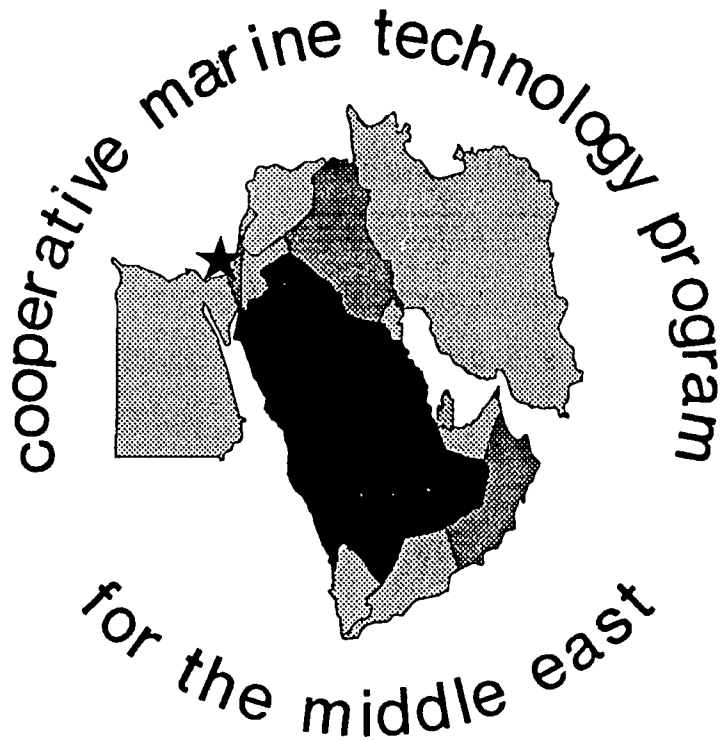


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MIDDLE EAST REGIONAL
COOPERATION PROGRAM
298-0158.08
NE/ENA 4/92



Annual Report for 1991
March 1992
New Jersey Marine Sciences Consortium

COOPERATIVE MARINE TECHNOLOGY PROGRAM FOR THE MIDDLE EAST

ANNUAL REPORT: October 1, 1990 - September 30, 1991

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APPENDICES

I Technical Reports of the Projects (Separate Cover)

II Financial Report

III Reports of Major Meetings, Workshops

A. Taba/Haifa April 27 - May 4, 1991

B. Taba July 20-25, 1991

C. Washington, D.C. October 20-23, 1991

IV List of Project Participants

1. SUMMARY AND OVERVIEW

The numerous socioeconomic developments in Egypt and Israel have had a significant impact on the coastline of the Nile Littoral Cell. In return, the Mediterranean Sea's actions have had major effects on the societies of those two countries. Four major cities: Alexandria, Port Said, Tel Aviv, and Haifa, and a large number of villages and towns are located on this coast.

The dense coastal population exerts various demands on the nearshore, such as major irrigation projects; establishment of new coastal and tourist villages; construction of commercial and industrial harbors, anchorages, oil terminals, cooling basins for power plants, sewer outfalls, recreational beaches, and many others.

These could not be accommodated in harmony with nature unless the coastal processes which shape the shoreline are understood; unless means of providing large quantities of food from marine sources are developed; and unless those societies' leaders become better able to forecast natural assistance (e.g. rainfall).

Those principles underlay selection of the projects reported in the following sections in summary, and in the appended volumes in detail.

This report covers the period October 1, 1990 to September 30, 1991. Therefore, it describes activities in Phase III-Amended, of the Program. This phase includes

- a. Predictive Model for Shoreline Changes Along the Nile Littoral Cell
- b. Circulation of the Eastern Levantine Basin
- c. Induced Spawning of Grey Mullet
- d. Experimental Feeding and Nutrition Studies of Some Brackish Water Fish
- e. Management

In Egypt, however, some work continued on extenuated from Phase III, with particular reference to Waste Water Recycling.

All projects have exhibited heartening progress. In terms of the fundamental technical goals of the Program, mariculture must be watched with greatest interest. For instance, the Egyptian Government projects a need for 350,000 to 400,000 tons of farmed fish per year by the end of this century, just 8 years away. Considering the desperately short supply of potable water and that the only food which does not require fresh water for survival is marine fish, that

projection is reasonable, in terms of need, if not attainment.

As will be reported in Section 2e, "Management," several unforeseen financial factors have combined to cause minor tremors in working relationships, but they have been confined to USA-Middle East interaction. If anything, working relations between Israel and Egypt are stronger than ever, under this Program.

The Steering Committee took advantage of non-programmed time at various meetings to consider and initiate a plan for the controlled development and environmental preservation of the Gulf of Aqaba. Private donations enabled Jordanian participation in these meetings.

Finally, policy level interest in the Program was demonstrated by the presence of Ambassador Moustafa Hanafi (Director of Israeli Affairs in the Egyptian Foreign Ministry) and Mr. Zvi Gabei (Director of Egyptian Affairs in the Israeli Ministry) at the most recent meeting of the steering committee.

These and other aspects of the technical and socio-political sectors of the Program will be treated in the succeeding chapters and in fine detail in Appendices I-III. Some events will be noted which occurred either just prior to, or after, the regular reporting period. This expanded reporting has been occasioned either by inadvertent omission of the event in the previous report, or the desire to include a very recent happening for updating purposes.

This report is organized as prescribed by Schedule E.3, "Program Performance Reporting," (Attachment 1 of Amendment #3 of September 1, 1988 to Grant No.

NEB-0158-G-SS-5192-00. Thus events are reported according to the categories directed therein, with each project listed in order, as a subsection. The exception is Category No. 3, "Regional Cooperation Activities," owing to the inter-project activities occurring under this section.

2. SCIENTIFIC AND TECHNICAL PROGRESS

The following highlights of progress are abstracted from Appendix I which reports progress and achievements in both summary and detailed form.

a. Shore Processes:

- 1/ The basic data necessary for the model input have now all been collected, analyzed, and stored in computer data bases.
- 2/ The essential elements of the shoreline model have been developed and are being placed in computer compatible format.
- 3/ Most of the computer subroutines for the model have been written and tested.
- 4/ The Shoreline Model is being used to identify patterns of erosion and accretion and shoreline movement along the Nile Delta Littoral Cell.
- 5/ A number of joint papers have been submitted and accepted for presentation at the 23rd Conference on Coastal Engineering scheduled for Venice, Italy in October, 1992 (refer to Section 3c)

- 6/ Several highly productive trilateral group meetings have been held (refer to Section 3b)
- 7/ A field experiment has been designed to further test the model. It will be conducted later this year.
- 8/ A technique has been established for constructing a 1 km. depth grid from available bathymetry and beach profile data.
- 9/ A deep water data bank has been completed -- established from the wave measurements at all wave stations in Israel and Egypt

b. Circulation of the Levantine Basin

- 1/ A model of the entire Mediterranean Basin was created and used to study the influence of different surface forcings on the circulation
- 2/ A study of the Mediterranean Sea tides has been completed in Alexandria where, following a lapse occasioned by equipment procurement problems, a rather sophisticated computing capability has been created. The Alexandria group is now developing a comprehensive hydrological atlas.
- 3/ The Haifa (IOLR) group is preparing synoptic surface forcing fields from the ECMWF observations.

4/ The Princeton ocean model was used to study the general circulation of the entire Mediterranean Sea. It permitted the following experiments:

- a/ forcing the model with monthly and stress averages, keeping temperature and salinity equal to the annual averages, to simulate perpetual annual average conditions
- b/ prescribing an evaporative fresh water flux of 1 m/year, using monthly and stress averages, monthly surface energy flux, and a surface salinity flux (constant in time and space)
- c/ Maintaining same wind stress and surface heat forcing but prescribing the salinity flux to be equal to the annual averages
- d/ Maintaining the previous parameters, but inputting the Po, Rhone, and Ebro rivers.

5/ The group in Egypt, under the direction of Drs. A. M. Eisawy and I. Maiza have completed three reports, including:

- a. A literature review containing a thousand citations, a truly heroic effort

- b. A review of the physical oceanography of the Eastern Mediterranean
 - c. A review of past modelling efforts applied to the Eastern Mediterranean
- 6/ An updated bathymetric map was produced, by amalgamating the U.S. Navy bathymetric data-base, Taspe DBDBSN, and by averaging and plotting the depth values for $1/4^{\circ}$ boxes
- 7/ The hydrological data were plotted from T° (in situ), salinity ($^{\circ}/00$) sigma-t, and oxygen concentrations, as read from the NODC data base
- 8/ Construction has begun of a low resolution model of the entire Mediterranean
- c. Induced Spawning of Grey Mullet (Mugil Capito)

For reasons not yet understood, grey mullet males in the Middle East reach spermiation (November) a few weeks prior to the females' readiness to spawn (early January). Thus by the time the females reach that stage (post-vitellogenesis), the males are already spent. This imbalance obviously impedes dramatically optimal production of young. The project participants, using special implant treatment (GnRHa), have caused the males to spermiate again.

- 1/ Plasma and pituitary gonadotropin levels, testosterone, and progesterone were measured by radio-immuno assay during the maturation stages.
- 2/ The seasonal variation in plasma gonadotropin concentration for the mullet was examined in relation to sexual maturation. It was found that sexual maturity of both sexes was related to a significant increase in plasma gonadotropin with the highest values observed for males near the time of spermiation.
- 3/ It was discovered that pituitary GTH (an essential hormone) was lowest in both immature and mature, nearly ripe and spent stages of both the male and female fish, increasing in the ripe female collected in December.
- 4/ During the spawning season (October-February) the mature female had higher plasma progesterone levels than the male. Further, the level of testosterone decreased around the time of ovulation, and this decrease was accompanied by a sharp rise in the plasma GTH levels. The increase in testosterone levels in both males and females correlates highly with the gonadasomatic index increase.

d. Experimental Feeding and Nutrition Studies of Some Brackish Water Fish

The species on which experiments were conducted included two races of grey mullet, sea bream, and sea bass, and included all growth

categories, fingerling, young, and adult.

- 1/ It was found that while the sea bass is unable to synthesize the longer chained polyunsaturated fatty acids which are essential to marine fish, the inability is overcome in the mariculture process by including marine based lipids in the sea bass' feed. The selected lipids are rich in n-3 fatty acids
- 2/ Use of high protein (50%+) and lipid (12%+) diets enabled the scientists in this project to wean sea bass onto a completely non-living feed as early as 250 mg size without the need for a live food supplement. However, the optimal size to which this diet provides an advantage in growth over potential grow-out rations is somewhere in the 0.25 - 3.50 g range, and has yet to be more precisely determined.
- 3/ Three of the six grow-out rations tested for sea bass growth have now been tested on larger fish with good results in terms of both survival and growth.
- 4/ Egg protein and fish meal proved more nutritive to mullet fry, while sea bream and sea bass fry prefer fish meal to blood meal.
- 5/ Inclusion of Vitamin C in the diet appears to increase tolerance of fish to variations in their environment.

- 6/ Parallel Egyptian and Israeli studies agreed on the effects of food on survival and growth of mullet, but more broadly on the generally beneficial effects of pond rearing over the natural environment where food sources are subjected to regional, seasonal, and biological variations.

3. REGIONAL COOPERATION ACTIVITIES

a. Visits

- 1/ During the Fall/Winter of 1991 Drs. A. K. Hamza and Magda Zaki (NIOF/Alexandria) worked at the National Center for Mariculture, Elat, in furtherance of the joint project on gray mullet.
- 2/ During December 1992, two Egyptian Scientists and two Egyptian Engineers visited the Elat laboratory to study the research-development-production-harvesting-sales system developed by Israel's National Center for Mariculture in cooperation with five Kibbutzeem.
- 3/ During December 1992, several scientists from laboratories in Elat visited Suez to observe the Wastewater Recycling System in action.
- 4/ During January, 1990 Drs. Ibrahim Maiza, (NIOF, Alexandria), Steven Brenner (IOLR, Haifa), and George Mellor (Princeton, USA) worked together at Princeton, to develop further the technology of the Circulation of the Levantine Basin Project; to coordinate their techniques; and to re-divide responsibilities.
- 5/ In June, 1989 Dr. Abraham Golik (IOLR, Israel) met at El Avish

with Drs. A. A. Khafagy and A. M. Fanos (Coastal Protection Institute, Alexandria, Egypt) to compare progress on the Shore Processes Project and to alter their research plans.

- 6/ In August, 1990 Drs. A. A. Khafagy, A. M. Fanos, and N. Anwar (Alexandria) met in Haifa with Drs. A. Golik, Y. Iosilevskii and Dr. Rosen (Haifa) to compare progress and re-synchronize their data reporting for more perfect alignment.
- 7/ In June, 1991, Drs. A. Golik, Y. Iosilevskii, D. Rosen, A. A. Khafagy, A. M. Fanos, and N. Anwar met again in El Arish to compare notes on their activities and to edit some joint publications. In this meeting both raw and processed wave data on cassettes, magnetic tapes, and diskettes were exchanged between the Israelis and Egyptians. They arrived at common procedures for data analysis as well as a common data bank.
- 8/ In the Fall of 1990, Drs. Yakar Iosilevskii (Israel), Hany Alwany, (Egypt), and Douglas Inman spent four months at the Scripps Institution of Oceanography, developing a set of computer programs to analyze the Israeli wave data in a format which fits the computer programs used by the Egyptian Team for simulating backward refraction of waves. The results will be presented at the ASCE Conference in Venice in October 1992.

- 9/ During March, 1991, Drs. Maiyza (Egypt), Brenner (Israel) and Mellor (USA) worked together again at Princeton University to become familiar with details of the circulation model and running the model on the CYBER-205 at the Geo Fluid Dynamics Laboratory. Subsequent effort was devoted toward translating the model into standard Fortran so that it could also run on other computers.
- b. Meetings (details are presented in Appendix II to this report)
- 1/ The Steering Committee plus several project scientists met at Taba and Haifa during April 27-May 4, 1991 to confer on the following items:
 - a/ Israel-Egypt Workshop on the Shoreline Processes Project
 - b/ Israel-Egypt Workshop on Mariculture
 - c/ Termination and results of Lakes Management Project
 - d/ Termination and results of Seafood Toxin Project
 - e/ Progress of Eastern Mediterranean Circulation project in addition to the foregoing:

f/ (Major Issue) AID-Review Team's comments on the Phase IV proposal and how to expedite responses

g/ The prospects of chronicling the program's career

h/ Logistics problems.

2/ The Steering Committee met again on July 20-25 to consider progress on some projects, and to discuss the status of the Phase IV proposal. Actually, since the primary reason for the meeting was to discuss cooperative emergency response measures among Jordan, Egypt, and Israel in the Gulf of Aqaba, AID Program funds were not utilized for the travel.

3/ The Steering Committee met again on October 20-23 in Washington, D.C. The agenda included:

- a/ Reaction to the comments of the second AID Review Committee's comments on the Phase IV proposal
- b/ Design and construction of the Annual Report
- c/ Alignment of financial accounts
- d/ Philosophy of the Program's content. This was an intense discussion. The AID current action on the Phase IV proposal gives highest priority to Fish Sanitation (U. Michigan, Hebrew University of Jerusalem, Egyptian National Institute of Oceanography and Fisheries) and Trophodynamics (Texas A & M, Israel Institute of Oceanographic and Limnological Research and Egyptian Academy of Scientific Research & Technology). Two projects that were rejected related to mariculture and derivation of Beta Carotene from algae. The objections of the Steering Committee to these priorities were: first, that the Carotene project introduced new institutions and new scientists to the program; second that mariculture, i.e. food from the sea, is, after all the core of the entire marine program and its deletion misaligned the Program's priorities; and third, the Israel-Egypt bilateral projects being rejected in favor of USA-Egypt-Israel trilateral projects appeared to counter the basic charter of the Regional Cooperation Program.

- e/ Meeting with the acting assistant administrator, Mr. Charles Weden. During this meeting, the Steering Committee was accompanied by Ambassador Moustafa Hanafi, Director of Israeli Affairs for the Egyptian Foreign Ministry; Mr. Zvi Gabei, Director of Egyptian Affairs for the Israeli Foreign Ministry; and Dr. Uri Marinov, Director General of Israel's Ministry for the Environment. These officials conveyed their respective nations' regard for the Marine Program at the policy level.

- f/ After hour discussions of the Aqaba Plan.

c. Exchanges of papers and data

At each of the previously reported visits and meetings all data derived from the projects were traded between the respective participants. This included, inter alia

- 1/ Tapes from the CASS recorders (Shore Processes)

- 2/ Instrument calibrations (Shore Processes)
- 3/ Fish growth statistics (in both the grey mullet and fish nutrition projects)
- 4/ Literature Search (Circulation)
- 5/ Physical oceanographic observations and records (circulation)

In addition data and reports were traded by mail.

- d. Joint publications and non-joint publications are listed in the bibliography attached to Appendix I)

The following publications were prepared and issued jointly:

- 1/ Elwany, M. H. S. and Y. Iosilevskii, 1990, "Wave Spectral Analysis Programs for a C.A.S. Unit" University of California, San Diego
- 2/ Brenner, S, I. Maiyza, G. Mellor, and M. Zavatarelli, "A Study of the Circulation of the Levantine Basin. 1991, Princeton University.
- 3/ Elwany, M.H.S., D. L. Inman, and Y. A. Iosilevskii, "A continuity

Model of Shoreline Changes along the Nile Littoral Cell, 1991
(submitted to, and accepted by International Conference of
Coastal Engineering.

- 4/ Inman, D. L., A. Golik, A. A. Khafagy, and M. H. S. Elwany,
"Application of Equilibrium Beach Profiles to Shoreline Models on
the Nile Littoral Cell, 1991" (Submitted to, and accepted by
International Conference of Coastal Engineering.

4. COMPARISON OF ACCOMPLISHMENTS WITH ESTABLISHED GOALS

a. Shore Processes

The achievement history of this project has been chequered, finally emerging as successful. First, in order to achieve the information and modeling objectives, it was highly desirable to utilize state-of-the-art instrumentation, in fact just then under development. Accordingly, the usual try-out pains were experienced, to say nothing of the fishermens' original fascination with the off-shore equipment.

Later, the Israelis and Egyptians found it necessary to re-synchronize the data reporting systems for better alignment.

Once these early problems were surmounted, the project moved rapidly ahead. At this point in time, as noted in Section 2 a. the goals have been achieved, short of final test of the model to predict shoreline changes.

b. Circulation of the Eastern Levantine Basin

A fifteen month delay in the Egyptians' acquisition of a computer system compatible with those of Israel and the U.S.A. adversely affected progress. Generally speaking, however, the project's scientists appear satisfied with achievements to date.

The project's participants remain cautiously optimistic that they are in position to estimate roughly, a correlation between atmosphere-ocean energy interchange, and the "storm effect," i.e. rainfall, on a climatic basis--which is the ultimate goal of the project. This cannot take into account phenomena such as the Philippine volcanic eruption or conflagration of Kuwait's oil fields, credited by some scientists as causing Israel's rainfall windfall.

c. Induced Spawning of Grey Mullet

At this point in time, the Israeli and Egyptian scientists had hoped to achieve full success in forced spawning of this important fish, through techniques described in Section 2c. Last year's activity, however, was only partially successful in Israel because of the Gulf War and the consequent state of emergency under which Israel existed. They are attempting to make up for lost time at the current reading.

d. Experimental Feeding and Nutrition Studies of Some Brackish Water Fish

This project's actual accomplishments have mostly fulfilled the goals set forth in the proposal, i.e. about half the overall plan. The rest of the work is to be carried out when a marine fish hatchery is established on a limited scale in Egypt.

5. ADDITIONAL

- a. As alluded to previously, several financial events combined to stress the program.

1/ The proposal for Phase III-Amended occupied two years in processing, thereby straining the resources of the Phase II participants who were primarily responsible for advancing the Program's social aims, e.g. technical cooperation. At one point, the Consortium loaned its own funds to enable one of the project teams to maintain a useful transition from Phase III to III-A. Then, Phase III-A was proposed for a three year term and was assigned a three year budget, but with a four year tenure. Although some of the projects were able to retard expenditures sufficiently to survive more or less through the fourth year, management cannot simply turn off. As a result, the Consortium has operated on volunteer status for this past year, i.e. without compensation.

- b. Six months after the proposal had been submitted AID activated Regulation A-110, and with particular reference to the Consortium--as Program Manager--ordered the Consortium to purchase in-depth (as prescribed by the regulation) audits, not only for the current year but retroactively to 1985. This required enormous expenditures of the Consortium to both its auditors (Coopers & Lybrand) and its own staff.

While AID has agreed in principle to compensate the Consortium for extraordinary expenditures, the negotiations process has drained the Consortium's funds and, required borrowing from the bank at a level which occasioned non-recoverable interest payments of nearly \$30,000.

- c. The Proposal for Phase IV, submitted originally by the Consortium on June 6, 1990 is still in processing at AID, thus depriving management of funds which could - in a practical way - maintain the organization.

- d. Those three events, in combination, sufficiently drained the Consortium's funds to the point where the Corporation's Trustees ordered termination. In consequence, program management has been ceded to Texas A & M University.

- e. Success of the "Circulation of the Eastern Levantine Basin Project" depends to a large extent upon the coordination of the participants' computer facilities and techniques. At the January, 1990 meeting a common system was agreed upon, which was already available to the USA and Israel. What had been envisioned as a routine procurement action for Egypt turned into a nightmare when the cost of the system was discovered to exceed the upper limit within which sole source procurement was permitted. The procurement process: writing specifications; inviting bids; processing the purchase order; arranging shipment; reordering when two of the parts failed to arrive; and final delivery; occupied 15 1/2 months, essentially depriving the Egyptians of full-scale

participation in the project.

- f. The fish nutrition project has suffered from lack of transportation between the central laboratory near Alexandria and the distant experimental ponds.
- g. It appears that the Egyptian per diem allocation--extremely generous for foreign travel--is rather frugal for domestic traffic. While actual transportation costs are compensated, subsistence (lodging and meals) appears to be limited to 5 E.L. (about \$2/night).
- h. Several projects reported variations between proposed-budget and actual costs, mainly due to inflation rates which reduced the values of the shekel and Egyptian pound, requiring adjustments among object classes, adversely affecting the exchange rates for imported items.

6. STATUS OF THE PROJECTS

Shore Processes

The projects achievements as reported in the preceding sections, indicate the projects' status rather clearly. The model is designed to predict the longevity and efficacy of structures designed and constructed in or near the water's edge.

The project's scientists and engineers claim that one more year's work is needed for completion. They have submitted a proposal for this extension to the Steering Committee. Trade-off decisions must now be made, with the understanding that we are in a zero-sum game. In other words, the Agency for International Development has just so much money available, appropriated to the Regional Cooperation Program. That Program's managers must establish their order of priorities, e.g. Aquatic programs vs. land-based programs.

As these priorities are conveyed to the Steering Committee, that group confronts the Decision Matrix:

- 1/ Mediterranean Program vs. Aqaba Program

- 2/ Mediterranean Projects' continuance vs. new projects (e.g. Phase IV)

3/ Continuance of Project A. vs. Project B.

The Steering Committee, giving approximately equal priority to the Mediterranean and Aqaba Programs, has determined in principle that new projects, institutions, etc. deserve higher priority than extensions. On the other hand we cannot afford to lose the beneficial effects of an existing program. In consequence, the Committee has ruled that compilation and submission of ongoing project extensions must await AID actions in Phase IV.

A comparison of old (circa 1940) and recent air photographs to detect coastal changes is now underway. In order to overcome difficulties such as distortion, scale, detection, and identification of the water line, etc. image processing techniques, using scanners and computers are currently being employed. This work is being carried out jointly with Dr. M. Shoshani and Mr. A. Degani from the Bar Ilan University which is just now being introduced to the Program. Preliminary results of this work indicate that this method has a significant potential in outlining shoreline changes.

b. Circulation of the Eastern Mediterranean Sea

1/ The curvilinear grid of the Mediterranean is still under development; it uses a grid generating program which utilizes a cubic spline routine, to define the borders of the grid. The grid

interior is filled by imposing the condition of orthogonality between the longitude and latitude lines at each grid point.

- 2/ The two bathymetric maps prepared under the auspices of this Program have been compared with the map of the Mediterranean Sea produced by the U. S. Defense Mapping Agency, and are in agreement with it in reproducing the main features of the coast and of the Continental Shelf of the Mediterranean. The differences are discussed in the technical report, appended as Appendix I.

Utilizing the same technique temperature anomalies have been discovered and are currently under analysis.

- 3/ An extension of one to two years appears to be needed to attain the projects' goals, including completion of the 9.5 years data series. The calculated fields will be used in numerical circulation experiments. Monthly mean fluxes will also be calculated.

FEDERAL CASH TRANSACTIONS REPORT

(See instructions on the back. If report is for more than one grant or assistance agreement, attach completed Standard Form 272-A.)

Approved by Office of Management and Budget, No. 46-RO111

1. Federal sponsoring agency and organizational element to which this report is submitted

AGENCY FOR INTERNATIONAL DEVELOPMENT

2. RECIPIENT ORGANIZATION

Name : New Jersey Marine Sciences Consortium

Number and Street : Building #22

City, State and ZIP Code : Fort Hancock, New Jersey 07732

4. Federal grant or other identification number

5. Recipient's account number identifying number

6. Letter of credit number

7. Last payment voucher number

72001409

141

(Give total number for this period)

8. Payment Vouchers credited to your account

9. Treasury checks received (whether or not deposited)

1

0

10. PERIOD COVERED BY THIS REPORT

FROM (month, day, year)

TO (month, day, year)

December 1, 1991

December 31, 1991

3. FEDERAL EMPLOYER IDENTIFICATION NO. 23-7025812

11. STATUS OF

FEDERAL

CASH

(See specific instructions on the back)

a. Cash on hand beginning of reporting period

\$ 75,565

b. Letter of credit withdrawals

19,000

c. Treasury check payments

- 0 -

d. Total receipts (Sum of lines b and c)

19,000

e. Total cash available (Sum of lines a and d)

94,565

f. Gross disbursements

18,115

g. Federal share of program income

- 0 -

h. Net disbursements (Line f minus line g)

18,115

i. Adjustments of prior periods

j. Cash on hand end of period

\$ 76,450

12. THE AMOUNT SHOWN ON LINE 11J, ABOVE, REPRESENTS CASH REQUIREMENTS FOR THE ENSUING

Days

13. OTHER INFORMATION

a. Interest income

\$ 66.73

b. Advances to subgrantees or subcontractors

\$

14. REMARKS (Attach additional sheets of plain paper, if more space is required)

Egypt - 84,076
Israel - 9,990
U.S.A. -(17,616)
76,450

15.

CERTIFICATION

I certify to the best of my knowledge and belief that this report is true in all respects and that all disbursements have been made for the purpose and conditions of the grant or agreement

AUTHORIZED

CERTIFYING

OFFICIAL

SIGNATURE

Celia I. Von Oesen

TYPED OR PRINTED NAME AND TITLE

Celia I. Von Oesen
Chief Financial Officer

DATE REPORT SUBMITTED

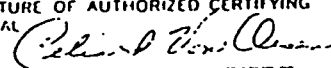
1/14/92

TELEPHONE (Area Code, Number, Extension)

(908) 872-1300

THIS SPACE FOR AGENCY USE

28

FINANCIAL STATUS REPORT <small>(Follow instructions on the back)</small>		1. FEDERAL AGENCY AND ORGANIZATIONAL ELEMENT TO WHICH REPORT IS SUBMITTED		2. FEDERAL GRANT OR OTHER IDENTIFYING NUMBER		3. OMD Approved No. 80-RO180		PAGE OF	
		AGENCY FOR INTERNATIONAL DEVELOPMENT		AID/NEB-0158-G-SS-5192				1 100	
4. RECIPIENT ORGANIZATION (Name and complete address including ZIP code)		4. EMPLOYER IDENTIFICATION NUMBER		5. RECIPIENT ACCOUNT NUMBER OR IDENTIFYING NUMBER		6. FINAL REPORT		7. BASIS	
New Jersey Marine Sciences Consortium Building #22 Fort Hancock, New Jersey 07732		23 7075017				<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		<input type="checkbox"/> CASH <input checked="" type="checkbox"/> ACCRU	
		8. PROJECT/GRANT PERIOD (See instructions)		9. PERIOD COVERED BY THIS REPORT					
		FROM (Month, day, year) October 1, 1985		TO (Month, day, year) August 15, 1992		FROM (Month, day, year) October 1, 1991		TO (Month, day, year) December 31, 1991	
10. STATUS OF FUNDS									
PROGRAMS, FUNCTIONS/ACTIVITIES	(a) NJMSC ADMINISTRATION	(b) U.S. SCIENCE COOPERATION	(c) EGYPTIAN SUB-GRANTEE	(d) ISRAEL SUB-GRANTEE	(e) TRAVEL EGYPT	(f) TRAVEL ISRAEL	TOTAL OF a, b, c, & d.		
a. Net outlays previously reported	\$ 1,117,720	\$ 584,083	\$ 2,025,968	\$ 2,416,249	\$ 219,928	\$ 152,720	\$ 6,144,020		
b. Total outlays this report period	53,993	101,580	84,744	1,040	24,912		241,357		
c. Less: Program income credits	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -		
d. Net outlays this report period (Line b minus line c)	53,993	101,580	84,744	1,040	24,912	- 0 -	241,357		
e. Net outlays to date (Line a plus line d)	1,171,713	685,663	2,110,712	2,417,289	244,840	152,720	6,385,377		
f. Less: Non Federal share of outlays	(241,563)	- 0 -	- 0 -	(228,454)	- 0 -	(17,789)	(470,017)		
g. Total Federal share of outlays (Line e minus line f)	930,150	685,663	2,110,712	2,188,835	244,840	134,931	5,915,360		
h. Total unliquidated obligations	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -		
i. Less: Non Federal share of unliquidated obligations shown on line h	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -		
j. Federal share of unliquidated obligations	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -		
k. Total Federal share of outlays and unliquidated obligations	930,150	685,663	2,110,712	2,188,835	244,840	134,931	5,915,360		
l. Total cumulative amount of Federal funds authorized	930,150	888,930	2,334,700	2,208,220	369,644	215,337	6,362,000		
m. Unobligated balance of Federal funds	- 0 -	203,267	223,988	19,385	124,804	80,406	446,640		
11. INDIRECT EXPENSE		12. CERTIFICATION		SIGNATURE OF AUTHORIZED CERTIFYING OFFICIAL		DATE REPORT SUBMITTED		TELEPHONE (Area number and extension)	
a. TYPE OF RATE (Place "X" in appropriate box) <input checked="" type="checkbox"/> PROVISIONAL <input type="checkbox"/> PREDETERMINED <input type="checkbox"/> FINAL <input type="checkbox"/> FIXED		I certify to the best of my knowledge and belief that this report is correct and complete and that all outlays and unliquidated obligations are for the purposes set forth in the award documents.				2/10/92		(908) 872-1300	
b. RATE 80%				TYPED OR PRINTED NAME AND TITLE					
c. BASE 29,996				Celia I. Von Oesen					
d. TOTAL AMOUNT 23,997				Chief Financial Officer					
e. FEDERAL SHARE - 0 -									
17. REMARKS: Add any explanations deemed necessary or information required by Federal sponsoring agency in compliance with governing legislation.									

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LIST OF PROJECT PARTICIPANTS

a. Predictive Model for Shoreline Changes along the Nile Littoral Cell:

- 1/ A. A. Khafagi (Egypt)
- 2/ H. Elwany (Egypt)
- 3/ A. Golik (Israel)
- 4/ Z. Carmel (Israel)
- 5/ D. Inman (USA)
- 6/ R. Lowe (USA)

b. Circulation of the Eastern Levantine Basin:

- 1/ I. Maiyza (Egypt)
- 2/ S. Brenner (Israel)
- 3/ G. Mellor (USA)

c. Induced Spawning of Grey Mullet:

- 1/ M. Zaki (Egypt)
- 2/ Y. Zohar (Israel)
- 3/ H. Gordin (Israel)

d. Experimental Feeding and Nutrition Studies of some Brackish Water Fish:

- 1/ A. K. Hamza (Egypt)
- 2/ G. W. Kissil (Israel)

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