UNITED STATES GOVERNMENT

Memorandum

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TO : TA/AGR, Dr. Leon Hesser
Acting Director

DATE: October 21, 1974

PD-AAM-602

FROM : AA/TA, Raymond E. Kitchell
Grant Coordinator

SUBJECT: Comprehensive Review of Auburn University 211(d) Grant on Aquaculture

Attached is the Team Report on the subject grant. Copies have also been sent to James Urano, the Grant Project Officer. Distribution in addition to that indicated below, and follow-up action should be taken by TA/AGR in accordance with the instructions and guidelines provided in TAB Manual Order 1026.3, revised on July 25, 1974, and soon to be incorporated in the agency grant handbook.

Your <u>personal attention</u> is specifically invited to recommendations A.1 and 2 on an AID fisheries policy and the bearing of such a policy review on this grant and also of the University of Rhode Island. This report should complete the inputs necessary for such a review which, in view of the short time left in the temporary extension granted earlier this year, is needed at the earliest possible date.

You are also requested to appoint someone on your staff, perhaps Dr. Baird, to take the initiative in contacting Mr. Fritz regarding recommendation E. 1 on training. While these suggestions involve other TAB offices, the major problem and workload, is in the agricultural area.

Thank you.

<u>Distribution</u> (with report attached)

Team Members

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Buy U.S. Savings Bonds Regularly on the Payroll Savings Plan

October 21, 1974

MEMORANDUM FOR: TA/AGR, Dr. Leon Hesser
Acting Director

FROM : AA/TA, Raymond E. Kitchell REK
Chairman, Comprehensive Review Team

SUBJECT : 211(d) Grant to International Center for Aquaculture, Auburn University

I. BACKGROUND

On September 18 and 19, 1974 an intra-agency review team met with officials and faculty of Auburn University to conduct a comprehensive review of the subject grant in accordance with the instructions and guidelines provided in Technical Assistance Bureau Manual Order 1026.3 (Revised). The team members included Lane Holdcroft, SA/TD/RD; Raymond E. Kitchell, AA/TA and chairman; Robert B. Morrow, ASIA/TECH; Dr. James L. Storer, Special Assistant for International Fisheries, National Oceanic and Atmospheric Administration; and Dr. Gary Toenniessen, Associate Director for Natural and Environmental Science, Rockefeller Foundation. James A. Urano, Grant Project Officer, TA/AGR, served as executive secretary to the team. Officials of Auburn University who participated through most or all of the sessions included Dr. C. C. Carroll, Vice President for Research; Dr. E. Wayne Shell, Head, Department of Fisheries and Allied Aquaculture, Director of the International Aquaculture Center, and 211(d) Grant Program Director; Dr. R. D. Rouse, Assistant Dean for the School of Agriculture; and Dr. Donovan D. Moss, Dr. Ross O. Smitherman and Dr. Edward W. McCoy, Faculty Members.

Introductory statements were made by Harry M. Philpott, President; Ben E. Lanham, Vice President for Administration, and Dr. Carroll. The President mentioned the pride with which Auburn University views its international involvement in fisheries, a theme reiterated by other Auburn officials. He also expressed Auburn's continuing interest in international problems and that it is looking to AID to provide information wherever possible to allow Auburn to give assistance where its expertise and capabilities lie.

Dr. Lanham reminded the team that Auburn is a land grant institution serving three principle functions; teaching, research and extension. For the first time, it has received

more state funding than the University of Alabama and now has the largest enrollment in the state, with last year's student enrollment up 9% while most schools in the United States were declining. This year AU expects to have an enrollment of 16,000 students, a rise of 6%. Such increases require more funds, leading to a need to increase faculty numbers which also enhances the institution's capability, quantitatively and qualitatively, to improve teaching and research activity. This year AU has been allocated 6 million dollars for physical facilities improvement and next year has been promised 8 million. The 211(d) grant provided the means to establish the International Aquaculture Center and encouraged the state legislature to supply funds to build a new fisheries department building which was dedicated in 1973. AU is proud of its accomplishments in fisheries and aquaculture with in the region, nationally and on an international basis. AU efforts are supported by the state legislature, the executive branch and the institution. AU stands ready to continue its cooperation with AID and will design and pattern future fisheries and allied aquaculture activities to AID's new policies and programming direction.

Dr. Carroll commented on the stability permitted the fisheries department by the 211(d) grant which, prior to AID involvement, was a sub-division of the zoology and anthropology department. Progress and development of the fisheries department is reflected in the rapid increase of faculty since 1966 from eight to 22. During this same period, the number of staff serving overseas increased from zero to seven. Man-months of international service increased from 6.9 to 15. Graduate enrollment increased from 26 to 67 with the number of foreign students going up from five to 34. There have been increasing contacts with LDCs with most recent request coming from Nigeria where the government plans to develop 110,000 acres of farm land of which 1,000 will be used for aquaculture. AU will be sending a trained and experienced technician on a two-year assignment, renewable for an extra year. All of these facts are cited to show that the 211(d) grant has permitted AU to make substantial improvements which they are most proud of in terms of accomplishments.

These statements were followed by a presentation by the Team Chairman, who summarized the results of the intra-agency review of the 211(d) program and the events leading up to the Auburn and similar comprehensive reviews. Changes in Agency policy, expectation and management processes were stressed and their implication on requests for extensions of 211(d) grants. Brief remarks were also made by other team members.

Dr. Shell then provided the team with background information on the factors which lead up to the development of the initial grant request. In 1967, AID came to Auburn to request technical assistance in establishing a worldwide inland and fisheries aquaculture program. As a result of consultation and a number of conferences, Auburn prepared a proposal calling for a three-phased project. Phase one was to be concerned with the development of an adequate staff at Auburn to handle the increased workload and the identification of problems such as sites for fish culture development, appropriate fish species, pond design, processing, distribution and marketing systems, fish diseases and parasites, and feeding. Phase two was to involve the extended development of facilities including commerical ponds and implementation of hatcheries. Under Phase two, the necessary research activities were to be expanded. In Phase three, extension of host country demonstrations began in Phase two was to be continued. In summary, the proposed project was to do the following things: (1) develop an adequate staff; (2) pinpoint major problems; (3) began adaptive research; (4) locate sites in LDCs for development of research and demonstration stations; (5) build and staff stations; (6) extend information throughout a country; and (7) develop network for exchanging information between host countries. The project was accepted by AID and a contract was signed for the first 18 months of work with an initial funding level of $160,000. In formulating the project, it was planned at all costs except those for construction, would be handled under the Auburn contract including salaries for personnel, travel, equipment, housing, and education. At that stage mission participation or mission funding was <u>not</u> considered. This project or contract was planned to continue for at least 60 months <u>but</u> was terminated after only two years. Total funding for this period was approximately $365,000. By the time the project was terminated Auburn had hired six additional staff members. Auburn is not certain what prompted the termination but suspects that it was because overseas missions were not adequately involved in either the planning or funding of country specific projects.

This contract was replaced by a Basic Ordering Agreement that carried no funding. Task Order #1, however, took over the core funding, including overhead, that had been initiated in 1967 but it also significantly altered and reduced the thrust of the original idea. This time the purpose was specified as developing and maintaining a faculty staff to respond to requests from AID for technical assistance on fresh and brackish water fish culture techniques and related problems. It did not call for any specific service overseas. Those services were to be requested by missions through specific task orders. Ultimately, seven task orders were executed, calling for specific work in Brazil, Peru and

Thailand. For some reason, in El Salvador, Panama and the philippines, AID chose to write separate contracts instead of using task orders.

Task Order #1 authorized periodic survey and evaluation studies on a worldwide basis including, but not limited to, the following: (1) determination of the most efficient pond fish species or combinations of species for highest yield; (2) development of effective pond feed and fertilization techniques; (3) establishment of improved fish pond management systems for use on a wide scope, including recommendations for suitable pond sites and designs; (4) development of hatchery and fish culture methods adaptable for stocking and restocking inland water systems; and (5) investigation of fish diseases and parasites in the development of prevention and treatment methods. 132 man-months of technical efforts on campus were authorized, including 84 man-months of professional staff for the one-year period, June 30, 1969 to June 29, 1970, and was funded at a level of $295,504. With the task order in hand, Auburn set about to build a staff necessary to do the work that AID apparently wanted done. By early 1970, Auburn had increased its professional staff by eight persons beyond the 1967 level.

By late 1969, however, it became evident that anticipated programs were not going to materialize and support under this task order would have to be drastically reduced. There was still considerable support for aquaculture in AID/Washington, so a search began for a mechanism to protect and maintain a least a portion of the expertise that Auburn, "in good faith," had assembled. The obvious mechanism to accomplish that purpose seemed to be a 211(d) grant. Accordingly, a grant proposal was prepared that would allow Auburn to maintain the staff and facilities already developed under <u>prior</u> AID arrangements and to continue the scope of services called for in the task order arrangement. The proposal that was approved on June 25, 1970, was, at least in the opinion of Auburn, primarily a continuation of certain aspects of Task Order #1.

Task Order #1 was not terminated June 29, 1970, but no additional funding was provided until December 1970, when $20,000 was added. Task Order #6 was approved April 1, 1971. It called for essentially the same services as Task Order #1. It was funded at the level of $75,000 and authorized only 31.2 man-months of staff time, including only 19.2 man months of professional staff. An additional $70,000 was added by amendment #1 to Task Order #6, on March 31, 1972, but no additional funding was added and Task Order #6 was terminated September 30, 1973.

II. DISCUSSION OF ISSUES

Unfortunately, the issues paper was not provided Auburn in sufficient time for them to prepare written comments for the team beforehand. During the discussions, however, the Chairman pointed out that he would be happy to receive any written comments on the issues after the review was completed, which were subsequently provided by Auburn and are attached hereto. What follows is an attempt to summarize and highlight the discussions as objectively as possible, supplemented by the written materials provided to the team.

Whether Auburn University increased its competence and met the objectives as outlined in the grant and what needs to be done to plug-up any gaps

A prime objective of the grant was to "add and/or develop expertise in the faculty to provide broader technical assistance to the LDCs." In the explanation of this issue, TA/AGR stated that, from the documentation available, it was unable to determine (1) the quantity and quality of identifiable areas of expertise resulting from the grant, (2) faculty exchanges with foreign universities, (3) AU's capacity to respond to short-term requests for technical assistance to formulate LDC aquaculture programs, (4) whether AU's contract operations with individual country fishery program benefit or detract from 211(d) grant purposes, and (5) does the utilization of manpower in the LDCs and in support of contract programs reduce funding available for building staff competence in the academic area.

Dr. Shell, who did most of the talking for the university throughout the discussion of these issues, stated that if one goes back to 1967, the onward documentation will show considerable staff development, one of the best in the world. Areas of emphasis have been production, processing technology and management, with a recent remphasis or move into economics. The 211(d) grant was the only way to bring in new people, with no increase in direct contracts and no additional outside money. People have moved in and out of grant funding as circumstances required. Auburn agreed to provide documentation on before and after including a flow chart of the movement of faculty in and out of 211(d) funding, core staff, and some indication of their use both on-campus and abroad (See Attachment No. 1). According to Dr. Shell, 85% of the regular staff in the Department of Fisheries is also involved in the international center. Other departments are also

involved, including agriculture engineering, animal science, agricultural economics and food technology. Information was also requested as to what in terms of inter-departmental collaboration has been sparked directly or indirectly through grant funding. In 1974, the first economist was partially funded by 211(d) funds. Dr. Shell who has received 1/2 of his salary from 211(d), is also the department head and a staff member of the state legislature experiment station. Twenty-two departmental people have been involved with 85% already participating in overseas activity.

A discussion took place on just what AID meant by an institutional response capability, which was briefly described as (1) problem identification and analysis; (2) program design; (3) project services; and (4) evaluation in the grant subject/problem area. This lead to a discussion on actual and potential demand for services. Auburn believes the demand is increasing but signals from the field seems to be short-circuited in Washington and the request for services is turned down e.g., Nepal. Auburn was also asked to supply the team with a summary of such requests and service supplied. This lead to a discussion on communications and proper channels. Both Auburn and the TAB grant project officer were very sensitive to this point, undoubtedly as a result of past cirticism by field missions and/or regional bureaus but, whatever the cause Auburn has had little contact with people in AID/Washington outside of TAB who can deal as intermediaries with the field. In a recent meeting with Senator Sparkman and Administrator Parker, Auburn had raised this issue, i.e., their inability to communicate effectively with regional bureaus and their missions. By repeated statements, Auburn indicated its desire to respond in any fasion AID wished, but expressed a cautious reluctance to initiate any actions on its own.

Apparently, Auburn does not currently interpret demand as being from any donor other than AID and has given little attention to the potential need to respond for requests from FAO, the World Bank, etc. It feels it has all it can handle with AID alone. Auburn believes that they have been inhibited in communicating regarding their capabilities and that the field does not know as much about them now as they once did. There was considerable interplay on the difference between communicating directly with LDCs at the scientific and technical level vis-a-vis the development of projects which may require AID funding or involved national sensitivities. The point was also made that it is not the USAID but the host country that must take the initiative in developing any fisheries work. At any rate, it was evident that there was a communication problem between Auburn and AID in general and particularly within AID/Washington.

In its subsequent written reply, Auburn stated that "Beginning in FY 1974, the use of grant-funded staff in support of country projects has reduced funding available for building staff competence. Visits were made to several countries at the request of Missions to conduct surveys. These activities should have been supported by the Missions themselves. There are not sufficient funds available under the grant to build and maintain the desired competence and at the same time provide transportation, salaries, per diem and equipment in direct support of Mission requests."

Grant objectives also included "develop worldwide literature library with methods of dissemination" and "to develop worldwide data collection on economic food fishes and other aquatic organisms now cultured or that appear suitable for cultivation." TA/AGR stated that these two objectives apparently have not met in part and furthermore, there is some question as to whether or not they are still of high priority and whether aquaculture dissemination information needs a change.

Apparently, Auburn viewed these objectives primarily, in terms of library development and technical publications. They agree that those objectives should not be of high priority, at least as presently defined, but believes that some means must be found to provide "comtinuing education to LDC biologists. There was some discussion on how to get relevant information into the hands of users rather than just the heads of fisheries departments but Auburn states it has no knowledgable person with staff time to answer these type of technical requests. In discussing the needs for information dissemination, the chairman explain the general concept of 211(d) outputs, i.e., information system, expanded knowledge base and research capability, education and training capacity, advisory capability, and network and linkages. This exposition was completely new to Auburn and they expressed considerable interest. In the case of the "objective" the point was made that the team is not concerned with the purchase of 800 library books per se but how they related to the purchase of the grant. This was followed by a discussion of just what kind of information was needed by the user and what role Auburn should play in disseminating such information since, in the opinion of one team consultant, the gathering or production of such data is not Auburn's "bag." There was some discussion on means of information dissemination other than publications per se, e.g., use of workshops and seminars, outreach programs, etc.

The final grant objective highlighted by TA/AGR was "to provide training and educational opportunities."

TA/AGR stated it is not fully informed on (1) how participants in training are financed, (2) how they are utilized in LDCs after training; (3) how involved AU is with LDC institutions in the academic area of aquaculture and fishing; and (4) how AU considers workshops and/or training conferences as a reasonable approach to increase the national interest in aquaculture and does AU have the interest and capability for such effort."

Of the 49 foreign students trained since grant award, 35 were financed by PIO/Ps, with some recent applicants coming from Nigeria and financed by oil companies. There was considerable discussion about the requirements and cost of students from the developing countries. AID pays only the catalogue cost but special handling is necessary. In addition, it is difficult or impossible for LDC students to get outside support for graduate research and most Missions have not financed research costs for Ph.D. candidates. A lot of it is done at Auburn's own expense. In some cases, Auburn also believes that LDC students have been sent to the wrong institution and it was agreed that the grant project manager would talk with officials in OIT about both of these problems and see what immediate actions can be taken, particularly since Auburn's course study for warm water fisheries in agriculture is the best in the world. The point was also made that Auburn's training capacity should be made known to other important intermediaries, such as NOAA, FAO.

There have been only one or two cases of non-utilization, i.e., graduates remaining in the United States, but there is no formal followup with graduates and there has been very little linkages with academic institutions. Auburn states this is so because it has not been asked to do so or provided the necessary funds. It was suggested that former students would also be a useful conduit for dissemination of recent findings, and scientific literature. Auburn is bothered that more has not been done in this area but explained that they have been brought in <u>after</u> missions have designed the project and selected the intermediaries and is the result of mission contract policy. Little attention has been given to institutional development by any missions. This issue brought up the discussion of a proposed workshop in Thailand to be funded under TAB's Utilization Project. The proposal was formally submitted on April 11, 1974 with further progress, according to Auburn, "awaiting a USAID (SIC) decision on funding. The two regional bureau representatives on the team, who have overlapping concern with Thailand, were "unaware" of this proposal which has as its general objectives (1) identifying economic and management dimensions necessary for viable aquaculture development programs; (2) drawing upon the experiences and resources of multilateral and bilateral foreign assistance groups - both public and private -

and exploring areas of cooperation in support of aquaculture development: and (3) involving the resources of governments interested in aquaculture development and their private sector as necessary to support and implement a successful aquaculture development program. A discussion of how this proposal was handled in AID/Washington served to highlight the communication problem already referred to above. Workshops were again discussed as a device for information collection and dissemination, training, identification of research gaps, etc. AU informed the team than an international workshop on fisheries and aquaculture economics is also planned for 1975 or 1976.

Whether the grant purpose is too narrow or broad; particularly too narrowly devoted to fish genetics and selective breeding, fish pathology, fish nutrition and production

TA/AGR explained the issue by stating that it believes more attention should be given to manpower involvement, competitive state of fish, economics of various types of production, demonstration fish forms, extension service training, and to post-harvest handling, processing, and marketing. Also it is unclear what impact on AU activities has resulted from agency concerns directed at income distribution and assistance to the small farmer.

Discussion began with questions about the importance of non-technical factors as impediment to further development. Auburn recognizes the constraints but feels before it takes on any new emphases it needs to assure itself it has sufficient funds to maintain its existing competence. At this point Auburn's propensisty to do everything itself became evident. When it was suggested AU could augment its skills in cooperation with other universities and institutions, the immediate reaction was defensive with the statement that over-dependence on such collaborative arrangements would weaken its own response capabilities. The Center has recently taken on an economist from the economics Department of Agriculture and now believes it also needs someone in the area of rural sociology. The economist will work on the economics of production while the rural sociologist will be concerned with identifying the human constraints to the adoption of new technology.

No mention was made of the need for employment analysis and income distribution effects. There was considerable discussion, lead by the team members, on the advantages and need for tieing into an evolving network, at the national as well as at the international level, as a way of bringing together an effective critical massing of expertise without expensive redundencies. It was evident that there is a challenge to increase the horizons of Auburn without losing its production and technological focus. Insofar as the

small and rural poor farmers are concerned, Auburn states it has long been interested in this problem in the United States and is more than willing to focus on the small farmer and artisanal fishermen and provide new emphasis on the economic and social constraints involved. In any event, AU has reviewed the grant as primarily "...for core support of the staff assembled at USAID request under previous contracts." If core support can be provided in some other fashion, than future grant activities, in the opinion of AU, can and should be broadened, particularly "...to include some emphasis on economics and rural sociology as these relate to fisheries development."

Concern that not enough has been done in ascertaining the "state-of-the-art" in the LDCs, in filling the gaps, and recognizing the needs

In the explanation of this issue, TA/AGR, says it is unclear how far AU has progressed in recognizing the constraints in the LDCs which inhabit greater interest and action in fish production activity. As discussed above, there is concern that AU is not sufficiently involved in the socio-economic aspects of aquaculture in either research or action programs and is, therefore, not fully aware of what the restraints are in the LDCs for greater interest in fish production. TA/AGR also states it is unaware of how much analysis AU has done to determine the applicability for U.S. aquaculture techniques in LDCs and whether they are too sophisticated or too expensive for adaptation and utilization. Finally, it was suggested that AU must be better prepared to apply research to action programs on the assumption that more attention and funds will be devoted to fisheries and aquaculture under new AID policies and program determinations.

Dr. Shell led off a rather lengthy discussion on this issue by stating that Auburn has been in a lot of countries and it has a feel for the constraints but the importance and priority of these sometime change rapidly, for example, the current energy crises. Unfortunately, a lot of people in this area are posing as experts when they really do not know enough about the problems. To illustrate, Shell gave some of the constraints involved with governments with whom AU is directly associated. In the case of Thailand, it is basically a lack of adequate extension capabilities and of adaptation to modern technology. In Brazil, there is a lack of trained personnel and effective coordinating mechanisms within governmental units. In Bangladesh, there are no hatchery or delivery systems of juvenile stock and a limited knowledge on juvenile stock production. In India, the basic constraint is not trained people but the lack of adequate research facilities.

The raply to the specific question of what AU had developed in the terms of state-of-the-art work centered about AU's academic course in aquaculture production where, annually, methods are "surveyed." Participation in the development of TA/AGR "white papers" is another example of efforts in ths this direction which were considerable constrained, AU states, when Task Order #6 funding was terminated. Auburn has tried everything including slide shows, special publications, etc., to illustrate the need but doesn't believe they can do anything until AID tells us what they want. Past efforts have been misinterpreted as self-serving. AID current concepts, including state-of-the-art work as a basic approach in an institutional grant, was explained, giving as an example the recently executed 211(d) grant to the University of California, at Riverside in the area of dryland moisture conservation. Auburn responded it would be delighted to work in this type of a framework with proper AID leadership.

AU was asked what it was doing in the infrastructure area, particularly, in concern with credit, coop organizations and similar constraints to resolving production problems. Again AU replied it hadn't done much since there had been no request for assistance in this area. AID's requests to date have been mostly limited to pond development and delivery. AU does not generally get involve in project planning but is given the project with the objectives already set. This triggered some discussion on AU's capability to design projects and the probable demand for more response capacity of this nature in the future, particularly in view of the current SOG discussions on the involvement of universities earlier in the design phases of collaborative technical assistance projects.

In response to a question, AU discussed its current plans, in cooperation with the University of Arizona to do a research project on an integrated watershed system that includes the management of water resources for the production of vegetables, livestock and fresh water fish in small watersheds before the water escapes onto large plains. The status of this research proposal within AID was described by the grant project officer as "shelved" along with many others pending Agency policy and programming direction. The Chairman of the review team pointed out that this was the kind of interdisciplinary, problem and production-oriented research that should be encouraged if technically feasible.

Dr. Shell stated that AID did not ask AU to move in the socio-economic aspects of aquaculture until quite recently and pointed out that AU has and already moved in this direction at the state level. The micro-economic level is

important but team members pointed out that many donors such as the UNDP, need the macro strength in terms of crop competition and an integrated approach within a sector model. It was suggested that this was one important gap in the state-of-the-art work to date and that there was also a need to focus on a national fisheries policy, given the poor data base in most LDCs. While admitting that they have not been involved enough in the socio-economic aspects, Dr. McCoy believes that AU is fully aware of the restraints and their implications for sector and intersectoral analyses, as an example, gave recent work in El Salvador. A major problem is how to approach sector analysis when there is no micro research and data. At any rate, to this date AU see-little indication that their present programs have suffered.

There was also discussion regarding AU's contact with other organizations to help in this aspect of the state-of-the-art Auburn was obviously resentful of the effort, sponsored by TAB and channelled through NOAA, which involved Florida State in an economic analysis of aquaculture without Auburn's active participation. They were also generally unresponsive to the note that the University of Rhode Island was the only school in the country with a Ph.D. for marine economists. Dean Rouse, however commented, that marketing economists are interested in sector analysis but not in production economics, at least as it concerns fish. Auburn is already doing this at the domestic level and Rouse stated they would be pleased to move in this direction in the international area.

On the applicability of U.S. technology, Shell believes that AU has been strong in this aspect from the start. Former Director Swingle stressed the need to identify which U.S. technologies are appropriate for LDCs, e.g., he was reluctant to introduce channel catfish around the world until tested but was severely criticized because this required moving too slow in the opinion of some field officials. Certain technology can be transferred immediately, but others require on-site testing with local technicians and needs demonstrated success. Regarding the application of research results, Shell thinks AU is already doing as much as possible under the limitations of current manpower and staff. A research proposal on fingerlings which would be widely applicable was given to AID and is now being considered as an OAA project titled "Juvenile Fish Seed Stocks and Delivery Systems." The project has not yet been presented to the Regional Bureaus. Consideration of the issue ended on low versus high input technology and whether the application of aquaculture to small farm operators sounded to simple to LDC leaders. There was also discussion on whether the technology already available to the small farmer was being fully utilized, for example, the production of small fish in

paddy fields. The forthcoming UN conference on aquaculture was mentioned including what results, if any, can be expected in revealing the state-of-the-art. Dr. Shell was not sanguine about such results.

On the application of research results, AU states it has "...responded to virtually all requests from AID for technical assistance and are prepared to do so in the future." It is pointed out, however, that trained people in aquaculture are in short supply with a strengthening domestic market for their services.

<u>Indication that AU may have too narrow an interpretation of its role in maintaining liaison with the Marine Research Development Center at the University of Rhode Island in developing appropriate relationships with other universities, international centers, and government agencies</u>

TA/AGR detects hesitancy on the part of AU to cooperate with URI, a reluctance to look to outside sources for assistance, compounded by a lack of appreciation that AID is looking to AU for leadership, and a slow acceptance of the fact the new mechanisms must be developed to enable AU to work with other US expertise sources.

AU and URI have made an effort to visit back and forth regularly although admittedly the interchanges have not been frequent. Only Nelson Marshall and Tom Weaver have visited Auburn and only the Deputy Director of ICA and Dean Rouse have visited URI. There has been some cooperation, particularly in the recent preparation of the "white papers." Dr. Shell expressed the opinion that URI's focus is on oceanography and marine fisheries and that they have added aquaculture as a recent interest, one for which it lacks the necessary capability. He claimed that URI staff is reluctant to get into aquaculture, either brackish or inland, and is being pushed by AID. AU states it is not at all adverse to working with URI but adds that, to this point, their approaches to development have been so widely divergent that there is relatively little common ground in their programs. In the opinion of some team members, this statement reflected a rather limited definition of aquaculture on the part of AU, associating it with only inland or warm water fish culture. There was considerable debate about the desired concern with artisan fishermen, possible, overlap in the brackish water area, and the strength of URI in the sociological and economic approaches to aquaculture problems. Discussion also took place about the possibility of a U.S. fishery network including not only AU and URI but also ICLARM, the Oceanic Foundation, Sea Grants Program, and the National Marine Fisheries Services. The possibility of joint ventures was also discussed. Throughout all this discussion, Dr. Shell answered in the affirmative, agreeing that Auburn had taken a very narrow interpretation

of its role but pointing out that it never worked on any common problems that would involve these institutions and that AID had never asked AU to undertake any of these steps. Cooperation can only take place when there is something to build upon. The extent of AU's cooperation and linkages with FAO were also discussed. There have been frequent visits to Rome and some training to FAO's staff and editing of publications. There have been some joint assignments in Ecuador and Colombia but there was still some concern expressed by team members that AU could be more utilized by FAO, for example, serving on FAO's committees concerned with fisheries.

Dr. Shell replied that Auburn has tended to shy away from such contacts because if it built up such a demand, all of its staff would be away from the campus too long. On the other hand, AU complained that it does not get any trainees from FAO. In terms of the World Bank and other funding sources, AU said it sent out some trial ballons but it ended up chasing rabbits.

During this discussion, AU complained that it has submitted several proposals to Washington, some initiated by TAB itself, but never gets a yes or no response and concluded by reiterating the question on just how much AU should do. AU states "there is little indications at this point that AID looks to Auburn for leadership..." and adds that even though AID is now "...apparently making a rather major decision on the degree of future involvement of the Agency in aquaculture, Auburn has had almost no role in this process." When AID decides, AU is willing to go in any direction but is not trying to build up an empire by itself. It was also suggested that AID needs expertise of its own to enter into an effective dialogue with AU and other institutions.

<u>Conditions under which the grant should be continued, particularly in relationship to the future needs and utilization prospects of AUs institutional response capabilities to solve LDC problems</u>

While AU reiterated its intent to ask for a grant extension, it stopped drafting a detailed proposal because it was not ready to move until AID decided on its own policy and interest in aquaculture. The Chairman, therefore, attempted to steer the discussion in terms of what alternatives are available to AU and AID and their probable consequences. Shell's reaction was requested to the apparent alternatives, i.e., (a) contracts for services only; (b) a Task Order #6 arrangement again for core support and (c) a 211(d) utilization grant. Shell replied that the optimum is a combination of all three options. Task Order #6 would be used to provide core support for the production and micro economic functions, contracts to provide actual services, and the 211(d) for general brainstorming and new effort

Best Available Document

If the alternative would be mission funded contracts only without core support, Auburn would initiate actions to get out of the international arena. This would necessitate broadening their domestic program support base and looking to (the domestic systems of) such organizations as the National Science Foundation for support. It is impossible, AU states, to operate with contract support only and the difficulties are compounded by the complicated and time consuming contract procedures. For example, AU has been carrying the cost of its activities in Brazil, waiting for its old contract to be extended under new financing arrangements. It was pointed out that any grant extension would not be simply on the basis of continuing the current program but on the outputs to be produced. Dr. Shell replied, "Tell us what the products should be and we will consider them." In its written statement, AU warns that "...this expertise cannot be purchased by the pound, ton or crate. Regular 'buyer-seller' relationships cannot be used to transfer expertise from the universities to AID. New types of agreements cooperative agreements possibly, must be developed to effectively provide for orderly building, storage and delivery of this expertise." (See Attachment, Pages 11-14).

Discussion concluded with opinions expressed as to what the grant external proposal should reflect, particularly in terms of this review and current policies in the agency regarding 211(d) grants in general and utilization grants in particular. The need to develop a cooperative and somewhat innovative relationship was stressed by both parties and the open discussion of issues terminated with a request by the Chairman for prompt submission of the requested written responses and materials. AU concluded its story by reiterating a strong recommendation that the 211(d) grant be continued and agreeing to a realignment of their activities with priority emphasis on meeting agency policy and program directions. It was pointed out, however, in view of comments previously made about the level of funding probable under any utilization grants, that the agency needs to consider whether they should be pushing AU to expand their technical capabilities in areas not now covered at the possible sacrifice of the existing competence in production technology.

III. FINDINGS AND CONCLUSIONS

General

The original proposal to strengthen the International Center for Aquaculture at Auburn University defined the purpose of the center as having "...the competence, capability and methodology for providing the required expertise in all phases of aquaculture to serve under appropriate contractual

agreements for the needs of AID." Given the events that lead up to the award of this grant, as discussed in the background section of this report, it is clear that indeed Auburn University has done everything requested of it by AID. It is equally clear that they are the outstanding institution in the entire world in the area of aquaculture production technology in warm water areas. Its commitment to the international dimension is total and, in fact, the international fisheries program is a source of great pride to the university as a whole. The comments suggestions and implications as well as explicit ciriticims included in the following narrative are presented with the understanding that much of the fault may lay elsewhere than with Auburn University or simply be the result of change since the conception of the original grant. The following comments also emphasized what can and should be done rather than what has or has not already been done.

Achievement of grant objectives

The grant document itself, that is, the proposal, is rather typical of some of the early grants in terms of its vagueness and generalities. The first 25 pages are simply a description of the institution's facilities and participation in international aquacultural activities. Considerable detail is given to the specific technical areas which are in most critical need of improvement including means for strengthening the training and consultation program. Unfortunately, the documentation of progress in meeting these needs is very poorly done. The annual reports are very sparse, not accumulative in nature, and do not include work plans for the forthcoming year. They do not give one the sense of a forthcoming year. They do not give one the sense of a developing knowledge base, partially becuase the annual reports were not conceived in that nature. The original grant agreement contains no hint of how AU intended to use its funds to produce any specific results. Given this lack of specific indices, the obvious peer recognition of its competence as an international center and its record of response to AID initiatives-the team can only conclude that indeed Auburn University has successfully achieved the purpose of the orginal grant.

On the other hand, it must be stated that Auburn has taken a short-term and constrained look at its responsibilities and demonstrated little or no initiative, accepting a passive role and looking for leadership which often was not forthcoming from the agency. Even in the cases where AU has taken the initiative, for example, in the joint proposal with the University of Arizona, the initial suggestion came from TA/AGR. There is an apparent tendency toward parochialism and imbreeding on campus and a deplorable lack of knowledge and contacts with key paopla in the AID/Washington bureaucracy

and with other donors*. It is apparent that within any refocus, attention has to be given to world-wide needs for information on aquaculture and what role Auburn should paly vis-a-vis other organizations in disseminating such information.

Auburn has done an excellent job on providing training and educational opportunities, particularly on-campus. They desperately need help in providing student support, not only for the special arrangements usually required for students from less developed countries, but to provide adequate funds necessary to perform relevant research at the Ph.D. level. Time did not permit a discussion on the involvement of minorities but with the potential increase of African participants, particularly from Nigeria, attention should be given to means to facilitate their acceptance within the campus community. It is obvious that Auburn needs to make more effort to contact key training conduits not only on OIT but in other key agencies such as NOAA and FAO.

Grant Focus

The focus of Auburn University has been exclusively upon aquaculture and, within that focus, almost exclusively with fresh and warm water aspects. This concentration is understandably given the interest and competencies of the staff involved. It is also desirable in terms of being able to meet a specialized and particular demand and to maximize the efficiency and capability of the staff. However, in this focus upon aquaculture, Auburn University has been essentially concerned with production. It has not been looking at the problem or opportunities for aquaculture in any broad context of national goals, rural planning and development, or in terms of the economic alternatives to aquaculture. They have not, in other words, been making such use of disciplines in the social sciences, i.e., economics, sociology, anthropology, political science or public administration. It is noted that they are recently employing the services of an economist up to 20% of his time but they seem to have applied this expertise primarily to micro-analysis of particular aquaculture projects, not in any of the broader sectoral and a macro aspects.

There are a number of reasons that dictate a broadening of the discipline base applied to aquaculture.

* Subsequent to this review, a list of key contacts in AID/W, other donors, and potential linkages was developed by team members and sent to AU by the grant project officer.

Most imporatnt is the fact development as it applies to the small farmer or fishermen is increasingly considered as a whole package embracing economic, political, social and anthropological aspects. In order, therefore, for Auburn University to make the most effective utilization of its capabilities in the technical field, it must also be able to deal in a reasonably sophisticated fashion with the nontechnical aspects and this requires a competency in or tie-into other disciplines.

It is also true that development projects are increasingly being funded in the context of national plans, both in the selection of national priorities and the determination of international assistance. Thus, for instance, UNDP activities in particular are based upon a country program and to be acceptable in such a program any project must be economically competitive with possible alternatives. It is necessary that those concerned with aquaculture project should be able to provide the means for establishing their justification. It is clear to the team, therefore, that Auburn University must provide a greater role for social scientists and that they must be involved in all levels of the Center's planning and operations. Only in this way can the necessary balance be achieved with the already recognized competency in the technical and production aspects of aquaculture. This does not mean expanding Auburn University's concern outside of warm water fisheries but rather deepening and strengthening its total systems and interdisciplinary competence <u>within</u> such a focus. Similarly, such a movement by Auburn does not necessarily require the addition of on-campus staff but rather more effective linkages with the fisheries and related communities in general in specific aspects of the aquaculture system.

Running through all this is the agency's increasing concern with the small, rural, poor farmer with particular emphasis on better income distribution, employment generation and the consequent need for low-technology inputs which should be reflected in any redefinition of the agency's relationship with Auburn. The desired focus of any grant extension will depend upon agency decisions of where it wants to go in the general area of fisheries, and warm water aquaculture in particular. The team reiterates the recommendations it made regarding "AID fisheries policy" in its previous report on the University of Rhode Island comprehensive review. Obviously, any decisions on the extension and/or revision of this and the URI grant will be directly affected by the result of such a policy review. The bulk of international financing available to carry forward fisheries development projects will come from IBRD and the regional banks. Therefore, it is quite appropriate for Auburn and the others involved in design

and preparation of fisheries projects to become very familiar with and adhere to the methodology being used by these financial institutions in project formulation.

State-of-the-art

AU's efforts in this direction have been limited and production -oriented. We did not get the impression that AU realized the important lead role it could take in such an endeavor -although we sympathize with their concern that previous efforts had been received by some parties in AID as self-serving. International interest in the potential of aquaculture to make a significant contribution to food supply, particularly in the LDCs, has fluctuated considerably in recent years. It was only five or six years ago that some were claiming that protein supply from aquaculture and fisheries was a panacea for world food problems. Much of this optimistic speculation, however, was based upon extrapolations which did not take into consideration the many limitations inherent in natural and artificial production systems. As such limitations were examined and brought to light and as actual fish catches began to level off and in some cases significantly diminish, interest in aquaculture waned. In the past year or so, however, several more realistic appraisals again suggested that aquaculture could make an important contribution to the improvement of human nutrition, particularly in protein deficient regions of the world. Much of this fluctuation in interest and diversity of opinions stems from the fact there has been no definitive state-of-the-art report prepared in the field of aquaculture which would clearly indicate its value in meeting the needs of LDCs. There needs to be a comprehensive examination of potentials, accomplishments, limits, and impediments of aquaculture development in the LDCs. This should be undertaken by, and should reflect the consensus of, a sufficient number of authorities in the field to justify broad acceptance of its conclusions.

If AID continues to support aquaculture development programs at the University of Rhode Island and Auburn University and initiates, as planned, research programs at the Oceanic Foundation, it would seem logical that these three institutions could effectively take a leadership role in preparing such a state-of-the-art report.* One could envision experts from these institutions, plus a few key consultants, forming a task force which would prepare a first draft report. This draft could be broadly distributed for review allowing additional and critical comments to be received and, if appropriate, included in a second draft. This could then serve

* See attachment No. 2

as an input to a small international workshop of world authorities in the field. These experts could be asked to review and, if appropriate, endorse the conclusions reached in the draft report or to provide a rationale for failure to endorse any portions of the report and to make any additional comments they feel would be of value. This could then lead to a definitive state-of-the-art report containing a series of statements and conclusions which would reflect the consensus of world experts, plus a second listing presenting a review of issues on which there is insufficient knowledge to reach conclusion and/or which there remains a divergence of expert opinion.

This of course is just one possible approach for obtaining a state-of-the-art report. It should not be exorbitantly expensive since two of the principle institutions involved would presumably still have grant support which could be used for this purpose. The result would be of significant value to various funding agencies and one would suspect that multiple-source funding could be obtained to meet such other expenses such as travel, conferences, communication, etc. Regardless of the exact approach employed, it is important to provide a clear indication of potentials, accomplishments to date, limits, and impediments. Too little attention has also given to the development of a set of interrelated national fisheries development policies. Country-specific fisheries development policies that result in an environment which provide an incentive for fishermen and farmers to increase fisheries production deserves much more attention than has been the case to date.

Implications for Auburn University

We were not convinced, despite AU's claim, that the use of grant funded staff in support of country projects had reduced funding available for building staff competence. Rather the problem seems to be a lack of initiative or responsiveness to using grant funds in an effective and imaginative manner. Notwithstanding this conclusion, the addition of, first, an increased capability in economics and, second, an increased capability in sociology, to the already considerable expertise in production and processing is the logical next step in strengtheing Auburn's international warm-water fisheries aquaculture program. The relative priority among social constraints to aquaculture development may not have changed as rapidly as other kinds of constraints, e.g., the recent increase in cost and scarcity of energy resources. As already suggested, it is believed that AU could probably best focus on social constraints through the use of both American and foreign sociologists and

anthropologists from a variety of institutions who are area and culture-specific rather than simply employing a resident sociologist or anthropologist.

If AU continues in international development work, it should become more involved in both project design and sector or sub-sector or any problem analysis and planning. Increasingly, AID and other external assistance agencies will depend upon AU and other institutions with a technical capability to design and develop project proposals with host country technicians rather than providing technical assistance after a project has been designed by others. Also AID and other donors would look to such institutions to provide the technical expertise needed in fisheries, sector analysis and planning. Unless more attention is given to fisheries planning, at both the project and sector level, it is very doubtful that fisheries development can compete with crop and livestock endeavors for scarce manpower and investment capital. Where a poor data base hinders quantitative problem analysis, any analysis must necessarily be more descriptive and historical in content. This is particularly so for AID-supported projects because "high technology" packages are relatively capital intensive, with minimal labor generation and with benefits accruing to relatively few people and the "low technology" packages are not yet well-known or tested.

It is also suggested that AU focus more attention on the application of low input technology to fisheries development in the LDCs. This level of technology would be particularly important to small farm operators, that is, the rural poor. For example, the production of various species of fish in paddy fields in the growing season as well as in already existing irrigation reservoirs and canals, has potential for wide spread application.

While the 211(d) instrument may indeed be the best for financing state-of-the-art work in the strengthening of a systems approach to aquaculture, it cannot carry the burden alone. In terms of the small farmer, the proposed research with the University of Arizona on the use of small watersheds shows great promise and the team urges the agency to give prompt consideration to this project and, if technically feasible and fundable, to move ahead at the earliest possible date. Similarly the proposal on the juvenile fish seed stocks and delivery systems seems to strike at one of the most basic technical limiting factors in pond culture and would provide Auburn with the basis for a purposeful worldwide involvement with the LDCs which has been lacking for some time.

Linkages

Auburn's need to expand its attention beyond the technical production aspects is the reverse of the problem facing the University of Rhode Island. In the latter's 211(d) program, they have from the start made a heavy use of the social scientists, especially the economists. This broad disciplinary scope is perhaps the greatest strength of the URI program but the problem there has been no clearly established focus upon which the expertise might be concentrated. A complementary focus for URI with that of Auburn is an emphasis on artisanal or small scale fisheries with a primary emphasis upon capture fisheries. This would not rule out a concern on URI's part for aquaculture, particularly of the coastal lagoon type as distinct from the fresh-water pond culture. Not only must there be this complementarity with respect to the focus, i.e., aquaculture in one case and artisanal fisheries in the other, but there also must be a strong program of cooperation with respect to the utilization of the various disciplines involved. It is not expected, for instance, that Auburn University must itself, i.e., with its own staff, have a complete roster of all of the disciplines that have been mentioned above. Rather, it should establish an effective pattern of cooperation with URI and perhaps other institutions to make use of some of their talent in the social sciences.

This does not preclude, however, the necessity or desirability for Auburn University to make some increases in its own staff in the social sciences, particularly in economics. It is also to be expected that when aquaculture is the subject of concern to URI, it will make the fullest use of the expertise from Auburn University. It is recognized that geographical separation of the two universities makes day by day contact impossible. It does not, however, prevent cooperation in terms of the planning and design of projects or in the execution of research work. Neither does it preclude the joint operation of various kinds of training programs and seminars, either in this country or abroad. Likewise it is perfectly possible and desirable to make joint use of the staffs from the two universities in forming technical assistance teams for work in the LDCs. In the opinion of the team, a proper division of labor and the synergistic effects than can be expected from a cooperative and structured collaboration is of such importance that, indeed, such clarification and agreement should be one of the prime <u>conditions</u> for extension of either grants into a utilization phase.

The review team formed the impression that not only were the contacts of Auburn University minimal with respect to the University of Rhode Island, but it also seems that Auburn has

relatively few contacts with other organizations or educational institutions involved in fisheries development. It was suggested for example, that the university strengthen its contacts with such people as William Riply, the fisheries officer for the United Nations Development Program; Lucien Sprague, the fisheries officer for the World Bank; and Julio Luna, the fisheries officer for the Inter-American Development Bank; the latter two having their offices in Washington. Auburn has already established relationships with the fisheries department of the Food and Agirculture Organization of the UN. It is not clear, however, whether these contacts are very close or that Auburn staff have participated in many of the activities of FAO in the fisheries field. One might have hoped, for instance, that Auburn's staff would be active participants in the forthcoming international conference on aquaculture, sponsored by FAO. Likewise, it would be helpful if the Auburn staff would be involved in the aquaculture working party of the Indo-Pacific Fisheries Council. Furthermore, FAO is expanding its aquaculture activities in Africa and an inland fisheries commission is being set up for that continent. Auburn staff members should be regular participants in the meetings of this commission and assist in the preparation of its documentation and its technical assistance activity. Finally, the review team hopes that there will be closer cooperation between Auburn University and the relevant units of NOAA, particularly the National Marine Fisheries Services and the Sea Grant Program. The latter will be particularly crucial if Sea Grant involves itself in international assistance programs.

It appears evident that AID has not effectively used AU in policy planning, project design and state-of-the-art efforts and it must improve upon its track record in these respects. At the same time, AU cannot escape responsibility for holding up its end of the bargain. A grant is awarded, instead of a contract, because the agency wishes to capitalize on an institution's technical and managerial capacities. AU cannot accept such an arrangement without accepting the responsibilities - and risks - that go along with it.

In fairness to Auburn, it should be noted that the responsibility for initiating and strengthening cooperation with these organizations is a joint one and does not lie solely with Auburn. At the same time, inviting individuals such as Donald Kimbell, the FAO representative to North America, to visit the International Center for Aquaculture, could be useful. If such a visit was designed around some aspects of a state-of-the-art review and analysis, for example, the

occasion might be even more effective.

Alternatives open to AID

Even if the two proposed projects discussed above are eventually approved and financed by AID, it is doubtful whether the International Center for Aquaculture could continue for any appreciable time without additional assistance in terms of a grant or core support arrangement. Staff would still be available as private consultant, courses relevant to LDCs will still be held as long as there is sufficient student enrollment, and the international dimension would still be viewed as important. On the other hand, there is little likelihood that a viable or enlarged response capability could be maintained and no hope for expanding AU's concern and expertise in a systems approach to aquaculture.

The alternative to order a 211(d) utilization grant is to go back to the task ~~force~~ arrangement which includes support for core staff. This would guarantee a specified level of response capability, closely related to actual demand. It would not, however, provide funds for basic research, including state-of-the-art or encourage the taking of initiative and innovative measures by Auburn University. The 211(d) instrument has the advantage of being, first, cheaper (no overhead) but, equally important-assuming an adequate level of financing-the flexibility allowed would provide Auburn with the means to expand its knowledge base and linkages in a more integrated a approach to aquaculture specifically, and in cooperation with URI and other institutions, to fisheries in general.

Crucial to any choice, is a projection of the quantity and type of future demand which, in effect, is directly related to the policy and priority AID gives to fisheries. Assuming that this policy is affirmative and, on the basis of certain conditions and changes discussed above and specified below in our recommendations, the review team believes that the utilization grant is the most effective instrument to keep AU involved with and working effectively on, LDC problems. This is particularly true in these response capabilities which need strengthening, such as problem analysis and project design. A utilization grant would also facilitate, more than any other instrument, moving Auburn away from its narrow, passive and introverted stance into a more active and fulltime collaborative partner with AID and other U.S. institutions in developing effective approaches and extending knowledge in the fisheries field for use in the developing countries.

IV. RECOMMENDATIONS

The review team belives that a utilization-phase extension/ revision of the existing grant is the best option available but any such grant should be neogtiated within the general context of the findings and conclusions above and the following recommendations:

A. AID Fisheries Policy

1. The recommendations developed by the Review Team on the University of Rhode Island 211(d) grant regarding the need for an parameters of an Agency fisheries policy are endorsed and reiterated by this team.

2. While recognizing that policy functions cannot and should not be delegated, Auburn University and other U.S. institutions working with AID in the fisheries area should be given the opportunity to work collaboratively with AID and take the initiative in suggesting changes in policy, selections of priorities, location of need and opportunities, etc. Specifically, Auburn University should be more involved in problem identification and analaysis and project design - usually in cooperation with other universities and institutions.

B. Purpose and Focus of Grant Extension/Revision

1. Assuming a favorable Agency policy decision on fisheries in general and aquaculture specifically and its effect on increasing demand, the 211(d) mechanism should be used, as the cheapest and easiest option available, to provide necessary and minimum core support to sustain Auburn University's existing competence in a viable and ready state for use by AID and other donors.

2. A utilization grant, besides being used as the instrument for core support, should include a redefined grant purpose which:

a) broadens the discipline base applied to aquaculture;

b) maintains AU's concentration on warm water and inland fisheries but deepens and strengthens its total systems competence within this focus;

c) expands AU's response capabilities in planning at both the project (micro) national (macro) levels; and

d) includes specific outputs on training, research, etc.

C. State-of-the-art

1. The details of a research output of any utilization grant should tie Auburn into a comprehensive examination-over the next two years-of potentials, accomplishments, limits, and impediments of aquaculture (and artisan fisheries) development in the LDCs.

2. State-of-the-art efforts by AU should give first priority to questions concerning the rural poor, e.g., attention to low-input, low-cost, energy-saving technology; income distribution; employment generation; and techniques of effective knowledge transfer.

3. Attention should also be given to development of a set of interrelated, country-specific, national fisheries development policies which can provide an incentive for fishermen and farmers to increase fisheries production.

D. URI and other linkages

1. Depending upon the results of the Agency policy review, a complementary focus with the University of Rhode Island should be worked out prior to any grant extensions for either university. URI's focus presumably will be on artisanal or small scale fisheries with a primary emphasis on capture fisheries. This should not rule out (or force) a concern on URI's part for aquaculture, particularly of the coastal lagoon type as distinct from fresh-water pond culture and with the non-technical aspects of aquaculture in general.

2. A basis should be worked out, with leadership assumed by TA/AGR, for an effective pattern of cooperation between AU and URI and related to common problems - particularly in the areas of macro and micro planning, marketing, processing, and non-technical constraints to fisheries production.

3. Auburn should also be encouraged to broaden its contacts with other universities interested in development fisheries, particularly to support and supplement AU's capacities in the economic and sociological disciplines.

4. More attention should be given by AU to donor agencies other than AID, particularly FAO, IBRD and the regional development bank.

5. TA/AGR should take specific actions to help AU in establishing, fostering and strengthening "programmed" linkages as recommended above but also with the AID organization itself-particularly with the program and technical offices of the regional bureaus and selected or interested field missions.

E. Other Actions

1. TA/AGR should, in cooperation with TA/PM, take the initiative in meeting with SER/OIT to discuss ways to:

a) provide adequate funding to AID participants for Ph.D. research related to LDC problems and conditions;

b) to develop special training programs which are problem-oriented;

c) increase awareness of special education and training capacities available at most 211(d) institutions - not only throughout AID but with other donors and the LDCs themselves; and

d) where appropriate and desirable, develop alternative mechanisms to the PIO/P for financing training in priority development problem areas.

2. TA/AGR should promptly and officially inform AU what action it has taken or proposes to take on:

a) the Thailand workshop;

b) the research (or OAA) proposal on fingerlings; and

c) the joint Auburn University - University of Arizona watershed research proposal.

3. Last, but not least, if AID intends to continue and/or expand its programs in the fisheries area, a sine qua non is the immediate recruitment of a full-time fisheries expert. This expertise should be supplemented by periodic involvement and consultation with other disinterested parties such as NOAA, the Rockefeller Foundation, etc.

Attachments

E.W. Shell

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RESPONSE TO ISSUES

Following is a written summary of our response to the ISSUES PAPER prepared by TA/AGR dated 9/11/74. These issues were also discussed in detail in the recent 211-d review. Time does not permit response in the same detail as in the meeting itself. We are attempting here only to summarize the responses presented in the discussion. Responses are numbered the same as in the ISSUES PAPER.

RESPONSE TO ISSUES

1.a(1) There is ample evidence that Auburn University has increased its competence in inland fisheries and aquacultures both quantitatively and qualitatively with funds provided by the 211-d Grant.

Auburn's 211-d Grant, approved in 1970, assumed the financial support for a core staff which had been assembled under contract USAID/csd-1581 beginning in 1967 and which was being supported at the time on contract USAID/csd-2270 T.O. 1. In the 1966 - 1967 academic year, Auburn's staff in fisheries and aquaculture consisted of six people. By the time AID/csd-1581 was terminated in June, 1969, six additional staff had been added. Two additional staff were added between June 1969 and June 1970 when the present 211-d Grant was approved. At the beginning of FY 1975 there were 22 on the staff, an increase of 16 over the FY 1967 level. A portion of this increase can be attributed to a normal increase in University-supported programs; however, a majority of the increase is a direct or indirect result of USAID support through AID/csd-1581, AID/csd-2270 (T.O. 1) and AID/csd-2780 (the 211-d Grant).

A list of the staff employed after July 1, 1967, that were supported on 211-d funds during the first four years of the Grant is presented in the following table. Also, included in the table are the number of man-months each person contributed to the project during a particular year and their specialties.

Staff Supported on 211-d Funds [1]

FY 1971	FY 1972	FY 1973	FY 1974
C.E. Boyd (3.0) [2,3]	C.E. Boyd (12.0)	C.E. Boyd (7.8)	C.E. Boyd (4.4)
R.T. Lovell (7.5) [4]	R.T. Lovell (3.6)	W.D. Davies (7.4) [8]	W.D. Davies (1.5)
D.D. Moss (5.0) [5]	N.B. Jeffrey (3.0) [6]	J.L. Gaines (6.6) [9]	J.L. Gaines (6.6)
R.O. Smitherman (12.0) [6]	R.O. Smitherman (3.0)	R.T. Lovell (3.2)	R.T. Lovell (3.7)
			D.D. Moss (1.4)
			M.M. Pamatmat (6.6) [10]
			R.O. Smitherman (5.1)

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[1] Includes only those "new" staff added after FY 1967.
[2] Man-months of effort supported by 211-d funds.
[3] Specialties - Pond ecology and aquatic plant management.
[4] Specialties - Fish nutrition and fish processing.
[5] Specialties - Aquacultures and research station design.
[6] Specialties - Aquaculture and fish breeding.
[7] Specialties - Aquacultures and water quality.
[8] Specialties - Inland fisheries management and statistics.
[9] Specialties - Fish pathology and fish physiology.
[10] Specialties - Marine biology and mariculture.

Note in the table that only a few staff were employed full-time (12 man-months/year) on Grant funds. Generally, new staff were paid initially on 211-d funds but as the program of the International Center grew they were partially shifted to other projects until Grant funds were used to pay only a part of their salaries. By utilizing the funds for joint appointments, a wider variety of specializations could be supported on the Grant.

Altogether, the Grant has supported nine different individuals that were added to the staff after July 1, 1967, and as indicated in the table they brought with them several specialties that have been extremely valuable to the development of the International Center. Four of the staff listed in the table served at least two-year tours in foreign countries on fisheries development projects funded by USAID.

1.a(2) A number of the Grant-funded staff have visited foreign Universities. Most of these visits have been supported by other USAID contracts with Auburn. Only a few of the contracts were supported directly by 211-d funds. Seven of nine of the individuals listed in the table have visited foreign Universities and have contributed to their development to some degree. Most of those contacts have been on an informal basis. These visits have resulted in a number of informal contacts with faculty members in those countries.

Staff members from a large number of foreign Universities have visited Auburn since the establishment of the International Center in 1970. These visits ranged in length from a few days to several months. One Fullbright Scholar from Kenya spent several months here studying fish pathology.

1.a.(3) Since the beginning of the Grant, members of the 211-d staff at Auburn have participated in projects to formulate LDC inland fisheries and aquaculture programs in Bangladesh, Brazil, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Haiti, India, Morocco, Nicaragua, Panama, Paraguay, Peru, Philippines and Thailand. Several of these countries were visited on more than one occasion.

1.a.(4) Contract operations through USAID with individual country fishery programs complement activities of the 211-d Grant. Staff members supported by Grant funds provide invaluable assistance in back-stopping country projects. These types of experiences in turn enhance the competence of the staff to effectively respond to requests of assistance. Contacts with foreign nationals from LDC s sent to Auburn for training under country projects contributes to the competence of the staff.

1.a.(5) Beginning in FY 1974, the use of Grant-funded staff in support of country projects has reduced funding available for building staff competence Visits were made to several countries and the request of Missions to conduct surveys. These activities should have been supported by the Missions themselves. There are not sufficient funds available under the Grant to build and maintain the desired competence and at the same time provide transportation, salaries, per diem and equipment in direct support of Mission requests.

1.b. With funds provided by the Grant, Auburn has moved to strengthen its fisheries library with special emphasis on international development. Since 1970, 774 books and 23 periodicals have been added to the library. We have also made an effort to develop a "worldwide" data collection

on economic food fishes. We have not developed an effective system for making this collection of information available to LDCs.

We agree that these objectives should not be of high priority as they are presently defined, but we feel that some means must be developed to provide "continuing education" to biologists working in the field in LDCs. Possibly seminars or shortcourses held both at Auburn or the LDCs would provide a better means of information dissemination.

1.c.(1) Since the inception of the Grant, 49 foreign students have received training in fisheries at Auburn. Of this number, 35 were financed by USAID traineeships; three were supported by funds from their respective governments. The remainder (11) were supported by family funds or other sources.

1.c.(2) Of the total of 31 students that have completed training since the Grant was initiated, 27 are known to have returned home. Only 1 of the USAID-supported students has not, to our knowledge, returned home.

Of the 31 USAID-supported students that have returned home, 30 are now working in fisheries development in their homeland.

1.c.(3) Auburn has had relatively little involvement except in an informal way with LDC institutions in the academic area of aquaculture and fisheries. There are no funds in the present 211-d Grant for these activities. Such activities would be extremely beneficial if funds were available. Unless some means is found to train the teachers in the Universities of the LDCs, the U.S. will have to continue to train biologists from those countries for many years.

Auburn is not involved directly in formal insitution to institution contacts in any of its Mission-funded projects. This situation is a result of Mission policy in all of our contracts.

1.c.(4) Auburn considers workshops and/or training conferences as an excellent approach to increase the national interest in and understanding of fisheries and aquaculture in LDCs. We were involved in the planning of such a conference in the Philippines. The conference was turned down, for a number of reasons, by the Philippines Government. They planned and held a conference of their own on "Fish Estates". Auburn participated in that conference.

We have also developed tentative plans to hold a workshop in Thailand. The basic plan for the workshop has been discussed with Thai fisheries officials. Further progress in awaiting a USAID decision on funding.

We are also planning an international workshop on fisheries and aquacultural economics to be held sometime in late 1975 or early 1976. The basic plan for the workshop has been discussed with USAID, but no request for funding has been submitted.

2. Grant purposes as presently defined provide for core support of the staff assembled at USAID request under previous contracts. For this type of core support, the grant must be rather narrow. If core support could be maintained in some other fashion or by some other type of funding arrangement, future grant objectivies should be broadened considerably. There are new concepts of assistance and cooperation with LDCs that should be developed and evaluated. Under the present Grant, core support is the primary concern.

Under future grants we would expect broader limits on possible activities. Core support should also be broadened in the future to include some emphasis on economics and rural sociology as these relate to fisheries development.

Auburn is aware of USAID emphasis on the small farmer and is prepared to provide technical assistance in supporting this objective. Fisheries and aquaculture offer numerous opportunities for helping the small farmer. With the wide range of culture techniques and fish species that are available and with the generally favorable input/output ratios in aquaculture, schemes to benefit small farmers can be devised in most LDC situations.

3. Auburn University - University of Rhode Island liaison has seemed relatively informal to this point. We have visited back and forth between campuses and we are aware of their programs, but we have not cooperated with them formally on any development projects. We are not at all adverse to working with URI. They have exceptional competence in marine science and marine fisheries. To this point our approaches to international development in LDC s have been so widely divergent that there is relatively little common ground in our programs. We have chosen to stay out of marine sciences because there are so many good institutions already involved.

Auburn maintains excellent contacts among other Universities and Governmental Agencies involved in U.S. inland fisheries and aquaculture. We were the leader in organizing a Regional Research Project (S-83) supported by the Cooperative State Research Service of USDA. This project involves the active cooperation of Land Grant Universities in Alabama, Arkansas, Florida, Georgia, Louisiana, Massachusetts, Mississippi, North Carolin, South Carolina,

Tennessee, Texas and Virginia. Personnel from the U.S. Department of Agriculture, the U.S. Department of the Interior, the U.S. Department of Commerce and the Tennessee Valley Authority also participate in this project.

Auburn personnel are active in the Catfish Farmers of America organization. Some of our staff were instrumental in the formation of the World Mariculture Society. Dr. Moss now serves as Secretary - Treasurer of that organization. He is also serving as Treasurer of the newly formed Fish Culture Section of the American Fisheries Society.

The point I am attempting to make is that Auburn already has excellent contacts with other U.S. institutions in our area of interest. I doubt if there is another institution that is equally well informed as Auburn on the developments in inland fisheries and aquaculture throughout the country and the world.

Auburn is an active participant in the Mississippi - Alabama Sea Grant Program. Dr. Shell currently is serving as a member of the management committee for the program.

In summary, Auburn is anxious to join with other institutions and organizations to solve common problems. Our present contacts are indicative of our commitment to this policy.

There is little indication at this point that AID looks to Auburn for leadership as stated in the list of issues. We have had relatively little opportunity to provide anything other than technical assistance primarily on the production aspects of inland fisheries and aquaculture. Although AID is now

apparently making a rather major decision on the degree of future involvement of the Agency in aquaculture, Auburn has had almost no role in this process.

4.a. I suspect that Auburn has been involved in almost as many LDCs in the past ten years as any other University in the country. In these involvements, we have worked with pond laborers, fish farmers, fish processors, government biologists, Directors of fishery programs and Ministers of Agriculture. In these contacts, Auburn has had an excellent opportunity to learn of the wide spectrum of restraints that inhibit interest and action in fish production activities.

4.b. Auburn is well aware of the problems that can arise from attempting to transfer U.S. and Auburn aquaculture techniques directly to LDC's. We have resisted efforts of a number of countries to import channel catfish and the production techniques utilized in the industry in the U.S. At the stations in Brazil, El Salvador, Panama, the Philippines and Thailand, we have emphasized research and development of production schemes using species, feedstuffs, fertilizers and manures that are available locally. On the other hand, when there are some aspects of American technology that would be useful in LDC's, we are confident in our ability to apply it.

4.c. Auburn acknowledges that it has not been heavily enough involved in the socio-economic aspects of aquaculture; although at this point there is little indication that our present programs have suffered. The Department of Agricultural Economics of the Agricultural Experiment Station at Auburn has

been involved in research and study or the economics of aquaculture for several years. Beginning in July, 1974, we have moved to begin utilizing some of their expertise in our international programs. The first formal course in aquacultural economics will be offered at Auburn this fall. This probably will be the first course of its type to be taught at any University in the U.S. An outline of that course is appended to this report.

4.d. Auburn is prepared to apply research results to action programs. We have responded to virtually all requests from AID for technical assistance and are prepared to do so in the future. AID must realize, however, that there is a shortage of trained people in this field and that if expansion into new programs is too rapid it may be difficult to find adequately trained people to staff some of the projects. The domestic job market is such now that people with experience are reluctant to leave an established position to take one in a foreign country.

5.a. Unless the trend is reversed, USAID will become increasingly less competent to handle the technical aspects of America's Foreign Aid Program. As the technology utilization threshold is raised in the LDC's, AID must increasingly depend on other sources of expertise to meet its needs. The obvious source of this expertise is the Nation's Universities. Unfortunately, this expertise cannot be purchased by the pound, ton or crate. Regular "buyer - seller" relationships cannot be used to transfer expertise from the Universities to AID. New types of agreements, cooperative agreements possibly, must be developed to effectively provide for the orderly building, storage and delivery of this expertise.

Following is a partial list of services (expertise) that will be required by USAID if it is to effectively utilize the full potential of inland fisheries and aquaculture to assist LDCs:

(1) Provide technical assistance on Mission-funded projects in LDCs.

(2) Conduct state-of-the-art surveys at Mission request in LDCs.

(3) Advise host governments and AID on inland fisheries and aquacultural development.

(4) Provide training for LDC personnel.

(5) Conduct research on specific problems at AID request.

(6) Development and deployment of specific applied technology packages in LDCs.

(7) Build and maintain a core staff to respond to AID requsts for service.

(8) Establish and help maintain research and training networks among U.S. and LDC institutions.

(9) Plan and sponsor workshops, seminars and symposiums.

10) Develop systems to promote and expedite technology transfers among LDCs.

(11) Build and maintain contacts with government fisheries administrative personnel in LDCs.

(12) Provide state-of-the-art information to AID planners and administrators.

(13) Provide AID administrators with information and alternative solutions needed in the decision making process.

(14) Maintain liaison between AID, the Foundations, FAO, UNDP, TAC and bilateral aid agencies from other countries at the technical level.

(15) Develop with other AID-supported institutions such as Auburn, multi-disciplinary task forces to plan integrated schemes for the most effective use of land, water, climate, plant, animal and people resources in LDCs. These schemes would be used by AID as a basis for planning its program in the various countries.

The Agency is prepared to provide only a few of these services from within its own organization.

Auburn is already providing part of these services to the Agency, but it would be to the advantage of both parties if the University provided all of them. Obviously, several funding mechanisms would be necessary under current AID policy. Some of the services could be provided under contract, others under specific grants and some of the services should be provided under a 211-d Grant. The number of services needed by the Agency and the funding mechanisms utilized to provide these services will determine in large part what the University's 211-d proposal will be.

Obviously, the University remains in essentially the same position with respect to support for core staff as it was in when funding under AID/csd-2270. T.O. 1 was reduced in 1970. The composition of the core staff has changed since that time but the relative size has remained essentially unchanged. In planning to submit a proposal for an extension of the 211-d Grant, the University's first concern must be to maintain the core staff. It is our view that

virtually none of the services can be effectively provided to the Agency without some support for a core staff. Unless some other funding mechanism can be developed, core staff support must be included in our request for a 211-d extension.

It would be more appropriate from our standpoint if core staff support were provided under a Task Order such as AID/csd-2270, T.O. 1. We would prefer that any extension of the 211-d Grant be more broadly written than the present one.

5.b. The University has assembled the best possible staff for core support of AID programs under the 211-d Grant. If the Grant is discontinued the University will make a sincere effort to provide support for as many of the staff as possible, but it is not likely that all of them could be transferred to other funds. Funds that are now used to support the research in the Department would have to be diverted to salaries. This change would seriously reduce the level of funding available for the non-salary costs of research.

5.c. Even with a low level of emphasis in inland fisheries and aquaculture on the part of AID/Washington, there is still a high demand for service. Current 211-d funding can be justified on the basis of present services provided to the Agency. Attached are lists showing short-term trips overseas in connection with international development activities since 1966. The lists are indicative of only a portion of the services provided by the University to the Agency directly and indirectly. These additional services have been fully documented in Annual Reports on 211-d activities submitted to the Agency previously.

Best Available Document

AID CONTRACTORS SPECIFIC AREAS OF INVOLVEMENT

SPECIFIC ACTIVITIES	AID Contractors		
	AU 1/	URI 2/	OF 3
Selecting brood stock	X	X	X
Developing brood stock	X	X	X
Genetic Improvement/Selective breading	X		X
Spawning and rearing	X		X
Limnology - water supply	X	X	X
water delivery system	X		
water distribution system	X		
water quality	X	X	X
water circulation/aeration system	X	X	X
water removal system	X		
Parasite and disease control	X	X	X
Feeds and feeding	X	X	X
Fish nutrition	X		X
Production Research	X		X
Collecting fry's			X
Hatcheries development	X		X
Juvenile stock production	X		X
Juvenile stock delivery system	X		X
Pond culture development system	X		X
Lakes-rivers-streams	X		
Estuaries	X	X	X
Lagoons-swamps		X	X
Coastal zone-artisanal		X	X
Polyculture systems	X		X
Fish and Crop combination production system	X	X	
Cage and pen culture			X
Commercial rearing/production	X		X
Production for home consumption	X		X
Predator control			
Transfer of Technology (Extension)		X	X
Harvesting and Harvesting Techniques		X	X
Processing - utilizing underutilized species		X	
utilizing unused species		X	
product development		X	
upgrading present LDC's processing systems	X	X	
Marketing - wholesale		X	
retail		X	
Consumer preference		X	
Project/Activities design	X	X	
Rural Sociology		X	
Aquacultural Economics	X	X	

1/ Auburn University
2/ University of Rhode Island
3/ Oceanic Foundation

Aid Contractors Specific Areas of Involvement Cont'd

SPECIFIC ACTIVITIES	AID Contractors		
	AU 1/	URI 2/	OF 3/
Production Economics			
Aquacultural Engineering	X	X	
Ecological considerations	X		
Environmental considerations	X	X	X
Energy considerations	X		
Credit and Cooperatives			
Manpower Involvement			
Involvement of the rural poor	X	X	X
Linkages - between AID fisheries and Aquaculture contractors	X	X	X
Other international-national linkages			
Training - Academic undergraduate	X	X	X
Academic graduate	X		
Seminar-Workshops	X	X	X
On site shortcourse	X	X	X
Information Dissemination	X	X	X
Technical Assistance to LDC's	X	X	X
	X	X	X

1/Auburn University
2/University of Rhode Island
3/Oceanic Foundation

AID 1025-1 (7-71) (FACE SHEET)

NONCAPITAL PROJECT PAPER (PROP)

I. PROJECT IDENTIFICATION

1 PROJECT TITLE

International Center for Aquaculture-
211(d) Grant to Auburn University

APPENDIX ATTACHED: [x] YES [ ] NO

2. PROJECT NO. (M.O. 1095.
180-120

3 RECIPIENT (specify)

[ ] COUNTRY

[ ] REGIONAL [x] INTERREGIONAL ~~TA Bureau~~

4. LIFE OF PROJECT
BEGINS FY 1970
ENDS FY 1976

5. SUBMISSION
[x] ORIGINAL 5/14/75 DATE
[ ] REV. NO. DATE
Grant NO. AID/Cs

II. FUNDING ($000) AND MAN MONTHS (MM) REQUIREMENTS

A. FUNDING BY FISCAL YEAR	B. TOTAL $	C. PERSONNEL (1) $	C. PERSONNEL (2) MM	D. PARTICIPANTS (1) $	D. PARTICIPANTS (2) MM	E. COMMODITIES $	F. OTHER COSTS $	G. ~~XXXXXXXX~~ Grant (1) $	G. (2) MM	H. LOCAL EXCHANGE CURRENCY RATE: $ US ___ (U.S. OWNED) (1) U.S. GRANT LOAN	(2) COOP COUNTRY (A) JOINT	(B) BUDGE
1 PRIOR THRU ACTUAL FY	800						800	800				
2. OPRN FY 75	356						356	356				
3 BUDGET FY 76	222						222	222				
4 BUDGET +1 FY												
5. BUDGET +2 FY												
6. BUDGET +3 FY												
7 ALL SUBJ. FY												
8. GRAND TOTAL	1378						1378	1378				

9. OTHER DONOR CONTRIBUTIONS

(A) NAME OF DONOR	(B) KIND OF GOODS/SERVICES	(C) AMOUNT

III. ORIGINATING OFFICE CLEARANCE

1 DRAFTER J. Urano	J. Urano	TITLE TA/AGR	DATE 5/14/75
2 CLEARANCE OFFICER L. Hesser	Leon F. Hesser	TITLE TA/AGR	DATE 5/15/75

IV. PROJECT AUTHORIZATION

1 CONDITIONS OF APPROVAL

The R & DC meeting held on 5/13/75 recommended the extension of this grant to Auburn University for two years.

2. CLEARANCES

BUR OFF.	SIGNATURE	DATE	BUR OFF.	SIGNATURE	DATE
PPC	A. Handley		TA/PPU	C.Molfetto	5/15/75
TA/PPU	T. Eliot T.Eliot	5/15/75	TA/PPU	J. Gunning	5/15/75
TA/PPU	M.Mozynski MCM	5/15/75			

3 APPROVAL AAs OR OFFICE DIRECTORS

SIGNATURE: Curtis Farrar
DATE:
TITLE: Assistant Administrator, TA/Bureau

4. APPROVAL A/AID (See M.O. 1025.1 VI C)

SIGNATURE: John E. Murphy
DATE:
ADMINISTRATOR, AGENCY FOR INTERNATIONAL DEVELOPMENT
Deputy Administrator for A.I.D.