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ABSTRACT

This document constitutes the final report of efforts undertaken in regard to grant N00014-89J-3172. In this program, students from the MAST Academy and other public and private high schools in Dade County were placed in laboratory positions at three oceanographic institutions on Virginia Key, Miami, Florida during the summer of 1993. These students received direct supervision from faculty members of the Rosenstiel School of Marine and Atmospheric Science (RSMAS) and from staff scientists at the Atlantic Oceanographic and Meteorological Laboratories of the National Oceanic and Atmospheric Administration (AOML/NOAA) and at the Southeast Fisheries Center, National Marine Fisheries Service (SEFC/NMFS). This program enabled high school students the opportunity to work in a marine science research environment and to more accurately appraise career opportunities in oceanographic sciences.

This document constitutes the Final Report of efforts undertaken under:

Grant No. N00014-89-J-3172/P00003
R&T Project: 4231042--04

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April 13, 1994

Dr. Bernard Zahuranec
Scientific Officer
Department of the Navy
Office of Naval Research
800 N. Quincy Street
Arlington VA 22217-5000

Dear Sir:

We are enclosing our progress report (3 copies) of work performed under Agreement No. 00014-89J-3172 reference "Partial Support of MAST Academy Outreach Program". We are forwarding one copy to the administrative officer of ONR in Atlanta, one copy to the Director of NRL and twelve copies to DTIC.

Sincerely,

A handwritten signature in black ink that reads "Bruce R. Rosendahl". The signature is written in a cursive style with a prominent initial "B".

Bruce R. Rosendahl
Dean & Weeks Chair

ENCLOSURES

Rosenstiel School of Marine and Atmospheric Science
Office of the Dean
4600 Rickenbacker Causeway
Miami, Florida 33149-1098
(305) 361-4000
Fax (305) 361-4711

GRANT PURPOSE

The purpose of this grant was to provide funding to conduct a high-school intern program jointly with the Dade County Public Schools. This program was supported by both the National Oceanic and Atmospheric Administration and the Navy. The conduct of the program, the personnel and effort, and the use of funds for direct and indirect expenses were generally as set forth in the Grantees' proposal entitled, "Partial Support of MAST Academy Outreach Program" dated May 25, 1993. Eligibility for this program was limited to Dade County high school students who meet the following criteria:

- o Entering grades 11 or 12.
- o Possess a minimum overall grade point average of 2.5 (acceptable), and 3.0 for scientific and laboratory research jobs.
- o Possess a good attendance record.
- o Successful completion of one or more of these courses: Biology, Marine Biology, Ecology, Chemistry, Physics, Computer Applications.
- o Recommended as a high achiever and hard worker who possesses a positive attitude. The student must be self-directed and able to work independently, if necessary. The student must be punctual and dependable.
- o Provide their own daily transportation.
- o Completed the application and interview process.

EXECUTION OF THE PROGRAM

Faculty at the Rosenstiel School and scientists at the NOAA/AOML and SEFC/NMFS laboratories, especially those who had participated in previous summer intern programs, were sent a request for summer positions and asked to fill out a job description form. The completed forms were then sent to the MAST Academy, where the student applicants' skills were matched with specific job descriptions (i.e., those with computer and math skills were matched with a job in scientific data processing). Copies of the job descriptions are given in Appendix A. Faculty and scientists at the three labs were then contacted and interviews with the student applicants arranged. The final list of students and supervising faculty is given in Appendix B. The program encompassed the period from July 2 through August 20, 1993.

These summer internships were paid positions and were available at three federally supported oceanographic centers. They are:

- o University of Miami, Rosenstiel School of Marine and Atmospheric Science
- o National Oceanic and Atmospheric Administration, Atlantic Oceanographic and Meteorological Laboratories.
- o National Marine Fisheries Service, Southeast Fisheries Center.

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The terms of employment and opportunities in this program were as follows:

- o A maximum of fifteen summer internships were available through an application and interview process
- o Employment period was from July 2 through August 20, 1993.
- o One annual elective high school credit was earned.
- o Each student earned \$4.75 per hour for a 7.5 hour day and worked a total of 35 working days.

In addition this past year, for the first time, the program included the opportunity for up to five students to continue their internships during the fall semester. Three students chose this option and continued in their lab positions during after-school hours, on weekends and during holidays. This portion of the project was funded with residual funds from previous years support.

The 1993 timetable for this program was as follows:

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|--------------------|---|
| May 7 | Faculty position requests and job descriptions due in Dean's Office/RSMAS. UM administration of program carried out through this office. Job descriptions sent to MAST Academy program administrator. |
| May 7 | Student applications due in MAST office. |
| May 10-14 | Applications checked for completeness by MAST staff. |
| May 17-21 | Potential employers called and interviews scheduled. Faculty and scientist mentors called and interviews scheduled. |
| May 24- June 4 | Applicant interviews at job sites based on criteria stated on applications. |
| June 7-18 | Mentors notify MAST of applicant decisions. |
| June 18-30 | Students are notified of placement. MAST orientation for students with emphasis on job skills. |
| July 2 | Students report to Dean's Office/RSMAS for orientation and a tour of the Rosenstiel School and to complete paperwork related to hiring. |
| July 6 - August 20 | Students report to the job site Monday through Friday (or as arranged with mentor). |
| August 21-31 | Students make up missed days of work to complete 35-day assignment. |
| Sept - Dec | Fall interns continue working afterschool/weekends |

The program administrator for the summer internship program at the MAST Academy conducted a post-internship survey to assist the University in both the preparation of this final report and in order to properly evaluate the effectiveness of this program (see Appendix C). The program was assessed in terms of its impact on participating students in the following areas:

- o Subsequent career choice.
- o Mentor contact.
- o Job opportunities and employability.
- o Academic standing and choice of curriculum.
- o Environmental awareness.

As is shown by the preliminary results, a large proportion of the interns report a positive influence on their high school grades after the internship. This has been the most consistent result of this program; in fact several of the interns from each summer program, throughout the nine years of this program, have decided that science is the career they want and made plans to attend either the University of Miami Undergraduate Marine Science or Environmental Sciences Program, or a similar program at another university or college.

Many of the interns, especially those who found the summer intern experience stimulating or enriching, are taking or plan on taking advanced science courses including advanced placement biology, chemistry and physics. Those who do not plan on taking advanced science courses generally fall into three categories: those who find that science is "harder" than they expected and seem daunted by the amount of work involved in both studies and actual research; those who find it less interesting than expected (a very small proportion of the respondents); and those who do not have these types of courses available at the school they presently attend.

The role of the mentor has proven to be pivotal in the experience of the students; the goal of the program is not only exposure to laboratory techniques but to those marine scientists who are willing to serve as active role models for these students. There are several scientists who have shown a special willingness to train and educate by example and who open their research activities for these summer interns each year. The students cite these mentors' accessibility and patience and their willingness to communicate about the research being done as the most positive aspect of this student-mentor relationship. Another very positive aspect of the student-mentor relationship occurred when young women served their internship with a woman scientist or the Hispanic students had contact with Hispanic scientists. The student-mentor relationship is further enhanced by regular communication with the MAST staff coordinator who monitors progress of skill development, interpersonal relationships and work skills.

In past years we have made note of the continued contact between students and mentors after the summer internship has ended. It is usually these interns (who maintain contact with their mentors) who return for a second summer in the program. Because this contact has been such a consistently positive result of intern program, this year there was the additional option to continue an internship into the fall semester. Not only did the students benefit from additional training and skill development during these additional months, but

the mentors were able to have better trained individuals working in their labs. The time the mentors spent training an intern thus gave them a greater return on their investment of time, with the option to prolong the internship into the fall months.

In all cases where the administrators of the program have had personal communication with the student interns, there is a sense of excitement and interest in the sciences. More and more of the interns are entering and winning local (county) science fair awards; several of the interns have gone on to the state competition. The highest proportion of interns who choose science as their intended major in college have participated in the intern program a second year or chose to continue their internship in the fall semester. The mentoring process can thus be said to have a direct connection to subsequent career and academic choices.

This intern program was initially created primarily to provide disadvantaged or minority high school students with the opportunity for direct science research experience as a means of stimulating interest in the science. At this point it is specifically aimed at high school students to serve as an academic stimulus in the pre-college years. A perusal of the data gathered in the nine years of this program supports the yearly evaluation that this approach is effective in achieving its programmatic goals. A substantial proportion of the students not only benefit academically from their participation, but are exposed to a more realistic experience of what a marine science career entails, including the physical requirements of laboratory and oceanographic research. The interns who work at the Rosenstiel School are also exposed to the academic environment in a direct way through their contact with graduate students and professors. Through this contact, the high school interns have a more realistic sense of the length of studies and level of expertise required for a career in marine science. Lastly, by providing this educational stimulus to students from ethnic, social or economic backgrounds that are under-represented in the field of science (black, female and Hispanic) this program fulfills a national mandate to promote increased academic excellence in math and the sciences among American youth, as well as providing more opportunities to minority and disadvantaged youth.

In the early years of the program the intent was to provide opportunities for inner city youth in marine sciences and was administered jointly with the Dade County Public School System as the "Inner City Marine Program". This partnership formed between Dade County Public Schools and the University of Miami is one of the most important aspects of this program -- for it benefits both students and the community, especially disadvantaged or minority students, by effective coordination of local educational resources. Though the focus of the program has shifted in the past three years from being primarily for inner city youth, the program still serves to attract a large percentage of black and Hispanic students (at least 50% of the interns), thus continuing to provide this much-needed opportunity to those economically disadvantaged. It is another indication

of the success of the program that career opportunity and job eligibility have been improved for these students.

This program had such continued success in achieving its goals that it was incorporated into the curriculum of the newly formed MAST Academy (a marine science and technology high school) as a summer intern program. The focus has evolved through the years to include a stronger emphasis on academic excellence and exposure to oceanographic science (though it still serves its original purpose as an outreach opportunity for disadvantaged youth, accepting applicants from public and private high school students in Dade and Broward County).

Students at the MAST Academy are fortunate to have a greater exposure to the many and varied branches of marine science and better training in basic laboratory techniques than most high school students, but many of the students who apply to this program do not have such an advanced science curriculum in their school. This program has been very effective, therefore, in identifying local students with a predilection for science and giving them the opportunity to experience many of the possibilities that exist in the oceanographic community for various types of research. The summer internships thus serve as an extension of the high school experience, opening up many previously unknown academic and career possibilities to those students who have already proven they are capable of achieving academic excellence and realization of their goals.

Another positive result of the program is a greater environmental awareness on the part of these students. The exposure to scientists in general, and oceanographic scientists in particular, allows the students to explore specific aspects of the marine ecosystem not usually experienced in high school, among them an awareness of the actual effects of development on the environment. By working in a coral reef laboratory, or with phytoplankton samples, or assessing data on coastal properties, these students gain specific knowledge of the natural world, the negative effects of urban development and the polluting factors associated with it (e.g., raw sewage spills in local waters). A consistent result of the summer internships seems to be a heightened awareness of some of the local environmental problems that exist. A secondary effect of this increased awareness may be career or academic choices related to the fields of ecology, environmental law, or marine and coastal policy.

This program has also been a success in providing experiences that improve job eligibility. Follow-up contact with former summer interns has shown that not only do many of these students feel more qualified to pursue jobs within the oceanographic and science community, they actually have gained some of the needed skills to perform well at these jobs. Several of the former interns are currently employed at the University or at the NOAA/AOML laboratory. We credit this program with providing these students with necessary research skills and an understanding of new procedures. Indeed, many of the mentors note a

maturation process in these high school students when exposed to graduate students, researchers and staff members during their internship.

It is important to note that after ten years duration this program and its continued success have become an incentive for middle school students as a known reward for academic excellence in the maths and sciences. Students can look forward to participating in this program in their junior and senior years, thus gaining a competitive academic edge during the final years of high school (for as noted above, student participation in this program has been shown to improve grades and laboratory skills and thus improve a student's chances of being accepted by the college program of their choice). This program has, in part because of its long term duration, become an important part of the improved science curriculum in the Dade County Public School system. In fact, its continued success at stimulating student interest in the sciences has indirectly led to the initiation of similar programs in other academic areas.

APPENDIX A

JOB DESCRIPTIONS

FOR

MAST ACADEMY OUTREACH PROGRAM

SUMMER MARINE AND ENVIRONMENTAL SCIENCE
INTERNSHIP PROGRAM

July 2 through August 20, 1993

MARITIME EMPLOYMENT PROGRAM

JOB DESCRIPTION

MAST Academy
3979 Rickenbacker Causeway
Virginia Key, Florida 33149

Position Title Student Assistant Hours 25 - 40

Agency University of Miami - RSMAS

Job site address 4600 Rickenbacker Causeway, Miami, FL 33149
CIMAS Bldg., 1st fl

Immediate Supervisor Francine Leon Phone 305/361-4175 ext 0

Agency Contact Person _____ Phone _____
(If different from immediate Supervisor)

Number of positions available 1

Minimum Age 16

Special Requirements Familiar with Computers
(ie: skills, course prerequisites, etc.)

Dress Requirements Casual

JOB DESCRIPTION

Student to assist in all aspects of Oceanographic Operations-Technical
Equipment Preparation, Record Keeping & Automated Filling etc

MARITIME EMPLOYMENT PROGRAM

JOB DESCRIPTION

MAST Academy
3979 Rickenbacker Causeway
Virginia Key, Florida 33149

Position Title Laboratory Assistant Hours 9-5

Agency UNIVERSITY OF MIAMI

Job site address 4600 Rickenbacker Causeway

Immediate Supervisor DR. SWART Phone 361 4103

Agency Contact Person Syenna Finn Phone 361 4106
(If different from immediate Supervisor)

Number of positions available 1

Minimum Age 16

Special Requirements NONE
(ie: skills, course prerequisites, etc.)

Dress Requirements lab is AC casual dress

JOB DESCRIPTION

Data entry in computer's
Sampling corals, general lab
work, some field work in Florida
Bay.

MARINE AND ENVIRONMENTAL SCIENCE
INTERNSHIP PROGRAM

JOB DESCRIPTION

1993

MAST Academy
3979 Rickenbacker Causeway
Virginia Key, Florida 33149

Position Title Lab Assistant Hours 37.5
Agency Rosenstiel School of Marine & Atmospheric Science
Job site address 4600 Rickenbacker Cswy
Miami, FL.
Immediate Supervisor Doug Campbell Phone 361-4708
Agency Contact Person S FINN Phone —
(If different from immediate Supervisor)
Number of positions available 1
Minimum Age 16
Special Requirements None
(ie: skills, course prerequisites, etc.)
Dress Requirements normal lab clothing

JOB DESCRIPTION

Density & salinity measurements of seawater
Other lab duties as required.

MARINE AND ENVIRONMENTAL SCIENCE
INTERNSHIP PROGRAM

JOB DESCRIPTION

MAST Academy
3979 Rickenbacker Causeway
Virginia Key, Florida 33149

Position Title Research Assistant Hours 9-5

Agency PSMAS

Job site address 4600 Rickenbacker Cswy
SLA 298

Immediate Supervisor Dr. Alina Szewant Phone 361-4609

Agency Contact Person Symna Finn Phone 361-~~4609~~ 4016
(If different from immediate Supervisor)

Number of positions available 1

Minimum Age 17

Special Requirements Biology, Chemistry, (computers)
(ie: skills, course prerequisites, etc.)

Dress Requirements Casual - shorts

JOB DESCRIPTION

Assist with research on coral physiology
and with studies of nutrient effects
on coral reefs and natural reefs.

MARITIME EMPLOYMENT PROGRAM

JOB DESCRIPTION

MAST Academy
3979 Rickenbacker Causeway
Virginia Key, Florida 33149

Position Title Research Assistant Hours 20-40/week

Agency Rosenstiel School of Marine & Atmospheric Science (Marine Affairs)

Job site address 4600 Rickenbacker Causeway, Miami 33149

Immediate Supervisor Prof. Daniel Suman Phone 361-4085

Agency Contact Person _____ Phone _____
(If different from immediate Supervisor)

Number of positions available 1

Minimum Age 16

Special Requirements good writing and library research skills
(ie: skills, course prerequisites, etc.)

Dress Requirements casual. Formal during an occasional meeting.

JOB DESCRIPTION Research Assistant will help Daniel Suman research, write, and edit ten case studies regarding management of the South Florida marine and terrestrial environment. ~~These case studies will be used in environmental studies and marine policy courses in high schools and colleges.~~ Research assistant should be a good writer, like to conduct interviews, and have some exposure to library research. I will guide Research Assistant and guarantee that he/she is engaged ~~in an activity that is educational and enjoyable to the MAST Academy student.~~

If the Research Assistant speaks or writes Spanish, he/she could assist in ~~the organization and followup of a week-long international workshop on mangrove management.~~ The workshop is in June, but we will have to perform analysis of ~~workshop results during the remainder of the summer.~~

MARITIME EMPLOYMENT PROGRAM

JOB DESCRIPTION

MAST Academy
3979 Rickenbacker Causeway
Virginia Key, Florida 33149

Position Title Student Asst Hours 9-5

Agency RSMAS

Job site address 4600 Rickenbacker Cswy
South Grosvenor rm. 264

Immediate Supervisor Dr. Ginsburg Phone 361-4875/468

Agency Contact Person S. Finn Phone _____
(If different from immediate Supervisor)

Number of positions available 1

Minimum Age 16

Special Requirements _____
(ie: skills, course prerequisites, etc.)

Dress Requirements casual

JOB DESCRIPTION

Assist in preparation of
samples for analysis; prepare
maps of coral reefs; learn
to use microscope for
description of bottom samples.

BRAND

MARITIME EMPLOYMENT PROGRAM

JOB DESCRIPTION

MAST Academy
3979 Rickenbacker Causeway
Virginia Key, Florida 33149

Position Title laboratory assistant Hours Flexible.

Agency University of Miami RSMAS

Job site address 4600 Rickenbacker Cswy
Miami Florida 33149

Immediate Supervisor Dr. Larry Brand Phone 361 4138

Agency Contact Person Juan Jaramillo Phone 361-4050
(If different from immediate Supervisor)

Number of positions available 2-3

Minimum Age 15

Special Requirements ONE science course
(ie: skills, course prerequisites, etc.)

Dress Requirements NONE (casual)

JOB DESCRIPTION

Assist in all kinds of laboratory duties such as:

- wash test tubes and culture flasks
- wash carboys and sterilize water
- set up cultures (marine microalgae)
- conduct experiments.

Continue in fall
Interviews prior to JUNE 18

MARITIME EMPLOYMENT PROGRAM

JOB DESCRIPTION

MAST Academy
3979 Rickenbacker Causeway
Virginia Key, Florida 33149

Position Title Hatchery Ass't Hours 9-5
Agency RSMAS
Job site address RSMAS Fish Hatchery
Virginia Beach Drive
Immediate Supervisor CINDY O'Brien Sarah Wynne Phone 361-1236
Agency Contact Person L. CLARKE Phone 361-4703
(If different from immediate Supervisor)

Number of positions available 4

Minimum Age _____

Special Requirements Anyone who likes to fish would be
(ie: skills, course prerequisites, etc.) helpful when we

Dress Requirements CASUAL/swimsuits are collecting but
not necessary

JOB DESCRIPTION

Help in raising fish AND CARE
of adult fish for aqua culture
and ecological studies.

Student to continue in the fall
if possible

MARITIME EMPLOYMENT PROGRAM

JOB DESCRIPTION

MAST Academy
3979 Rickenbacker Causeway
Virginia Key, Florida 33149

Position Title DATA Processing Assistant Hours Summer 40 hrs/wk
9-5 During scho
part time

Agency RSMAS

Job site address Meteorology & Physical Oceanography / RSMAS
4600 Rickenbacker Cswy, Miami, FL 33155

Immediate Supervisor Elizabeth Williams Phone 361-4070

Agency Contact Person _____ Phone _____
 (If different from immediate Supervisor)

Number of positions available 1

Minimum Age 16

Special Requirements Algebra, Computer Skills
 (ie: skills, course prerequisites, etc.)

Dress Requirements Neat, casual dress

JOB DESCRIPTION

This position is one where the main task will be data processing, however this will not be the only task required. This position requires flexibility as the individual will be, at various points, running computer programs, doing investigative research tasks, helping prepare instruments for deployment in the field, analyzing data, and preparing data reports. A good grasp of algebra will be helpful in some of these tasks. The person in this position need not be a computer expert, but should be willing to become one. This position may include

MARITIME EMPLOYMENT PROGRAM

JOB DESCRIPTION

MAST Academy
3979 Rickenbacker Causeway
Virginia Key, Florida 33149

Position Title Office/Research Assistant Hours 75 bi-weekly
Agency University of Miami-RSMAS, Ctr. for Marine & Environmental Analyses
Job site address 4600 Rickenbacker Cswy., Miami, FL 33149-1098

Immediate Supervisor Dr. Mark Harwell, Chris Harwell
or Mel Bethel Phone 361-4163

Agency Contact Person Symma Finn Phone _____
(If different from immediate Supervisor)

Number of positions available 2

Minimum Age 16

Special Requirements familiarity with library; good organizational skills;
(ie: skills, course prerequisites, etc.) some knowledge of PCs (Mac pref)

Dress Requirements none

JOB DESCRIPTION

General office work and library research in support of environmental
policy unit, and the Center for Marine and Environmental Analyses

MARITIME EMPLOYMENT PROGRAM

JOB DESCRIPTION

MAST Academy
3979 Rickenbacker Causeway
Virginia Key, Florida 33149

Position Title Development Assistant 9-4 Hours

Agency Rosenstiel School

Job site address 4600 Rickenbacker Cswy

Immediate Supervisor Victoria Myers Phone 361-4013

Agency Contact Person _____ Phone _____
(If different from immediate Supervisor)

Number of positions available 1

Minimum Age 15

Special Requirements Proficient writer, ability to communicate
(ie: skills, course prerequisites, etc.) write and interact

Dress Requirements Office Attire with a variety

JOB DESCRIPTION

Work with the Development and Public Relations Staff to coordinate events, prepare newsletter articles, write acknowledgment letters, conduct tours of campus and prepare presentations.

Knowledge of people, personal computer

APPENDIX B

LIST OF STUDENT INTERNS AND MENTORS

FOR

MAST ACADEMY OUTREACH PROGRAM

**SUMMER MARINE AND ENVIRONMENTAL SCIENCE
INTERNSHIP PROGRAM**

July 2 through August 20, 1993

SUMMER INTERNSHIPS 1993 CLASS ROSTER

(updated 6/29/93)

| | <u>NAME</u> | <u>LOCATION</u> | <u>SS NUMBER</u> | <u>AGE</u> |
|---------|-----------------------|----------------------|------------------|------------|
| | ✓ Aguilar, Tatiana | RSMAS | 591-58-9755 | 15 |
| new | ✓ Bendezu, Jean | RSMAS | 591-52-5479 | 16 |
| | ✓ Cuza, Janine | NOAA | 589-46-6845 | 16 |
| | ✓ Diaz, Johnathan | RSMAS | 298-744119 | 15 |
| | ✓ Doig, Annie | RSMAS | 592-70-2303 | 15 |
| Review | ✓ Engler, Craig | SEFC NOAA | 594-58-3532 | 17 |
| | ✓ Garcia, Nicole | RSMAS | 593-42-1018 | 15 |
| WEDSDAY | ✓ Graff, Sarah | SEFC | 594-70-9961 | 17 |
| | ✓ Hudgins, Sherry | RSMAS | 595-60-7558 | 15 |
| | ✓ Lopez, Rick | RSMAS | 304-82-4115 | 17 |
| | ✓ Mark, Jacqueline | RSMAS | 593-70-7968 | 16 |
| | ✓ Matas-Sosa, Orlando | NOAA SEFC | 592-66-7679 | 16 |
| | ✓ Munoz, Hazzen | RSMAS | 590-50-9395 | 16 |
| | ✓ Neudorff, Sheree | RSMAS | 591-30-1946 | 15 |
| | ✓ Pupo, Jorge | RSMAS | 595-40-2334 | 16 |
| | ✓ Rice, Brian | RSMAS | 589-50-2801 | 17 |
| | ✓ Rodriguiz, Miriam | SEFC | 263-89-4479 | 17 |
| | ✓ Seidle, Beth | RSMAS | 589-21-9518 | 16 |
| | ✓ Steele, Ian | NOAA | 589-80-7819 | 16 |
| | ✓ Vlad, Ann | NOAA | 591-09-5099 | 16 |
| | ✓ Whitling, David | RSMAS | 265-97-1382 | 16 |
| | ✓ Williams, Fred III | RSMAS | 590-70-7534 | 17 |

* second year in program

A = NO MORE Also Application
B = RPTURE

Under 16 additional time

| | | | | | | | | | | |
|---|-----------------------------------|--|--|---|---|--------------------------|---|---|----|---|
| RSMA5 4600 RICKEN- BACKER CSWY. MIAMI, FL 33149 | OFFICE/ RESEARCH ASST. | 75 BIWEEKLY | MEL BETHEL 361-4163 CIRNAS 215 | DR. MARK HARWELL CHRIS HARWELL 361-4163 | FAMILIARITY WITH LIBRARY/GOOD ORGANIZATIONAL SKILLS; SOME KNOWLEDGE OF PC'S (MAC PREFERRED) | NONE | GENERAL OFFICE WORK AND LIBRARY RESEARCH IN SUPPORT OF ENVIRONMENTAL POLICY UNIT, AND THE CENTER FOR MARINE AND ENVIRONMENTAL ANALYSIS | 2 | 16 | JOANNA BUENO SHERRY HUDDENS |
| RSMA5 4600 RICKEN- BACKER CSWY. MIAMI, FL 33149 | DEVELOPMENT ASSISTANT | 9AM-4PM | VICTORIA MYERS 361-4013 S/A 105B | SYMIMA FINN 361-4016 | PROFICIENT WRITER; ABILITY TO COMMUNICATE AND INTERACT WITH A VARIETY OF PEOPLE; KNOWLEDGE OF PERSONAL COMPUTERS | OFFICE ATTIRE | WORK WITH THE DEVELOPMENT AND PUBLIC RELATIONS STAFF TO COORDINATE EVENTS, PREPARE NEWSLETTER ARTICLES, WRITE ACKNOWLEDGEMENT LETTERS, CONDUCT TOURS OF CAMPUS AND PREPARE PRESENTATIONS | 1 | 15 | ANNIE DOG |
| NOAA/AOIML 4301 RICKEN- BACKER CSWY. MIAMI, FL 33149 | MARINE SCIENCE LIBRARY TECH | 7:30AM- 4PM OR 8AM- 4:30PM | LINDA PIKULA 361-4429 | CMDR. VIRGINIA NEWELL 361-4306 | BASIC KNOWLEDGE OF LIBRARIES AND COMPUTERS | | PROCESSES AND FILES NEW BOOKS AND JOURNALS; SEARCHES IN COMPUTER DATA BASES, ASSISTS LIBRARIAN | 1 | 16 | JANNIE GUZA |
| NOAA/AOIML 4301 RICKEN- BACKER CSWY. MIAMI, FL 33149 | RESEARCH APPRENTICE | 8AM-5PM | GEORGE MAUL 361-4343 | CMDR. VIRGINIA NEWELL 361-4306 | COMPUTER SKILLS | CASUAL | CREATE NEW DATA BASE OF SEA LEVEL VARIABILITY IN GULF OF MEXICO, CARIBBEAN SEA, BAHAMAS AND GUYANAS USING COMPUTER RECORDS AT AOIML. STUDENT WILL HAVE TO READ FILES, COMPUTE TRENDS, COMPUTE MONTHLY MEANS, AND DRAW MAPS OF SEA LEVEL ANOMALIES | 1 | 16 | ANN VLAD |
| NOAA/AOIML 4301 RICKEN- BACKER CSWY. MIAMI, FL 33149 | SCIENTIFIC ASSISTANT | 40 | REYNA SABINA 361-4324 | | COMPUTER SKILLS | | ENTER BIBLIOGRAPHIC DATA INTO A COMPLETED DATA BASE FILING SCIENTIFIC PAPERS | 1 | 16 | ELIZABETH BECKER (NO INTERNSHIP) |
| NOAA/AOIML 4301 RICKEN- BACKER CSWY. MIAMI, FL 33149 | COMPUTER SCIENCE INTERN | 8 HR/DAY FLEXIBLE | | JULES CRAYNOCK 361-4331 | COMPUTER PROGRAMMING, PC FAMILIARITY | NORMAL WORK- PLACE | ASSIST SENIOR SCIENTIST AND SCIENTIFIC COMPUTER PROGRAMMERS IN REDUCTION AND PROCESSING OF ENVIRONMENTAL DATA | 1 | 16 | IAN STEELE |
| SE FISHERIES CENTER 75 VIRGINIA BEACH DRIVE MIAMI, FL 33149 | STUDENT AID | 8AM- 4:30PM | | ESSIE COLIMAN DUFFIE 361-4237 | STRONG SCIENCE BACKGROUND AND INTEREST IN COMPUTERS | CASUAL | WORK CLOSELY WITH THE PROFESSIONAL, TECH AND CLERICAL STAFF OF SEFC AND MIAMI LABORATORY. WORD PROCESSING, USE OF A PC, SPECIES IDENTIFICATION, COMMERCIAL FISHERIES STATISTICS, DATA BASE MGMT., DATA ENTRY, EDITING AND QUALITY CONTROL, STATUS OF FUNDS REPORT, MARINE MAMMALS OR TURTLE PROJECT LOGBOOK ASSESSMENT, ICTHYOPLANKTON SORTING | 3 | 16 | MIRIAM RODRIGUEZ SARAH GRAFF |
| MIAMI SEAQUARIUM 4400 RICKEN- BACKER CSWY. MIAMI, FL 33149 | GEN ANNUAL ASST. | 9:30AM- 6PM | SCOT CHRISTIE 361-5705 EXT 201 | JULI GERLACH 361-5705 EXT 282 | INTEREST IN ANIMALS ENJOY OUTDOORS | UNIFORMS SUPPLIED | CLEANING ANIMAL ENCLOSURES, FOOD PREPARATION, INTERACTING AND SHARING INFORMATION WITH PARK VISITORS | 1 | 16 | NIKE HUNT |

Marine and Environmental Internship Program 1993

29 Positions

| EMPLOYER ADDRESS | POSITION TITLE | HOURS | IMMEDIATE SUPERVISOR PHONE | CONTACT PERSON PHONE | REQUIREMENTS | ATTIRE | JOB DESCRIPTION | # OF POSITIONS | MIN. AGE | STUDENTS |
|---|-------------------------------------|---------------------------|--|----------------------------|--|--------------------------------|--|----------------|----------|---------------------------------|
| RSMAS 4600 RICKEN- BACKER CSWY. MIAMI, FL. 33149 | RESEARCH ASSISTANT (MARINE AFFAIRS) | 20-40 | PROF. DANIEL SUMAN 361-4085 | SYMMA FINN 361-4016 | GOOD WRITING LIBRARY RESEARCH SKILLS FLUENT IN SPANISH | CASUAL; FORMAL DURING MEETINGS | ASSIST RESEARCH WRITING AND EDITING OF MARINE ENVIRONMENT CASE STUDIES | 1 | 16 | HAZZEN MUNOZ |
| RSMAS 4600 RICKEN- BACKER CSWY. MIAMI, FL. 33149 | RESEARCH ASSISTANT | 9AM-5PM | DR. ALINA SZAMANT 361-4609 S/A 298 | SYMMA FINN 361-4016 | BIOLOGY, CHEMISTRY, COMPUTERS | CASUAL | ASSIST IN CORAL PHYSIOLOGY RESEARCH | 1 | 17 | |
| RSMAS 4600 RICKEN- BACKER CSWY. MIAMI, FL. 33149 | LAB ASSISTANT | 37.5 | DOUG CAMPBELL 361-4706 S/A 216 | SYMMA FINN 361-4016 | NONE | NORMAL LAB CLOTHING | DENSITY AND SALINITY MEASUREMENTS OF SEAWATER OTHER LAB DUTIES AS REQUIRED | 1 | 16 | JACQUELINE MARK |
| RSMAS 4600 RICKEN- BACKER CSWY. MIAMI, FL. 33149 | LAB ASSISTANT | 9AM-5PM | DR. P. SWART 361-4103 N GROSSVENOR ROOM 212/252 | SYMMA FINN 361-4016 | NONE | CASUAL | DATA ENTRY IN COMPUTER; SAMPLING CORALS, GENERAL LAB WORK, SOME FIELD WORK IN FLORIDA BAY. | 1 | 16 | BRIAN RICE |
| RSMAS 4600 RICKEN- BACKER CSWY. MIAMI, FL. 33149 | STUDENT ASSISTANT | 25-40 | MIGUEL MCKINNEY 361-4175 EXT 7130 CIMAS BLDG, 1ST FL | SYMMA FINN 361-4016 | FAMILIAR WITH COMPUTERS | CASUAL | ASSIST IN ALL ASPECTS OF OCEANOGRAPHIC OPERATIONS- TECHNICAL EQUIPMENT PREPARATION, RECORD KEEPING AND AUTOMATED FILING | 1 | 16 | TATIANA AGUILAR |
| RSMAS 4600 RICKEN- BACKER CSWY. MIAMI, FL. 33149 | STUDENT ASSISTANT | 9AM-5PM | DR. GINSBERG 361-4875 S GROSSVENOR ROOM 264 | SYMMA FINN 361-4016 | NONE | CASUAL | ASSIST IN PREPARATION OF SAMPLES FOR ANALYSIS, PREPARE MAPS OF CORAL REEFS, USE MICROSCOPE FOR DESCRIPTION OF BOTTOM SAMPLES | 1 | 16 | |
| RSMAS 4600 RICKEN- BACKER CSWY. MIAMI, FL. 33149 | LAB ASSISTANT | FLEXIBLE CONTINUE IN FALL | DR. LARRY BRAND 361-4136 E GROSSVENOR ROOM 110 | JUAN JARAMILLO 361-4050 | ONE SCIENCE COURSE | CASUAL | ASSIST IN LAB DUTIES: WASH TEST TUBES, CULTURE FLASKS, CARBOYS, STERILIZE WATER, SET UP MARINE MICROALGAE CULTURES, CONDUCT EXPERIMENTS | 2 | 15 | DAVID WHITLING NICOLE GARCIA |
| RSMAS FISH HATCHERY VIRGINIA BEACH DRIVE MIAMI, FL. 33149 | HATCHERY ASST. | 9AM-5PM CONTINUE IN FALL | GINDY O'BRIEN/ SARAH WYNN 361-1236 | DR. LIZ CLARKE 361-4703 | HELPFUL IF LIKES TO FISH | CASUAL SWIMSUIT | HELP IN RAISING FISH AND CARE OF ADULT FISH FOR AQUACULTURE AND ECOLOGICAL STUDIES | 3 | 16 | JOHN BENEZU JORGE PUPO |
| RSMAS 4600 RICKEN- BACKER CSWY. MIAMI, FL. 33149 | DATA PROCESSING ASST. | 9AM-5PM CONTINUE IN FALL | ELIZABETH WILLIAMS 361-4070 MSC 315 | TOM LEE | ALGEBRA COMPUTER SKILLS, FLEXIBILITY | NEAT CASUAL | DATA PROCESSING, RUNNING COMPUTER PROGRAMS, DOING INVESTIGATIVE RESEARCH TASKS, HELPING PREPARE INSTRUMENTS FOR DEPLOYMENT IN THE FIELD, ANALYZING DATA, AND PREPARING DATA REPORTS MAY INVOLVE FIELDWORK AT SEA | 1 | 16 | BETH SEIDLE |

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|--|--|-------------------|--|-------------------------------------|--|-------------------------------|---|-----|----|-------------------|
| DERM 111 NW 1 AVE MIAMI, FL 33128 | BIOLOGIST ASST. BIOLOGICAL RESOURCES | 8:30AM- 4:30PM | CRAIG GROSSENBACHER 375-3312 | DAVID ETTIMAN 375-3303 | ADVANCED SWIMMING SKILLS WILLING TO WORK OUTDOORS AND ON BOAT; INTEREST IN MARINE SCIENCE | DISCUSS W/ EMPLOYE R | ASSIST BIOLOGIST IN FIELD AND OFFICE. EXTENSIVE PHYSICAL ACTIVITIES. WORK CLOSELY WITH PROFESSIONAL STAFF | 1 | 15 | MARY GALANTER |
| DERM 111 NW 1 AVE MIAMI, FL 33128 METRO DADE CO. PARKS AND REC. DEPT. OLD CUTLER HAMMOCK NATURE CENTER 17955 SW 79 AVE. MIAMI FL 33157 | SUMMER CAMP COUNSELOR | VAR | BRIAN FLINN 372-4852 BARBARA GOULDNER 255-4767 | DAVID ETTIMAN 375-3303 | CPR AND FIRST AID CERT.; CANOE CERT. PREFER APPLICANTS WHO CAN WORK THROUGH 828 | T-SHIRTS PROVIDED | ASSIST IN PROGRAMMING AND LEADING GROUP GAMES. ACTIVITIES AND LIVE ANIMAL PRESENTATIONS TO CHILDREN 4-6 OR 7-11 | 1-3 | 17 | TRAVIS FARRELL |
| NUCLEAR MARKETING AND SERVICES, INC. 7056 SW 44 ST MIAMI, FL 33155 | CALIBRATION TECHNICIAN | 8AM-4PM | YOSH EDWARDS 665-4769 EXT 102 | FRANK GAVILA 665-4769 EXT 110 | ALGEBRA, COMPUTERS, CHEMISTRY AND PHYSICS | CASUAL | ASSIST AIR SAMPLER PRODUCTION DEPARTMENT WITH CALIBRATION OF AIR SAMPLERS INCLUDING OQQA DOCUMENTATION, CALIBRATION, INVENTORY OF PARTS, PACKAGING OF COMPLETED UNITS, AND OCCASIONAL ASSISTANCE WITH PRODUCTION | 1 | 15 | LONG HA |
| NUCLEAR MARKETING AND SERVICES, INC. 7056 SW 44 ST MIAMI, FL 33155 | QUALITY CONTROL TECHNICIAN | 8AM-4PM | JOHN ODOM 665-4769 EXT 100 | FRANK GAVILA 665-4769 EXT 110 | ALGEBRA, GEOMETRY, COMPUTER SKILLS | CASUAL | PERFORM QUALITY CONTROL MEASUREMENTS OF PRODUCTION COMPONENTS INCLUDING DOCUMENTATION, LABELING OF BOXES, INVENTORY OF STOCK AND ASSISTANCE IN WAREHOUSE MANAGEMENT | 1 | 15 | CLAYTON NELSON |
| NUCLEAR MARKETING AND SERVICES, INC. 7056 SW 44 ST MIAMI, FL 33155 | ENGINEERING ASSISTANT | 8AM-4PM | JOHN ODOM 665-4769 EXT 100 | FRANK GAVILA 665-4769 EXT 110 | COMPUTERS, ALGEBRA 2, DRAFTING OR MECHANICAL DRAWING | CASUAL | ASSIST IN PREPARATION OF MECHANICAL DRAWINGS ON CAD SYSTEMS AND ASSIST IN ORGANIZATION OF DRAWING SYSTEMS. TASKS INCLUDE PERFORMANCE OF DIMENSIONAL MEASUREMENTS ON PRODUCTS OR COMPONENTS. | 1 | 15 | SANTIAGO RUIZ |

APPENDIX C

**MAST ACADEMY OUTREACH PROGRAM
MARINE & ENVIRONMENTAL SCIENCE INTERNSHIPS**

ANNUAL CAREER FOLLOW-UP SURVEY

1993

PRELIMINARY REPORT

1993-94
MAST ACADEMY OUTREACH PROGRAM
ANNUAL CAREER FOLLOW-UP SURVEY REPORT
MARINE AND ENVIRONMENTAL INTERNSHIPS

OVERVIEW

A total of 28 senior high school students were placed in internship positions, ranging from research assistant to computer programmer. Of the 28 students, 16 were placed with University scientists or administrative staff. The interns were from 8 different high schools, and consisted of 3 Blacks, 11 Hispanics, 13 Whites, 1 Asian, 16 males and 12 females.

SUMMARY OF FINDINGS

Surveys indicate that as in previous years, the internship program once again has had its greatest impact on school performance; 83% of all interns surveyed indicated a positive effect on grades. A positive influence on attitudes towards science were reported by 86% of UM interns, and 79% of all interns.

As was the case last year, half of the students indicated their intention to enroll in additional science courses as a result of their experience. In addition, 63% of students are now planning a career in science. Over 60% of the UM interns indicated that their mentor has had a significant impact on their career plans.

Half of the students have continued to have contact with their mentors since completing the program. Six UM interns, and 14 of the 24 interns surveyed have been offered part-time employment as a result of their internship contacts. Eleven of the students have indicated that mentors have provided assistance with student science fair projects; two MAST Academy participants have become district science fair winners, and will be entering their projects at the state level.

Of all eligible interns, 79% requested they be contacted to participate in the 1994 summer program. This included 90% of the UM interns.

**1993-94
 MAST ACADEMY OUTREACH PROGRAM
 ANNUAL CAREER FOLLOW-UP SURVEY REPORT
 MARINE AND ENVIRONMENTAL SCIENCE INTERNSHIP**

These survey results were gathered from students participating in the 1993 summer internship program.

The survey included questions of two types. Questions A, J, and L were either general information or related to curriculum planning for class days. All other questions were intended to assess program impact on participating students. Results are tabulated on the chart below.

The data shown below reflects student response to questions assessing impact brought about by participation in the internship program. Two sets of data are supplied. One data column represents the student population funded through the University of Miami. The second column reflects all participating interns.

DATA

| <u>Question/Information</u> | <u>U.M. Interns</u> |
|---|---------------------|
| Number of surveys completed | 14/16 (88%) |
| B. Were you planning a career in science before your internship? | |
| Yes | 9/14 (64%) |
| No | 5/14 (36%) |
| C. Are you now planning a career in science? | |
| Yes | 8/14 (57%) |
| No | 6/14 (43%) |
| D. Has there been continued contact with your mentor since last summer? | |
| Yes | 6/14 (43%) |
| No | 8/14 (57%) |
| E. Have these mentor contacts influenced your career choices? | |
| Yes | 9/14 (64%) |
| No | 5/14 (36%) |

| | |
|---|---|
| <p>F. Have you been offered any additional opportunities as a result of these contacts?</p> <p>Job offers Support for college application Full-time employment Part-time employment Assistance with science fair projec</p> | <p>4/14 (29%) 7/14 (50%) 2/14 (14%) 6/14 (43%) 6/14 (43%)</p> |
| <p>G. As a result of the intern experience, have you participated in any of the activities listed below?</p> <p>1. Science/Environmental Clubs 2. Hiking 3. Canoeing 4. Camping 5. Snorkeling 6. Scuba Diving 7. Fishing 8. Sailing 9. Boating 10. Swimming</p> | <p>3/14 (21%) 0/14 (0%) 8/14 (57%) 1/14 (7%) 8/14 (57%) 1/14 (7%) 3/14 (21%) 3/14 (21%) 7/14 (50%) 7/14 (50%)</p> |
| <p>H. Has your internship experience positively influenced your progress in school in any way?</p> <p>1. Grades 2. Conduct 3. Attendance 4. Attitude towards school 5. Attitude towards science 6. Attitude towards other subjects</p> | <p>12/14 (86%) 10/14 (71%) 11/14 (79%) 10/14 (71%) 12/14 (86%) 9/14 (64%)</p> |
| <p>I. Have you taken or are you planning to take additional science courses as a result of your intern experiences?</p> <p>Yes No</p> | <p>8/14 (57%) 6/14 (43%)</p> |
| <p>K. Has your interest in environmental issues changed as a result of your internship experience?</p> <p>Yes No</p> | <p>9/14 (64%) 5/14 (36%)</p> |
| <p>L. Are you interested in participation next summer?</p> <p>No, I am graduating high school and am not eligible. Still eligible <u>Yes, please contact me.</u> No, I am not interested.</p> | <p>4/14 (29%) 10/14 (71%) <u>9/10 (90%)</u> 1/10 (10%)</p> |