Dive
14610 Lake Wood Boulevard
Bellflower, California 90706

Sea Suits of California
821 West 18th Street
Costa Mesa, California

Bayley Suit
P. O. Box 99
Fields Landing, California 95537

Sea-Sarong
19017 Leadora Avenue
Glendora, California 91740

Lunada Bay Enterprises
P. O. Box 606 - Dept. SD
Hermosa Beach, California

Skindiving Unlimited
8716 La Mesa Boulevard
La Mesa, California 92041

Healthways
5340 West 102nd Street
Los Angeles, California 92704

Sportsways
7701 East Compton
Paramount, California 90724

Dive-N-Surf
540 North Broadway
Redondo Beach, California 90277

The Diving Locker
1020 Grand Avenue
Pacific Beach
San Diego, California

W. J. Voit Rubber Corporation
3801 South Harbor Boulevard
Santa Ana, California 92704

U. D. Divers Company
3323 West Warner
Santa Ana, California

Seamless Rubber Company
253 Hallock Avenue
New Haven, Connecticut 06503

Dacor Corporation
5190 Church Street
Skokie, Illinois

Parkway Fabricators
348 Bordontown Avenue
South Amboy, New Jersey 08879

White Stag Manufacturing Company
Water Sports Division
5203 S. E. Johnson Creed Blvd.
Portland, Oregon 97206

Aqua Terra, Inc.
371 Fleetwood Street
Coatsville, Pennsylvania

Imperial
D. H. Distributors
606 North Montgomery
Bremerton, Washington

Harvey's Wet Suits
10847 First Avenue South
Seattle, Washington 98163

The Market Buoy
11007 Meridian Avenue North
Seattle, Washington 98133

Source: How to Make Money in Oceanography, page 21.

5. Electronic Gear

The more standardized components of electronic gear can be manufactured in lower-wage areas by women.^{1/} Savannah's potential supply of female workers will be attractive to such manufacturers. (9a) They also might be interested in being near SI.

Companies to be contacted:

Bendix Corporation (Many of its divisions manufacture products which could be assembled and for which parts could be made by female workers. See list of divisions below.)

Texas Instruments, Inc.

BENDIX CORPORATION DIVISIONS

Electro-Optics Division
1975 Green Road
Ann Arbor, Michigan 48107
General Manager: K. R. Stephanz
(313) 633-3311

Electrodynamics Division
11600 Sherman Way
N. Hollywood, California 91605
General Manager: J. G. Weldon
(213) 765-1010

Environmental Science Division
1400 Taylor Avenue
Towson, Maryland 21204
President: W. Lob
(301) 825-5200

Instruments & Life Support Division
Box 4508
Davenport, Iowa 52808
Manager: E. Burks
(319) 324-9101

Pioneer-Central Division
Hickory Grove Road
Davenport, Iowa 52808
General Manager: G. A. Lewthwaite
(319) 324-9101

Semiconductor Division
South Street
Holmdel, New Jersey 07733
General Manager: A. J. Harcher
(201) 747-5400

United Geophysical Corporation
2650 E. Foothill Boulevard
Pasadena, California 91109
President: M. Weingarten
(213) 795-0421

Source: Oceanology International, June 1969, p. 39.

^{1/} See "Micro Electronic Circuits: A Manufacturing Opportunity in Savannah," published by the Industrial Development Division of Georgia Tech.

6. Mining from the Sea

Companies interested in mining operations on the continental shelf and/or the Blake Plateau facing Savannah or mining operations in the Savannah coastal zone, including the marshes, might find it convenient to direct their exploratory, experimental operations and perhaps, later on, the actual mining operations from a land base centrally located to their area of interest. An operational office on Skidaway Island could, if desired, use some of the services SI offers. (5)

Companies with which to keep in contact:

Deepsea Ventures, Inc., a Tenneco subsidiary
Kerr McGee

7. Companies which already have facilities in the Savannah area and are active in the field of oceanography

Now that the first great enthusiasm for oceanography has settled down somewhat, many companies take a more cautious approach to the subject. This means that they will not make large initial investments until they have gotten some feel for the real potentials. One way to avoid such large initial investments is to put up research and/or manufacturing facilities near existing facilities, which permits sharing of personnel and services. (3)

Companies to be contacted:

Grumman
American Cyanamid Company
Kaiser
Hercules

8. Companies with Miscellaneous Interests

- a. Allis Chalmers. They are interested in sources of power for underwater devices and have expressed interest in SI's preliminary studies in that field. Also, they are interested in SI's underwater mobility device.

The company has recently undergone some important changes in management and now appears eager to create a new corporate image. This can be used as an opening wedge to explore with them the possibility of utilizing the OSCA properties.

- b. General Dynamics Corporation. The following facts should be used in making initial contacts:
1. Mr. Roger Lewis, company President, has visited Savannah.
 2. Mr. William Ruhe, Corporate Director, Marine Engineering and Program Development, is a good friend of Dr. E. D. Harrison, Georgia Tech's former President. They have discussed and again will discuss SI at their business meetings.
- c. Hydrospace Research Corporation, a subsidiary of EG&G. They are interested in any new, promising, high-technology area. If SI can propose something which looks good, they will consider it.
- d. Scientific Atlanta. They are still interested in an operation on Skidaway Island, in the foreseeable future.

III. DATA SHEETS ON PROSPECTS
ARRANGED ALPHABETICALLY

FIRMS ENGAGED IN OCEANOGRAPHIC ACTIVITIES

1. Name: Abbott Laboratories Date: 12/69
Address: 14th St. & Sheridan Road, North Chicago, Ill. 60064
Telephone:
Name of contact: C.S. Brown, Exec. V.P. Scientific Operations
(not contacted yet)
2. Research and development function formalized and conducted by especially designated personnel?
3. Research and development headquarters located?
North Chicago, Ill.
4. Research and development activities presently carried out --
In Southeast:
not to our knowledge

Other:

5. Nature of interest in ocean-related activities:
Their scientist: S.J. Anderson, M.D. talked at the "Drugs from the Sea" conference. This seems to indicate that Abbott Laboratories is interested.
6. Interest in Skidaway Island?
Research:
Has to be investigated.

Manufacturing/processing:

7. Names/addresses of other persons in the firm who should be contacted:

FIRMS ENGAGED IN OCEANOGRAPHIC ACTIVITIES

1. Name: Allis-Chalmers Mfg. Co.

Date: Sept. 1969

Address: 1205 So. 70th St. West Allis, Wisc. 53214

Telephone: 414-475-2000

Name of contact: Dr. Clare P. Stamford, V. Pres. Research
414-475-2815

2. Research and development function formalized and conducted by especially designated personnel?

Yes

3. Research and development headquarters located?

Advanced Electrochemical Products Division West Allis, Wisc.

4. Research and development activities presently carried out --
In Southeast:

No

Other:

West Allis, Wisc.

5. Nature of interest in ocean-related activities:

Interested in power sources for submersible equipment

Interested in underwater mobility equipment

The company has recently undergone a major reorganization. They are anxious to establish a new corporate image.

6. Interest in Skidaway Island?

Research:

Yes, because of interests indicated under 5. Those interests should be used as a means of acquainting Allis-Chalmers with the OSCA and SI facilities. It will permit making repeated contacts which could lead to some cooperative effort.

Manufacturing/processing: Have no oceanographic production facilities in the southeast. Their Standard Steel Corp. with plants in Decatur, Ill. and Los Angeles, Calif. builds fish meal plants. They might be interested in development work on small, aboard fishmeal plants.

7. Names/addresses of other persons in the firm who should be contacted:

Richard L. Davis, Program Manager, Advanced Electrochemical Products Division

FIRMS ENGAGED IN OCEANOGRAPHIC ACTIVITIES

1. Name: American Cyanamid Co.

Date: 9/69

Address: Wayne, N.J. 07470

Telephone: (203) 348-7331 (Research)

Name or contact: Dr. Ernest Ohsol, Dir.

Dr. J.F. Flagg, V.P. Research

2. Research and development function formalized and conducted by especially designated personnel?

yes

3. Research and development headquarters located?

193/ Main St. Stanford, Conn.

4. Research and development activities presently carried out --
In Southeast:

Not so far as oceanography is concerned

Other:

5. Nature of interest in ocean-related activities:

Water pollution, especially estuarial pollution, shellfish culture, drugs from
the ocean. 1/

(completed extensive report for State of Conn.)

Chemical luminescent for underwater use

6. Interest in Skidaway Island?
Research;

They are interested in a research facility in the Southeast. They
recommended keeping in touch with them.

Manufacturing/processing:

7. Names/addresses of other persons in the firm who should be contacted:

Dr. Clyde Scanlay, Industrial Chemicals Division. Polymeres effective

in combating water pollution.

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(See also next page)

1/ See also under "Lederle Laboratories.

INDUSTRIAL INTERVIEWS

1. Name: Chemical Engrg. Dept - American Cyanamid Co.^{1/} Date: 7/3/68
Address: Stamford, Conn. G. A. Hanson
Telephone: (203) 348-7331
Name of contact: Dr. Ernest Ohsol, Dir.

2. Research and development function formalized and conducted by especially designated personnel?
3. Research and development headquarters located:
4. Research and development activities presently carried out --
In Southeast:

Other:

Extensive research headquarters located at Stamford.

5. Nature of interest in ocean-related activities:

Savannah contact has covered general interests. Dr. Ohsol will check, however, and advise us of any additional areas of interest. Company has just completed extensive report on shellfish culture for State of Conn. Asked if Ga. involved or interested in such activity. He appeared interested in Sapelo marine biology projects and noted that engrg. and biology both are required for success in shellfish culture.

6. Interest in Skidaway Island?
Research:

Manufacturing/processing:

7. Names/addresses of other persons in the firm who should be contacted.

^{1/} See previous page

1. Name: Aqua Mar Culture Corp.

Date: 10/69

Address: 29 E. Fairfield Dr. Pensacola, Fla.

Telephone:

Name of contact: Ray Monroe, Jr.

2. Research and development function formalized and conducted by especially designated personnel?

3. Research and development headquarters located?

4. Research and development activities presently carried out --
In Southeast:

Pensacola, Fla., farming of Pompano

Other:

5. Nature of interest in ocean-related activities:

Aquaculture

6. Interest in Skidaway Island?

Research:

Address obtained from the Oyster Institute of North America. Mr. Monroe has not been directly contacted yet.

Manufacturing/processing:

7. Names/addresses of other persons in the firm who should be contacted:

FIRMS ENGAGED IN OCEANOGRAPHIC ACTIVITIES

1. Name: Castle & Cook, Inc.; Bumble Bee Seafoods Div. Date: 12/69
Address: P.O. Box 2990, Honolulu, 2, Hawaii
Telephone:
Name of contact: not contacted yet
2. Research and development function formalized and conducted by especially designated personnel?
3. Research and development headquarters located?
4. Research and development activities presently carried out --
In Southeast:
not in S.E., but absorbed Maryland Tuna Corp., Cambridge, Md. Has plants on West coast and Cambridge, Ind.

Other:

5. Nature of interest in ocean-related activities:
Aquaculture

6. Interest in Skidaway Island?
Research:

has to be investigated. Should be approached on the basis of complimenting their West coast operations with operations on the Southeastern Atlantic coast.

Manufacturing/processing:

7. Names/addresses of other persons in the firm who should be contacted:

FIRMS ENGAGED IN OCEANOGRAPHIC ACTIVITIES

1. Name: Chas. Pfiser & Co., Inc.

Date: 12/69

Address: 235 E. 42nd St. New York, N.Y. 10017

Telephone:

Name of contact: J.J. Powers, Jr. Chmn., Pres. & Chief Exec. Officer
(not contacted yet)

2. Research and development function formalized and conducted by especially designated personnel?

3. Research and development headquarters located?

Maywood, N.J.

4. Research and development activities presently carried out --
In Southeast:

not to our knowledge

Other:

5. Nature of interest in ocean-related activities:

Their interest should be aroused on the basis of what Lederle Laboratories
(American Cyanamid) is doing

Drugs and antibiotics from the ocean and from coastal waters.

6. Interest in Skidaway Island?

Research:

has to be investigated

Manufacturing/processing:

7. Names/addresses of other persons in the firm who should be contacted:

1. Name: Clow Corp. (subsidiary: Yeomans Brothers) Date: 12/69
Address: Exec. Plaza East, 1211 W. 22nd St., Oak Brook, Ill. 60521
Telephone: (312) 344-9600

Name of contact: Mr. Albert J. Fox, Director of Marketing, Yeomans Bros.,
1999 Ruby St., Melrose Park, Ill., 60160 (not contacted yet)

2. Research and development function formalized and conducted by especially designated personnel?
3. Research and development headquarters located?
4. Research and development activities presently carried out --
In Southeast:
not to our knowledge

Other:

5. Nature of interest in ocean-related activities:
water treatment, water pollution

6. Interest in Skidaway Island?
Research:

has to be investigated. An invitation to visit the SI installations might be helpful.

Manufacturing/processing:

7. Names/addresses of other persons in the firm who should be contacted:

1. Name: Comtel Corp. (subsidiary: Oceanography and Pollution Research Corp.) Date: 12/69
Address: Southfield, Mich.
(Detroit Area)
Telephone: (313) 352-4650
Name of contact: Mr. J.B. Chesquiere, Exec. V.P., Comtel.
2. Research and development function formalized and conducted by especially designated personnel?
3. Research and development headquarters located?
4. Research and development activities presently carried out --
In Southeast:

Other:

5. Nature of interest in ocean-related activities:
Analysis of water pollution, do not manufacture equipment or chemicals, analyze pollution conditions with special methods.
6. Interest in Skidaway Island?
Research:
not investigated yet. They should be approached on the basis of experimenting with their methods in our area in collaboration with SI.

Manufacturing/processing:

7. Names/addresses of other persons in the firm who should be contacted:

FIRMS ENGAGED IN OCEANOGRAPHIC ACTIVITIES

1. Name: Dacor Corporation

Date: 12/69

Address: 5190 Wt. Church St., Skokie, Ill.

Telephone: (312) YO6-8611

Name of contact: not contacted yet

2. Research and development function formalized and conducted by especially designated personnel?

3. Research and development headquarters located?

4. Research and development activities presently carried out --
In Southeast:

Other:

5. Nature of interest in ocean-related activities:

Diving suits

6. Interest in Skidaway Island?
Research:

Manufacturing/processing:

7. Names/addresses of other persons in the firm who should be contacted:

FIRMS ENGAGED IN OCEANOGRAPHIC ACTIVITIES

1. Name: Deepsea Ventures, Inc. a Tenneco subsidiary Date: 12/69
Address: 12388 Warwick Blvd. Newport News, Va. 23606
Telephone: (703) 595-5581
Name of contact: Mr. Arnold J. Rothstein, Director of Marketing and Programs

2. Research and development function formalized and conducted by especially designated personnel?

Yes

3. Research and development headquarters located?

Newport News, Va.

4. Research and development activities presently carried out--
In Southeast:

yes, at Newport News, Va.

other:

5. Nature of interest in ocean-related activities:

Deepsea mining and exploration

6. Interest in Skidaway Island?

Research:

Not at this time. Might develop if they start more active exploration of the Blake Plateau, especially for Manganese nodules. A group of OSCA people visited their Newport News headquarters and they visited Savannah having a meeting with the SPA people at SPA headquarters.

. Manufacturing/processing:

7. Names/addresses of other persons in the firm who should be contacted:

INDUSTRIAL INTERVIEWS

1. Name: General Dynamics Corp. 1/ . Date: June 20, 1968
Address: 1 Rockefeller Plaza, N. Y., N. Y. 10020
Telephone: (212) 245-5000
Name of contact: R. H. Prothro, Acting Dir. of Marine Systems
2. Research and development function formalized and conducted by especially designated personnel?
3. Research and development headquarters located:
4. Research and development activities presently carried out --
In Southeast:

Other: President's Council on Oceanography has made recommendations - should be
- Spends \$100 million on ocean activities, mostly submarines. checked.

- Scripps & Woods Hole.

- ADL is working on project to direct Gen. Dyn. long-range plans for involvement in oceanography.

5. Nature of interest in ocean-related activities:

- Explorations for oil through government contract now.
- Undersea stresses, corrosion, nuclear propulsion, undersea manipulators & controls, hydrodynamics, communications, acoustic terrain followers needed, underwater vision or navigation systems.
- Wide range of oceanographic activities.

6. Interest in Skidaway Island?

Research:

Asked for info/literature or visit regarding purposes, capabilities of SIO.

Will make grants for graduate research (\$10,000 to \$75,000) for oceanography & management work, similar to grants now issued to MIT, Scripps, other institutions, for fundamental R & D that will benefit-supplement their mfrg. activities.

Manufacturing/processing:

7. Names/addresses of other persons in the firm who should be contacted.

FIRMS ENGAGED IN OCEANOGRAPHIC ACTIVITIES

1. Name: General Dynamics Corp. 1/

Date: 9/69

Address: 1 Rockefeller Plaza, N.Y., N.Y. 10020

Telephone: (212) 245-5000

Name of contact: Mr. William Ruhe, Corporate Director, Marine Engineering and Program Development

2. Research and development function formalized and conducted by especially designated personnel?

3. Research and development headquarters located?

4. Research and development activities presently carried out--
In Southeast:

See previous page

other:

5. Nature of interest in ocean-related activities:

See previous page

6. Interest in Skidaway Island?

Research: Mr. William Ruhe is a good friend of Dr. E.D. Harrison, Georgia Tech's former President. He reported that SI has been discussed and again will be discussed at their business meetings. Mr. Roger Lewis, President of the Corporation has visited Savannah.

. Manufacturing/processing:

7. Names/addresses of other persons in the firm who should be contacted:

1/ See also previous page

1. Name: General Foods

Date: 10/23/69

Address: White Plains, N.Y. 250 North St. 10602

Telephone: (914) 631-6400

Name of contact: Director of Research, Mr. A.S. Clausi

Manager Technical Applications, Dr. B.F. Buchanan

2. Research and development function for: Utilized and conducted by especially designated personnel?

3. Research and development headquarters located?

Tarrytown, N.Y.

4. Research and development activities presently carried out --
In Southeast:

Apparently not.

Other:

5. Nature of interest in ocean-related activities:

Aquaculture

Interest in Skidaway Island?

Research:

They visited the Skidaway Institute of Oceanography installations. They might go into cat fish and shrimp culture at a later date.

Manufacturing/processing:

Names/addresses of other persons in the firm who should be noted:

FIRMS ENGAGED IN OCEANOGRAPHIC ACTIVITIES

1. Name: Grumman Aircraft Engineering Corp. 1/ Date: 9/22/69
Address: South Oyster Bay Road, Bethpage, N.Y. 11714
Telephone: (516) 575-0574
Name of contact: Mr. Walter Scott, Director Ocean Systems Division
2. Research and development function formalized and conducted by especially designated personnel?
3. Research and development headquarters located?
4. Research and development activities presently carried out --
In Southeast:

Other:

5. Nature of interest in ocean-related activities:
6. Interest in Skidaway Island?
Research: and manufacturing
Could develop because their Savannah Gulfstream plant and SI are definite attractions. For oceanographic activities or equipment related to the continental shelf or the Blake Plateau they agree Savannah has an excellent location. Their operation at W. Palm Beach, Fla. is only temporary. Mr. Scott advised to keep in touch every 6 months.

Manufacturing/processing:

7. Names/addresses of other persons in the firm who should be contacted:

INDUSTRIAL INTERVIEWS

1. Name: Grumman Aircraft Engineering Corp. 1/ Date: 7/12/68
Address: South Oyster Bay Rd., Bethpage, N. Y. 11714
Telephone: (516) 575-0574, Ext. 3507
Name of contact: Dr. Charles Mack, Director of Research
2. Research and development function formalized and conducted by especially designated personnel?
Yes
3. Research and development headquarters located: Bethpage, L. I.
Tend to do most research inhouse, but uses some consultants (20-30 of them) from many disciplines in universities. Utilizes few outside contracts.
4. Research and development activities presently carried out --
In Southeast:
West Palm Beach (telephone 842-4828)
(844-3482)
PX-15 assembly and testing
Hydrofoil Assembly and testing
(lease small shop-type building from W.P.B. Port Authority)

Other:

5. Nature of interest in ocean-related activities:
Largest corporate interest in ASW -- detection, classification, ocean scattering properties, currents, light layers, temperature gradients.

6. Interest in Skidaway Island?
Research:
Small possibility of interest in establishing research facility on Skidaway, but Mack is not really certain as to the full extent of the company's interest in oceanography.

Manufacturing/processing:
Proximity of Gulfstream plant in Savannah would provide some degree of incentive for establishment of additional manufacturing and/or research operations. Grumman now working on hovercraft development. Bidding on Dept. of Commerce study contract on high speed cushion track-held vehicle. Dept. of Commerce looking for site for track testing - straight track and oval - totaling 10 to 15 miles. Need flat land, stable subsoil-thought to be looking in Arizona.

7. Names/addresses of other persons in the firm who should be contacted.

FIRMS ENGAGED IN OCEANOGRAPHIC ACTIVITIES

1. Name: H.J. Heinz Company Date: 12/69
Address: P.O. Box 57, Pittsburgh, Pa. 15230
Telephone:
Name of contact: J.F. Allen, Exec. V.P.
(not contacted yet)
2. Research and development function formalized and conducted by especially designated personnel?
3. Research and development headquarters located?
apparently at Pittsburgh
4. Research and development activities presently carried out --
In Southeast:
not to our knowledge

Other:

5. Nature of interest in ocean-related activities:
Aquaculture

6. Interest in Skidaway Island?
Research:
has to be investigated

Manufacturing/processing:

7. Names/addresses of other persons in the firm who should be contacted:

1. Name: Hercules, Inc.^{1/}

Date: 12/69

Address: 910 Market St., Wilmington, Del. 19899

Telephone: (302) 656-9811

Name of contact: Mr. Kirkley of the Public Relations Department

2. Research and development function formalized and conducted by especially designated personnel?

yes

3. Research and development headquarters located?

Wilmington, Del.

4. Research and development activities presently carried out --
In Southeast:

None, except mfg. applied research at plants

Other:

ocean-related research carried on at ABL, Cumberland, Md. - leases
from U.S.N.

5. Nature of interest in ocean-related activities:

Their environmental services division, part of their Cellulose and Protein
Department, is interested in water treatment and water pollution abatement.
Contact: Mr. G.D. Floyd, Technical Mgr. of Environmental Services Division
at address above.

6. Interest in Skidaway Island?

Research:

has to be investigated

Manufacturing/processing:

7. Names/addresses of other persons in the firm who should be contacted:

^{1/} See also two next pages.

INDUSTRIAL INTERVIEWS

1. Name: Hercules, Inc.^{1/} Date: 6/28/68
Address: Wilmington, Del. 19899 G. A. Hanson
Telephone: (302) 656-9811, Ext. 8704
Name of contact: Charles E. Jordan, Mgr. of Fiber Structures, Chem. Propulsion Div.

2. Research and development function formalized and conducted by especially designated personnel?

Yes

3. Research and development headquarters located:

Wilmington, De. (pure research) corporate level research for gov't., military, commercial

4. Research and development activities presently carried out --
In Southeast:

None, except mfg. applied research at plants.

Other:

Ocean-related research carried on at ABL, Cumberland, Md. - leases from USN.

5. Nature of interest in ocean-related activities:

High-pressure vehicle hulls - spiral wound filament (graphite, boron, glass) - based on rocket technology. Special hulls for acoustical properties for USN have been developed. 20-25% resin, balance glass material with no voids - high pressure & high electrical resistance.

6. Interest in Skidaway Island?

Research:

Mr. Jordan would like to go into detail for R & D projects.

Most likely interest is in materials for undersea vehicles. Asked if we have any projects in this area now, and stated he will contact us further regarding timing of project development.

Manufacturing/processing:

7. Names/addresses of other persons in the firm who should be contacted.

On 6/24, contacted Dr. Robert Cairns, Vice-Pres, Res., who stated the applied engineering feature of SIO will be appealing to industry. He arranged for Mr. Jordan (above) to contact us for additional information on SIO.

SAVANNAH INTERVIEWS

1. Expected changes in next five years which might affect the economy of the Savannah area.

Employment

Sees no significant change in either during next 5 years.

Capital investment

2. Research and development function formalized and conducted by especially designated personnel?

Yes

3. Research and development activity headquarters, if not in Savannah.
Research Center, Wilmington, Delaware

4. Research and development activities presently carried out --

Type

Locally
In Southeast
Other

None
Ballistics

Alleghaney Ballistics Labs, Cumberland, Maryland -- for the U.S.N.

5. Degree of interest in creating or adding to local research/development function. Previously interested in graduate educational facilities in technical fields to attract and maintain professional employees of high caliber. See no particular association between this manufacturing activity and a research activity.

6. Any specific interest in ocean-related activities?

If so, specify: Manufacturer's of underwater seismographic explosives. Hercules has recently acquired Texas Company - Aquatrol - connected with water and pollution control. Wholly owns Haveg Ind's - 19808 Greenbank Rd., Wilmington, Del. - Makes filament wound reinforced fiberglass missile cases, vessels, pipes. Has proposals in for building underwater vessels and submarines-have made underwater escape chambers.

7. Any interest in Skidaway Island?

Knows of no local application

(Over)

8. Names/addresses of other persons in the firm who should be contacted.

Dr. Robert W. Cairns, V. P., Hercules, Inc., Wilmington, Delaware - in charge of research.

Interviewed: Plant Manager, Barron Boyd and Jim Reed

Local research is applied and primarily customer-oriented.

FIRMS ENGAGED IN OCEANOGRAPHIC ACTIVITIES

1. Name: Hydrospace Research Corp. subsidiary of EG&G 1/ Date: 9/29/69
Address: 5541 Nicholsen Lane, Rockville, Md. 20852
Telephone: 301-881-5000
Name of contact: Mr. John Hess, Director of Planning Washington Corporate Office
Suite 804, 1501 Wilson Blvd., Arlington, Va. 22209, (703) 524-8688
2. Research and development function formalized and conducted by especially designated personnel?
3. Research and development headquarters located?
4. Research and development activities presently carried out --
In Southeast:

Other:

5. Nature of interest in ocean-related activities:
The section of Mr. Hess is interested in aquaculture

6. Interest in Skidaway Island?
Research:
Mr. Hess was on vacation, will return Oct. 8. We were referred to him by
Mr. Ross Yeiter, Gen. Mgr.
Later on Mr. Hess informed me that at the moment they are not really interested in aquaculture, but they will keep an open mind. If SI can propose something which looks good, they will consider it. They are interested in any new, promising, high technology area.

Manufacturing/processing:

7. Names/addresses of other persons in the firm who should be contacted:

FIRMS ENGAGED IN OCEANOGRAPHIC ACTIVITIES

1. Name: EG&G International, Inc. 1/

Date: June 13, 1968

Address: 95 Brookline Ave., Boston, Mass.

G.A. Hanson

Telephone: 617-267-9700

Name of contact: Mr. Kenneth J. Germeshausen, Chrm. & Dir. Research

2. Research and development function formalized and conducted by especially designated personnel?

3. Research and development headquarters located?

4. Research and development activities presently carried out --
In Southeast:

Oak Ridge, Tenn. is facility nearest Ga.
Fort Lauderdale, Fla.

Other:

Labs in New England & California (Santa Barbara - EG&G is forming a bio. project with Scripps).

5. Nature of interest in ocean-related activities:

- Instrumentation - underwater location & seeing, measuring temp., Sal. Turb.
- Underwater camras, lighting.
- Hydrodynamics, hull design, ship board sounds are being studied for military
- Aids to fishermen.
- Ocean survey, oil, minerals (floor & ocean subsurface)
- Developing marine farming

6. Interest in Skidaway Island?

Research:

On new instrumentation for above areas. EG&G will be pleased to learn more about SI through correspondence or visits by Ga. or SI reps.

Manufacturing/processing:

Now building products for ASW, instrumentation - may expand into new areas.
Ocean farming may develop into production level and SI may be considered as farm area by EG&G.

7. Names/addresses of other persons in the firm who should be contacted:

Ross Yerter, Gen. Mgr. of subdy., EG&G International, Bedford, Mass.
Handles oceanographic activities.

1/ See also previous page.

1. Name: Kaiser Industries Corporation
Address: 300 Lakeside Drive, Oakland, Calif. 94604
Telephone: 415- 271-2211
Name of contact: Mr. William R. Hoyt, Mgr. of Communications

Date: 12/29/69

2. Research and development function formalized and conducted by especially designated personnel?

3. Research and development headquarters located?

4. Research and development activities presently carried out --
In Southeast:

none to our knowledge

Other:

5. Nature of interest in ocean-related activities:

Kaiser Engineers, contact Mr. Chandler P. Young, Mgr. Business Development
Interested in pure water from sea water and water treatment. Kaiser Aerospace
and Electronics, Corp. contact Mr. William Freistat, Exec. V.P. Interested
in electronic systems and equipment. Kaiser Aluminum & Chemical Corp., contact
Mr. Robert A. Sandberg, V.P. They are the parent company of Kaiser Agricultural
Chemicals (Southern Nitrogen) All these persons can be contacted at the address

6. Interest in Skidaway Island?
Research:

at the top of this sheet.

Manufacturing/processing:

7. Names/addresses of other persons in the firm who should be contacted:

1. Name: Kerr-McGee 1/

Date: 9 & 10/69

Address: Kerr-McGee Bldg., Oklahoma City, Okla. 73102

Telephone: 405-236-1313

Name of contact: Mr. A.T.F. Seale, Sr. V.P.

Mr. W.R. Ford, box 6361, Savannah, Ga. 31405 355-6551

2. Research and development function formalized and conducted by especially designated personnel?
3. Research and development headquarters located?
4. Research and development activities presently carried out --
In Southeast:

Other:

5. Nature of interest in ocean-related activities:

6. Interest in Skidaway Island?
Research;

So far it has not been explored whether Kerr-McGee is interested in the OSCA properties. Mr. Ford indicated this might be useful. Dr. E.L. Cheatum is exploring the possibilities of research work for SI. Whether it would be politically advisable for OSCA to explore this possibility is not for us to decide.

Manufacturing/Processing:

Names/addresses of other persons in the firm who should be contacted:

INDUSTRIAL INTERVIEWS

1. Name: Kerr-McGee Corp. 1/ Date: 7/9/68
Address: Kerr-McGee Building
Telephone: 405-236-1313
Name of contact: Dr. V. L. Mattson, Vice President-Research
2. Research and development function formalized and conducted by especially designated personnel?
Directed by: Dr. Mattson
3. Research and development headquarters located:
Usually contacted.
4. Research and development activities presently carried out --
In Southeast:
None

Other:

Company does not have research capabilities for developing new off-shore mining techniques, therefore interested in learning more about SIO.

5. Nature of interest in ocean-related activities:

Oil-gas exploration has been project since World War II. Also, mineral development of off-shore and estuarial properties, which is of particular interest at Savannah.

6. Interest in Skidaway Island?

Research:

Develop new and improved methods of hydro dredging, processing of material after extraction, recovery and reuse of land. Very willing to discuss R & D project needs of company and SIO capabilities.

Manufacturing/processing:

7. Names/addresses of other persons in the firm who should be contacted.

Mr. A. T. F. Seale, Sr. Vice President, working on Savannah project now.
7/10/68 Contacted Mr. Seale, who stated the company would be very interested in R & D projects in mineral mining of the ocean. He feels the coastal zoning proposed by University of Georgia has much merit.

1. Name: Lederle Laboratories, Div. of American Cyanamid ^{1/} Date: 10/69
Address: Pearl River, N.Y.

Occupation:

Name of contact: Gen. Mgr. Borden R. Putnam Underwater Explorer, Dr. Paul
Director of Research, Dr. Ira Ringler Burkholder

2. Research and development function formalized and conducted by specialized personnel:

3. Research and development headquarters located?
Pearl River, N.Y.

4. Research and development activities presently carried on --
In Southeast:

They have no base in the Southeast, but their underwater explorer, Dr. Paul Burkholder, recently has been exploring the Caribbean in search of drug producing sea animals and plants.

Owner:

5. Nature of interest in ocean-related activities:

Drugs from the sea.

6. Interest in Skidaway Island?
Research:

See data sheet on American Cyanamid. They should be approached as part of the total American Cyanamid approach aimed at bringing their research facilities to Skidaway Island.

Manufacturing/processing:

Names/addresses of other persons in the firm who should be contacted:

FIRMS ENGAGED IN OCEANOGRAPHIC ACTIVITIES

1. Name: Long Island Oyster Farms Date: Sept. 1969

Address: Box 94, West Sayville, N.Y.

Telephone: 516-AN1-6380/516-LT9-0259

Name of contact: Mr. George Vanderborgh, Jr.

2. Research and development function formalized and conducted by especially designated personnel?

3. Research and development headquarters located?

Long Island, N.Y.

4. Research and development activities presently carried out --
In Southeast:

In the Florida area

Other:

In Louisiana

5. Nature of interest in ocean-related activities:

Aquaculture

6. Interest in Skidaway Island?

Research:

Yes, especially the work they are doing in aquaculture.

Manufacturing/processing:

He is interested in the possibilities of commercial fish farming in our area especially of the type of fin fish or shell fish which command a high price on the market.

7. Names/addresses of other persons in the firm who should be contacted:

FIRMS ENGAGED IN OCEANOGRAPHIC ACTIVITIES

1. Name: Merck & Co., Inc.

Date: 12/69

Address: Rayway, N.J.

Telephone:

Name of contact: Max Tishler, Senior V.P. Research & Development
(not contacted yet)

2. Research and development function formalized and conducted by especially designated personnel?

3. Research and development headquarters located?

Rayway and Linden, N.J.

4. Research and development activities presently carried out--

In Southeast:

not to our knowledge

other:

5. Nature of interest in ocean-related activities:

Their interest should be aroused on the basis of what Lederle Laboratories (American Cyanamid) is doing; drugs and antibiotics from the ocean and coastal waters.

6. Interest in Skidaway Island?

Research:

has to be investigated

7. Manufacturing/processing:

7. Names/addresses of other persons in the firm who should be contacted:

FIRMS ENGAGED IN OCEANOGRAPHIC ACTIVITIES

1. Name: Parkway Fabricators (subsidiary of Great American Industries) Date: 12/69
Address: 348 Bordontown Ave., South Amboy, N.J.
Telephone:
Name of contact: Mr. Fred Weiss, Mgr.
2. Research and development function formalized and conducted by especially designated personnel?
3. Research and development headquarters located?
4. Research and development activities presently carried out --
In Southeast:

Other:

5. Nature of interest in ocean-related activities:
They manufacture suits for diving.

6. Interest in Skidaway Island?
Research:

Mr. Weiss has no interest just now but asked us to keep in contact/ He would like to receive a brochure on the OSCA properties on Skidaway Island.

Manufacturing/processing:

7. Names/addresses of other persons in the firm who should be contacted:

FIRMS ENGAGED IN OCEANOGRAPHIC ACTIVITIES

1. Name: Scientific Atlanta, Inc. 1/

Date: 9/69

Address: 3845 Pleasantdale Road

Telephone: 404-938-2930

Name of contact: Mr. Glen R. Robinson, Pres.

2. Research and development function formalized and conducted by especially designated personnel?
3. Research and development headquarters located?
4. Research and development activities presently carried out --
In Southeast:

Other:

5. Nature of interest in ocean-related activities:

6. Interest in Skidaway Island?

Research:

They are still interested in putting up independent research facilities on Skidaway Island in a couple of years. Mr. Robinson is a member of the OSCA board, therefore automatically keeps in contact with developments.

Manufacturing/processing:

7. Names/addresses of other persons in the firm who should be contacted:

1. Name: Scientific Atlanta, Inc. 1/. Date: 5/15/68
Address: 3845 Pleasantdale Rd., Doraville, Ga.
Telephone: (404) 938-2930
Name of contact: Glen R. Robinson, Pres.
2. Research and development function formalized and conducted by especially designated personnel?
Yes
3. Research and development headquarters located:
Atlanta
4. Research and development activities presently carried out --
In Southeast:
Atlanta - principally defense-oriented electronic tracking systems

Other:

Plastic containers

5. Nature of interest in ocean-related activities:
Underwater sound research and instrument development
Marine communications
Sonar echo testing
6. Interest in Skidaway Island?
Research:
Same as #5. Could do independent research or provide contract support to SIO
Anticipate staff of 100 people in next 3 to 4 years. 20 professional engineers/scientists; 60 skilled technicians; 20 administrative support personnel.

Manufacturing/processing:

7. Names/addresses of other persons in the firm who should be contacted.
None

1/ See also previous page

FIRMS ENGAGED IN OCEANOGRAPHIC ACTIVITIES

1. Name: Squibb Beech-Nut Inc. Date: 12/69
Address: 460 Park Ave., New York, N.Y. 10022
Telephone:

Name of contact: R.M. Furlaud, President & Chief Executive Officer
(not contacted yet)

2. Research and development function formalized and conducted by especially designated personnel?

3. Research and development headquarters located?
New Brunswick, N.J. and Three Bridges, N.J. (research farm)

4. Research and development activities presently carried out --
In Southeast:

Not to our knowledge

Other:

5. Nature of interest in ocean-related activities:

Their interest should be aroused on the basis of what Lederle Laboratories, (American Cyanamid) is doing; drugs and antibiotics from the ocean and from coastal waters.

6. Interest in Skidaway Island?
Research:

Has to be investigated

Manufacturing/processing:

7. Names/addresses of other persons in the firm who should be contacted:

1. Name: Texas Instruments Inc.

Date: 12/69

Address: P.O. Box 5474, Dallas, Texas 75222

Telephone:

Name of contact: Mr. J.F. Bucy, Component group V.P.

Mr. A.R. McCord, Equipment group V.P. (not contacted yet)

2. Research and development function formalized and conducted by especially designated personnel?

3. Research and development headquarters located?

Research centralized at Dallas, Texas

4. Research and development activities presently carried out --
In Southeast:

not to our knowledge

Other:

5. Nature of interest in ocean-related activities:

Oceanographic electronic and other instruments

6. Interest in Skidaway Island?

Research: has to be investigated (Use IDD's report prepared for the
SPA on micro electronic circuits)

Manufacturing/processing:

They manufacture at Dallas and Houston, Texas

7. Names/addresses of other persons in the firm who should be contacted:

1. Name: Trans Union Corporation

Date: 12/69

Address: 111 West Jackson Blvd. Chicago, Ill., 60604

Telephone:

Name of contact: Mr. T.B. O'Boyle, Group V.P., Water and waste treatment
(not contacted yet)

2. Research and development function formalized and conducted by especially designated personnel?

3. Research and development headquarters located?

4. Research and development activities presently carried out --
In Southeast:
not to our knowledge

Other:

5. Nature of interest in ocean-related activities:

waste water treatment, water pollution

6. Interest in Skidaway Island?

Research;

has to be investigated. An invitation to visit the SI installations might be helpful.

Manufacturing/processing:

7. Names/addresses of other persons in the firm who should be considered.

FIRMS ENGAGED IN OCEANOGRAPHIC ACTIVITIES

1. Name: White Stag Mfg. Co. (subsidiary: Hirsch Weis Canvas Products) Date: 12/69
Address: 5100 S.E. Harney, Portland, Oregon (Branches at Chicago, Los Angeles and N.Y.C.)
Telephone:
Name of contact: Not contacted yet
2. Research and development function formalized and conducted by especially designated personnel?
3. Research and development headquarters located?
4. Research and development activities presently carried out --
In Southeast:

Other:

5. Nature of interest in ocean-related activities:
Diving suits

6. Interest in Skidaway Island?
Research:

Manufacturing/processing:

7. Names/addresses of other persons in the firm who should be contacted:

Tangible assets over \$1,000,000

IV. LOCATIONAL ADVANTAGES OF THE OSCA PROPERTIES ON SKIDAWAY ISLAND FOR FIRMS INTERESTED IN OCEANOGRAPHIC RESEARCH AND/OR PRODUCTION WORK

(Basis for selecting companies interested in doing oceanographic research or production work at Savannah, Georgia, and also basis for a brochure on the Institute to be sent to such companies)

1. Firms located on the OSCA Skidaway properties are in an excellent position to study the south Atlantic coastal waters, the south Atlantic continental shelf, the Blake Plateau, and that part of the Atlantic Ocean which extends beyond them because they will have easy access to those areas via the Skidaway and Wilmington rivers and the 36-foot channel (authorized depth 40 feet) extending over the bar from the mouth of the Savannah River and because they will be centrally located to them. Most oceanographic research vessels now afloat can utilize the Institute's docks on the Skidaway River. Larger vessels can utilize the nearby Savannah harbor facilities.
2. Firms operating from the OSCA Skidaway properties are well-located to do research on water composition and water pollution. Furthermore, SI has competence and is already active in this field. Skidaway Island is close to both polluted and unpolluted rivers and creeks and is relatively close to important sources of water pollution. The extremely varied nature of the south Atlantic coast close to Savannah, with innumerable estuaries, inlets, lagoons, sandbanks, beaches, marshes, small and large islands, many covered with dense vegetation, presents the possibility of investigating the effects of water and air pollution on a great number of different coastal environments, including life in the ocean on and above the continental shelf.
3. Firms on the OSCA property will be well-located to do research on ways and means to improve present-day methods of fishing, catching, or collecting marine and coastal water animals. The Savannah region has well-developed commercial fishing activities consisting of important catches of shrimp, crab, and oysters. It also possesses several seafood industries. Those seafood industries, like most seafood industries along the south Atlantic coast, have a larger production than corresponds with the Savannah-based fishing activities. In other words, they have to bring in fresh fish from other areas to satisfy the demand. This points to opportunities to increase

the efficiency of those fishing activities. SI has expertise in the basic engineering sciences as well as the design capabilities to handle such assignments. It also possesses a machine shop capable of handling most machine work, fitted out with a 10" lathe, a milling machine, several small lathes, band saws, etc. Another factor is the proximity of the Marine Institute of the University of Georgia on Sapelo Island. This institute concentrates on basic biological research, with special emphasis on how the existing ecologies function; SI is oriented toward basic and marine engineering and oceanography and concentrates more on how existing environments can be changed through those sciences to bring aquaculture to peak production. This means that the two institutes complement one another in a very effective manner.

4. Skidaway Island is ideally located for firms which want to engage in fish farming (aquaculture) research. SI is well equipped to do this; in fact, it is already active in this field. The island offers a strategic location for experimental fish farming on a semi-commercial scale and also for full-scale commercial fish farming because it is surrounded by almost endless marshlands and innumerable shallow estuaries, inlets, lagoons, sandbanks, and islands -- parts of which are regularly flooded -- which at relatively small expense could be transformed into fish farms. There are also opportunities for aquaculture in the relatively shallow water over the continental shelves.^{1/} Here, again, the proximity to the Marine Institute of the University of Georgia on Sapelo Island (see 3 above) is extremely valuable.
5. Firms on the OSCA property will be well-located to carry out research in connection with the production of fishmeal, for animal and human consumption, as a by-product of fishing activities or as a product of fish farming. (See 3 and 4.) Important quantities of fishmeal are constantly imported into Savannah harbor from Peru, indicating that Savannah is close to important markets for this product. One is Gainesville, Georgia, perhaps the country's largest concentration of broiler industries. SI is interested in research on the creation of small shipboard plants to produce fishmeal from trash fish.

^{1/} Sam Barnes, "Farming the Sea - The Arriving Age of Aquaculture," Machine Design, December 1967, p. 22.

6. Skidaway Island is a strategic base to investigate the food and mineral producing potentials of the south Atlantic continental shelf and also the Blake Plateau. Savannah, and consequently the Island, faces the broadest part of that shelf and the plateau, measuring from Savannah in a direction perpendicular to the coastline. Gordon J. F. MacDonald, who was chairman of the President's Science Advisory Committee panel that studied the most effective use of the sea, writes of the continental shelves: ". . . the economically important continental shelves. In addition to the minerals on them, their shallow plant-rich waters are also the preferred habitat of most of the world's presently commercially desirable fish."^{1/} In the same vein, John P. Craven, Chief Scientist of the Navy's Deep Submergence Systems Project, writes: ". . . the continental shelf area where a large share of the ocean's exploitable resources are to be found."^{2/} The Island also would be a good location to study the weather in the air and in the ocean above the continental shelf. This is of great importance for short-term weather predictions which are urgently needed for mining and oil exploration and production operations on the shelf.
7. A Skidaway Island-based operation will be well-located to investigate the opportunities for mining manganese and phosphorite nodules. The map on page 4 of Gordon J. F. MacDonald's article "What's in the Ocean," International Science and Technology, April 1967, shows a broad band of phosphorite facing Savannah on the edge of the continental shelf on the Blake Plateau. (For the manganese nodules, the indications are tentative because they are based on limited samples taken at widely separated locations.)
8. For companies which want to experiment with and design oceanographic vessels and large pieces of oceanographic equipment and components, Savannah offers the advantage of possessing two shipyards which do ship repair and build barges, dredges, tugboats, and cranes, and also a company which

^{1/} "What's in the Ocean?" International Science and Technology, April 1967, p. 43.

^{2/} "Working in the Sea," International Science and Technology, April 1967, p. 53.

builds large-size container handling cranes. Those firms would be able to participate in construction work of large-size oceanographic equipment. Savannah also possesses 12 job shops -- shops which can do electrical work, instrument repair work, and supply other back-up services. (See Savannah Auxiliary Services Directory.) SI has capabilities in the basic engineering sciences and in design and possesses a small underwater mobility device for which a patent application has been filed.

9. Skidaway Island is well-located to study the basic factors involved in beach erosion. The Savannah coastal area possesses a great number of beaches, nearly all of which suffer from some kind of erosion.
10. The OSCA properties will be attractive to firms engaged in research work on production of drugs from sea organisms. Most of the animals under investigation so far live in coastal waters or on the continental shelves. Under no. 6, it already has been indicated that the Institute faces the broadest part of the south Atlantic continental shelf. Furthermore, the Institute is in close working relationship with several Georgia universities with well-developed medical schools.
11. Firms on the OSCA properties will have the advantage that their staff easily can keep in contact with professional circles. Savannah possesses a well-developed industrial complex which employs a great number of engineers and scientists. (See Savannah Manufacturers Directory.) It also possesses two four-year colleges, Armstrong State College and Savannah State College. Georgia Southern College, a four-year college with a graduate school, is only 53 miles from Savannah.
12. Once the bridge to Skidaway Island is finished (June 1970) firms on the OSCA properties will have easy access to Savannah's commercial airport, which has regular flights to Atlanta, Washington, D. C., New York City, and Miami.

V. CLASSIFICATIONS BY FOCUS OF INTEREST OF INCENTIVES
FOR A FIRM TO UTILIZE THE OSCA PROPERTIES

A research or industrial organization active in the field of oceanography might contemplate a Savannah, Georgia, based operation on the OSCA property for either one or both of the following reasons:

- A. SI has expertise and capabilities in their field of interest.
- B. A Savannah location gives them special advantages not available at most other locations.

Fields of interest, grouped according to the incentives above are as follows:

1. Incentives "A" and "B"
 - a. Aquaculture (fish farming). (4)^{1/}
 - b. Advanced equipment for commercial fishing. (3)
 - c. Equipment and chemicals used to combat water and air pollution. (2)
 - d. Small, shipboard, low-cost processing systems to convert trash fish into fishmeal. (5)
 - e. Research on mining manganese nodules from the Blake Plateau and phosphorite from the slope of the continental shelf. (6) Also phosphate from the coastal area, including the marshes.
 - f. Research into the possibilities of producing antibiotics from organisms living in marshes, lagoons, estuaries, inlets, and coastal waters or on or above the continental shelf. Extraction of drugs generally from sea animals and plants. (10)
2. Incentive "A"
 - a. Small-size mobility equipment.
 - b. Light, reactive metal-based power systems for submersibles and mobility equipment.
 - c. All equipment the design of which utilizes to a considerable extent the basic engineering sciences of heat transfer, fluid flow, thermodynamics, and applications of underwater acoustics.
3. Incentive "B"
 - a. Coastal protective works, especially protection of beaches. (9)
 - b. Testing out of submersibles and other large-scale underwater equipment to be used on the Blake Plateau.

^{1/} The numbers between parentheses refer to the corresponding number in the list of the OSCA properties' locational advantages.

VI. AREAS OF OCEANOGRAPHY PRESENTLY OF GREAT INTEREST

Exploration and Surveys

- oil and gas
- minerals
- metals

Research

- aquaculture
- food and drugs from sea
- equipment and tools for working and living underwater
- corrosion problems
- fishery by-products and trash fish utilization
- methods and equipment for underwater exploration for minerals and for underwater mining
- methods and equipment for underwater exploration for oil and gas and for underwater production of oil and gas
- marine electronics and instruments
- phosphate mining (coastal)
- power sources for underwater equipment
- water pollution and water pollution abatement
- weather forecasting (above and in the ocean)
- desalination

Production

- aquaculture of shellfish and high-value finfish
- fishing of shrimp and other higher-priced sea animals
- oil and gas
- sulfur, iron ore, diamonds, phosphate, magnesium, bromine, salt
- purified water

Manufacturing (large-scale)

- attack submarines
- buoys for data gathering
- recreational boats, including house boats
- other recreational water sports equipment
- ships for transportation of containers and/or barges
- large-size barges
- suits for scuba and other forms of diving, both recreational and commercial
- water pollution abatement equipment and chemicals

Construction Activities

- coastal protective works
- drilling rigs
- ports and harbors
- waterways

VII. AREAS OF OCEANOGRAPHY WHICH WILL BECOME OF GREAT INTEREST
IN ABOUT TEN YEARS OR MORE

Exploration and Surveys

oil and gas
minerals
metals

Research

nature and history of the ocean
food from the ocean
marine electronics and instruments
power sources for underwater equipment
water pollution and water pollution abatement
weather forecasting (above and in the ocean)
energy from waves, tides, and temperature differences

Production

drugs from the sea
food products from trash fish and other fishery by-products
aquaculture
mining of phosphorite
mining of manganese nodules
mining of some other minerals
sulfur
oil and gas
fishing for new species
purified water
chemicals, by-products from desalination plants

Manufacturing (large-scale)

specialized types of submersibles
equipment and tools for working and living underwater
marine electronics and instruments
power units for underwater use
recreational boats
water sports equipment
suits for recreational and commercial diving
desalination plants
equipment for aquaculture
equipment for underwater mining
equipment for underwater oil production
bigger and better research vessels
ships for transportation of containers and/or barges
large, specialized barges

Construction Activities

coastal protective works
drilling rigs
temporary structures for underwater mining
ports and harbors
waterways
buildings for working and living underwater

VIII. PRESENT CAPABILITIES OF THE SKIDAWAY INSTITUTE OF OCEANOLOGY

Engineering Sciences

1. Design and construction of experimental aquaculture equipment
2. Research on and experimental construction of improved commercial fishing equipment
3. Designing, building, and testing small submersible mobility equipment
4. Research on the suitability of light, reactive metals as underwater power sources
5. Research on and design and experimental construction of oceanographic equipment based on the applications of:
 - a. fluid flow
 - b. heat transfer
 - c. thermodynamics
 - d. acoustics

Life Sciences

1. Experimental fish farming
2. Research on:
 - a. environmental requirements for fish farming (aquaculture)
 - b. nutrition
 - c. control of diseases
 - d. genetics
3. Economic evaluation of aquaculture programs
4. Assistance to fresh water and oceanic fisheries
5. Effects of marine food on human nutrition

Physical Sciences

1. Marine chemistry
 - a. water and air pollution
 - b. effectiveness of equipment and chemicals to combat water and air pollution
 - c. chemistry of sea water, chemical reactions in the sea, at the sea-air interface and at the sea-sediment interface
 - d. analysis of marine minerals and sediments
2. Marine physics
 - a. marine geophysics and geophysical prospecting
 - b. study of ocean and coastal currents, temperature distribution and other physical properties

3. Marine geology

- a. exploitation of mineral resources
- b. formation of marine sediments
- c. marine volcanism