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**Evaluation of Florida A & M University
Technical Assistance
Malawi Polytechnic Expansion Project**

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TABLE OF CONTENTS

	Page
I. Executive Summary	1
II. Background Information	3
A. The Malawi Polytechnic	3
B. Goals and Objectives of the AID Project	4
C. The Florida A & M University Team	4
D. Timeline of Implementation	5
III. Evaluation Method	7
A. Evaluation Team	7
B. Scope of Work and Method of Implementation	7
C. Timeline of Evaluation	8
IV. Evaluation Components	9
A. Classroom and Laboratory Instruction	9
B. Industrial Counseling	12
C. Curriculum Review and Modification	13
D. General Institutional Impact	15
E. Project Management	19
1. Home Office Support	19
2. USAID/Malawi Project Management	22
3. Polytechnic Administration Project Management	22
F. Areas of Continued USAID/FAMU/Polytechnic Collaboration	23
G. Project Activities After Termination of USAID Funding	23
V. Additional Recommendations	24
VI. Appendices	26
VII. References	34

I. EXECUTIVE SUMMARY

This document presents the results of an evaluation study of the performance of the Florida Agricultural and Mechanical University (FAMU) in providing technical assistance to the Malawi Polytechnic under AID contract number AFR-0201-00-3014-00, Polytechnic Engineering Expansion Project. The purpose of the project was to improve and expand the institutional capability of the Polytechnic to produce Malawian engineering manpower for the public and private sectors. The objectives of the technical services provided by FAMU were to provide specialized expertise in engineering through classroom instruction and to assist the Principal and Department Heads of the Polytechnic in developing, reviewing, assessing and, as necessary, modifying the Polytechnic's existing curriculum.

The evaluation involved the review of numerous documents related to the project and on-site personal interviews with the Vice-Chancellor of the University of Malawi, the Principal of the Polytechnic and nearly all of the relevant members of the Polytechnic administration and faculty, selected members of the industrial community, several graduates of the Polytechnic, and all of the resident members of the FAMU Technical Assistance Team. Calls were also made in the U.S. to members of the FAMU Team that had already completed their service contracts at the time of the on-site evaluation study.

The evaluation revealed several contributions made by the FAMU team toward attaining the project objectives. The more notable ones are:

- Participation in servicing both classroom and laboratory needs. (Several of the Team members received excellent praise in this area of performance).
- Development of a Student Record System.
- Generation of Industrial Surveys regarding Student Performance and Industrial Needs.
- Preparation of a totally new Curriculum Document for Engineering Degree Programs.
- Introduction of a centralized Industrial Counselling system.

While several of these contributions have not, to date, been adopted by the Polytechnic, it is possible that they may be adopted, at least in part, after the departure of the majority of the remaining FAMU Team members in August, 1986.

The evaluation also revealed components of the project design and operations that impeded the full and successful impact of the FAMU

project on the Polytechnic. Because the team did not become fully integrated into the Polytechnic structure, some of the team's recommendations have not been adopted. Responsibility for the team's isolation must be accepted by USAID and the Polytechnic as well as by the team itself. The absence of a thorough induction process to integrate faculty and team members was insufficient to achieve collaboration. Operational practices exacerbated the situation and created barriers to implementation. While the positive contributions of individual team members must be recognized, the experience of the FAMU project suggests that in the future earlier and more substantive involvement of all parties in project design and operations would enhance project effectiveness. With appropriate follow-up, the full impact may still be realized.

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affected the Team's ability to have some of their recommendations readily accepted by the Polytechnic. Much of the activity of the FAMU Team was undertaken unilaterally with documents presented to the Polytechnic leadership in final form without giving the faculty an appropriate opportunity for input during the development process. While individual Team members often functioned extremely well within the system of the Polytechnic and the University of Malawi, the Team functioning as a whole failed to recognize the rules, regulations and protocol of the institution to bring about change.

II. BACKGROUND INFORMATION

A. The Malawi Polytechnic

The Polytechnic originated in the early 1960's as a comprehensive school to provide courses in practical vocational, technical, and commercial skills, as well as, adult education. The Polytechnic is situated along Kamuzu Highway about 1.5 miles from the center of the city of Blantyre. It is one of four campuses of the University of Malawi and its chief administrator is the Principal who reports directly to the Vice Chancellor of the University of Malawi. The Polytechnic is composed of three major academic units: Engineering (Mechanical, Civil and Electrical); Applied Studies (Math, Technical Education and Language/Communication) and Commerce (Accountancy, Business Studies and Management). In 1980 the Polytechnic had six main buildings in addition to student housing. These structures were a 2-story classroom/administration building, a lecture theater building, two large workshops, and a maintenance workshop, all developed with USAID support.

For the period from 1980 to date, \$8.1 million has been provided by USAID to expand the physical facilities of the Polytechnic and to help establish a degree training program in engineering. Included in this expansion project are a 26,000 sq. ft. library, an 18,000 sq. ft. multiscience laboratories building that is now occupied, and four, 3-bedroom senior staff houses. Funds and commitments have also been received from other donors to compliment and complete the Government of Malawi's Master Expansion Plan for the Polytechnic.

Nearly \$1.0 million of new equipment is now on order to help modernize the new and existing laboratories. In addition, there are approximately 16 Malawian faculty members involved in advanced training in the U.S. to better prepare them for their future assignments at the Polytechnic.

The Polytechnic currently offers technician training, a 3-year diploma, and a 6-year general engineering degree. All students share a common core of classes during their first year of study and then the technician students pursue their own course of study. At the end of the third year approximately 25 of the best students in the diploma class are selected for entry into the final three years of the general engineering degree program. The students selected for the degree program are allowed to focus somewhat on either electrical, mechanical, or civil engineering, but they must take a defined set of courses in all three areas.

Academic study for both streams of students (diploma and degree) is supported by appropriate laboratory classes. In addition, these students are attached (Industrial Attachment Program) to an engineering organization for periods of three months during the course of study to give them insight into how industry functions.

B. Goals and Objectives of the A.I.D. Project

The purpose of the project was to improve and expand the institutional capability of the Polytechnic Institution to produce Malawian engineering manpower for the public and private sectors. The objectives of the technical services were to provide specialized expertise in engineering through classroom instruction and to assist the Principal and Department Heads of the Polytechnic in developing, reviewing, assessing and, as necessary, modifying the Institute's existing curriculum.

C. Florida A & M University Team

The following lists field personnel and their duties as stipulated in the contract.

Civil Engineer - Dr. A. Gill

Duties:

- Teach Civil Engineering courses.
- Assist the Polytechnic in developing a curriculum for the B.Sc. and M.A. degrees in civil engineering.
- Recommend practical changes in the current curriculum for diploma candidates.
- Provide inservice training to civil engineering teaching assistants to upgrade their skills.

Electrical Engineer - Dr. B. Hazeltine

Dr. E. Erickson

Mr. J. McCloud

Duties:

- Teach electrical engineering courses.
- Assist the Polytechnic in developing a relevant curriculum for the B.Sc. and M.A. degrees in electrical engineering.
- Recommend practical changes in the current curriculum for diploma candidates.
- Provide inservice training to electrical engineering teaching assistants to upgrade their skills.

Mechanical Engineer - Mr. C. Rigby

Duties:

- Teach mechanical engineering courses.
- Assist the Polytechnic in developing a relevant curriculum for the B.Sc. and M.A. degrees in mechanical engineering.
- Recommend practical changes in the current curriculum for diploma candidates.
- Provide inservice training to mechanical engineering teaching assistants to upgrade their skills.

Industrial Counselor - Mr. V. Taylor

Duties: (Also Chief of Party)

- Serve as liaison officer between the Polytechnic and the users of its outputs.
- Assist in developing a relevant management curriculum suitable for use in counselling for practical on-the-job application.
- Establish a guidance counselling system to help define where students should work when doing practical training.
- Establish a records system capable of tracking a student through the Polytechnic and monitoring the students movement into the workforce or into post graduate work.
- Provide industry-related counselling to the engineering students and others.
- Establish and maintain contact with public and private sector entities utilizing engineers and assist in further development of an information bank which can be used to advise Polytechnic students and graduates of employment opportunities.
- Ensure that proper administrative action is taken to train a counterpart so that this staff position becomes a permanent position.

D. Timeline of Implementation

The Polytechnic Engineering Expansion Project concept began to take shape in 1979 and the Technical Assistance aspect of the project is scheduled to terminate on August 31, 1986, unless an extension is granted. During this time period the following events are considered to be noteworthy:

- . June 1980. Project Paper - Malawi Polytechnic Engineering Expansion, completed (Mr. Vernal Taylor, later to become Chief of Party of the FAMU Team, was a member of the Design Team).
- . January 1983, Letter Contract issued to Florida Agricultural and Mechanical University.
- . February, 1983. Mr. Vernal Taylor, Chief of Party, arrived in Malawi.
- . July, 1983. Dr. Ajit Gill, the Team's Civil Engineer, arrived in Malawi.
- . September, 1983. Dr. Barrett Hazeltine, the Team's Electrical Engineer, arrived in Malawi.
- . January, 1984. Mr. Cornel Rigby, the Team's Mechanical Engineer, arrived in Malawi.
- . August, 1984. Dr. Ernest Erickson replaced Dr. Barrett Hazeltine.
- . September, 1985. Mr. James McCloud replaced Dr. Ernest Erickson.
- . Summer, 1986. Mr. James McCloud completed appointment and returned to the United States.
- . Current Date. Mr. Vernal Taylor, Mr. Cornel Rigby, and Dr. Ajit Gill completing project tasks and awaiting further instructions.

III. EVALUATION METHOD

A. Evaluation Team

The evaluation team was comprised of two members. Dr. Edna L. McBreen, Senior Associate at Creative Associates has a background in higher education and institutional analysis. She served as a team resource in the areas of institutional impact and home office support as well as providing input in other areas.

Dr. Robert Davis, Dean of Engineering at the University of Missouri at Rolla was the major team resource in engineering education. He was particularly responsible for the analysis of data in the areas of classroom and laboratory instruction as well as industrial counselling and linkages. Dr. Davis also focused on an analysis of additional technical assistance needs in light of the AID donated equipment which has yet to arrive at the Polytechnic.

B. Scope of Work and Method of Implementation

The evaluation team, focused upon the following scope of work which was developed jointly by the AID Project Manager and the FAMU Director of International Programs.

The assessment team should evaluate the quality (including timeliness and appropriateness) of services provided by individual team members and the overall institutional development impact of the technical assistance. This will include assessing:

- (1) Classroom Instruction.
- (2) Laboratory Instruction.
- (3) Industrial Counselling, including linkages for placing students and feedback for curriculum modification.
- (4) Curriculum Review and Modification, including review of report on proposed innovations in the engineering curriculum.
- (5) General Institutional Impact, including roles played within departments and on various committees, training of Malawian teachers and counterparts, and systems established (e.g. student tracking, industrial counselling).
- (6) Home Office Technical and Administrative Support of the Field Effort.
- (7) Areas of Possible Continued USAID/FAMU/Polytechnic Collaboration, including recommendations on technical assistance needs in terms of new engineering equipment.

- (8) Continuation of project activities after USAID financing is completed.

Data collection concentrated on the review of project documents and interviews of people involved with the project. The document review included project documents made available by AID/Washington, the FAMU Office of International Programs, USAID/Malawi, and the FAMU Technical Assistance Team in Malawi; as well as documents, letters, and memoranda from Polytechnic staff and administration and University of Malawi Administration. The evaluation team interviewed the FAMU team and representatives of the University of Malawi administration; Polytechnic administration, staff and graduates; and industry representatives.

C. Timeline of Evaluation

The in-country portion of the evaluation began Tuesday, July 8. On that day, the team was able to meet with Mr. Richard Day, Program Officer, USAID/Malawi to review the scope of work. The team was given project documentation at the time, in addition to the documentation which had been shared with them by AID/Washington and the Office of International Programs at FAMU.

On Wednesday, July 9, the team, accompanied by Mr. Day, proceeded to Blantyre and the Polytechnic. That afternoon they were able to meet with the Principal and Vice Principal of the Polytechnic. In attendance at the meeting were Dr. Hartmann and Mr. Taylor.

A schedule of interviews with FAMU Team members, Polytechnic staff, and graduates, and industry representatives lasted from Thursday, July 9 through Friday, July 18 and included an interview in Zomba with the Vice Chancellor of the University of Malawi, Dr. David Kimble (a complete list of those interviewed appears in Appendix A).

On Monday, July 21, the evaluation team had exit interviews with the FAMU team and the Principal. Mr. Day was present at the meeting with the Principal.

The evaluation team returned to Lilongwe on Tuesday, July 22 to collect data on the participant training component of the Polytechnic Expansion Project, to interview additional industry representatives, and clarify specific issues with USAID staff.

Exit interviews with Mr. Day and Mr. John Hicks, Mission Director, USAID/Malawi were held on Thursday, July 24 in Lilongwe.

Follow-up activities in the U.S. included telephone calls made to Drs. Hazeltine, Erickson and Mr. McCloud to gain additional information, and a site visit to the FAMU campus on September 2, 1986.

IV. EVALUATION COMPONENTS

A. Classroom and Laboratory Instruction

The evaluation team met privately with several members of the Polytechnic faculty and selected students to determine the effectiveness of the members of the FAMU Team that were given teaching assignments. We also reviewed some actual classroom notes, exams, homework assignments, and textbooks and made personal visits to several laboratories. Based on these activities, the following observations, comments and recommendations are presented:

1. Dr. Ajit Gill

Observations - From all indications Dr. Gill readily accepted a rather heavy teaching assignment and has done an excellent job in discharging these duties. He has worked internally on curriculum revision, supervised research projects, interacted well with his counterpart, and established good contacts with several industrial personnel. Dr. Gill is generally well liked and respected and the Polytechnic has made a request to AID and FAMU for an extension of his services as a Department Head and Lecturer.

Comments - Dr. Gill has been especially valuable both as an individual and as a member of the FAMU Team.

Recommendations - We would strongly support the reappointment of Dr. Gill to the Polytechnic faculty for the 1986 - 1987 academic year.

2. Dr. Barrett Hazeltine

Observations - Dr. Hazeltine taught electronics and business studies and was one of the first faculty members to introduce the use of the computer in a classroom environment, albeit with existing software. He was active in the development of new laboratory exercises and introduced some new material in digital electronics that is still being used. Dr. Hazeltine was praised often by several members of the faculty that were at the Polytechnic during his brief tenure.

Comments - Dr. Hazeltine completed several long-term assignments in Africa prior to this one, thus when he returned as a member of the FAMU Team he quickly adapted and was a very productive member of the Polytechnic faculty.

Recommendations - Dr. Hazeltine has an excellent reputation for classroom teaching, has been active in research and administration, and exemplifies the type of individual that should be recruited for these types of projects.

3. Dr. Ernest E. Erickson

Observations - Dr. Erickson was selected as the replacement for Dr. Hazeltine in the electrical engineering area. Dr. Erickson apparently did a very acceptable job, but during the latter part of the term his enthusiasm waned. He was considered to be a very capable person and was well liked.

Comments - Dr. Erickson's wife became ill during their stay in Malawi and this probably affected his performance.

Recommendations - None.

Dr. Erickson's Observations - Dr. Erickson was concerned with the lack of formal scheduling of laboratory time and with the lack of suitable textbooks.

Dr. Erickson's Recommendations - The forthcoming change in the curriculum should take care of a portion of the laboratory scheduling problem, and the completion of the library should speak to the textbook problem. It is also recommended that USAID/Malawi develop a brief manual of information for presentation to participants in a Malawi project. This would be helpful in assuring that each participant understands various regulations regarding post differential, shipping reimbursements, vacation time and other considerations.

4. Mr. James McCloud

Observations - Mr. McCloud taught electronics and computational methods; however, his main contribution was in the introduction of microprocessor material to the Polytechnic. Mr. McCloud made significant contributions to the computer selection committee and he delivered some public lectures that were well received. Mr. McCloud's counterpart was especially appreciative of McCloud's assistance. It was reported that Mr. McCloud was resentful of the External Examiner's negative position regarding the standard of his final examination paper and that his attitude toward the end of his assignment had deteriorated.

Comments - According to one of the Lecturers, Mr. McCloud's examination had to be less complex because of the level of understanding of students entering the class. The material on microprocessors presented to the D6 (final year of degree program) students by McCloud was their first exposure to microprocessors, thus the material had to be elementary, but the External Examiner was not aware of these circumstances. Overall Mr. McCloud was a valuable contributor to the program.

Recommendations - Care should be taken to explain the system, such as the role of the External Examiner, to any new comers and the hierarchy of the system should be alerted to any special exceptions or situations that are forthcoming. A comprehensive orientation of

the FAMU Team to the Polytechnic system including philosophy, procedures, rules, and regulations, developed and presented by the Chief of Party and the Principal of the Polytechnic, would have been extremely valuable.

Mr. McCloud's Observations - Mr. McCloud felt that the Polytechnic administrators did not properly advise the Polytechnic faculty of the mission of the FAMU team, and that this caused some unnecessary problems,

Mr. McCloud's Recommendations - The acquisition of new microprocessors will help to eliminate some of the student preparation problems experienced by Mr. McCloud.

5. Mr. Cornel Rigby

Observations - Mr. Rigby started at the Polytechnic in mid-term and was assigned as a lab assistant for five different courses in mechanical engineering. He also started work on the commissioning of some lab equipment at this time. Mr. Rigby taught Solid Mechanics and Process Engineering, both being D6 courses, during the 1984-1985 term. His assignments during the 1985-1986 term were varied and erratic. Mr. Rigby received sharp criticism from more than one individual regarding his performance at the Polytechnic. He was accused of being late in submitting his exam papers to the Department Head for subsequent review by the External Examiners, uncooperative by refusing to teach an assigned class or to grade an exam, teaching classes that did not adhere to the course syllabus, and, in general, being unprofessional.

Comments - Mr. Rigby apparently interpreted the memorandum (Appendix B) from the Principal to the Head of Mechanical Engineering regarding the External Examiner's Report to mean that the course in Solid Mechanics and Process Engineering needed to be revised to include some supporting material. A preliminary review of Mr. Rigby's course notes indicates that he started both courses with an introduction to vector and tensor analysis (advanced math topics) followed by material usually presented in a master's degree level course. He eventually covered approximately one half of the material cited in the original course syllabus. Mr. Rigby's reason for being late in submitting his exam paper is that this was his first occasion to teach these courses and, since they were outside his field of specialization, he did not know in February just what material he would have covered by the end of the term. From this point on the relationship between Mr. Rigby and the engineering administration deteriorated rapidly. The Department Head was accused of capricious grade changing, making unreasonable teaching assignments, etc., and Mr. Rigby was accused as indicated previously. The upper administration of the Polytechnic and the University of Malawi were generally kept informed of the situation.

Recommendations - The differences between Mr. Rigby and the engineering administration are not reconcilable at this time, at least from the administration's perspective, thus we would recommend a termination of this relationship. Ideally a problem of this magnitude should have been dealt with much earlier in the course of the project either through negotiation and agreement on the part of the parties concerned or, if that was impossible, through the dismissal of Mr. Rigby.

6. Mr. Vernal Taylor

Observations - Mr. Taylor did not do any teaching at the Polytechnic. Several individuals indicated that there was some resentment regarding the lack of any teaching by Mr. Taylor. Mr. Taylor was, however, praised by nearly everyone as being a fine person, and, as will be described later, his work as an industrial counsellor was especially appreciated by several people.

Comments - The FAMU contract specified that Mr. Taylor would serve as the "Industrial Management Counsellor (Chief of Party)". Furthermore, in a letter from Professor Myers, Department Head of Electrical Engineering, to Mr. V.L. Taylor (Appendix C), dated 16th June, 1983, Myers stated "it would be more difficult to accommodate you in the teaching programme than not..." and subsequently agreed with Mr. Taylor that Taylor's contract states that his full-time duties would be as Industrial Counsellor.

Recommendations - In future contracts of this type we recommend that each member of the contracting party have some teaching responsibility such that he/she would be more readily acceptable to the students, faculty, and administration.

7. Summary Comments - For the most part individual FAMU team members not only shared in carrying a portion of the Polytechnic's teaching load, but they made a lasting impact on the institution through their efforts to introduce new material (computer solutions for engineering problems, microprocessor design, digital electronics, geotechnics, etc.) into both the classroom and the laboratory. Unfortunately, the rapid evolution of technology requires a continuous updating of course material and curriculum content. The Polytechnic recognizes this phenomenon and, hopefully, they will be able to dedicate a portion of their available resources to the Malawian faculty to allow them to track new technological discoveries and incorporate them into the curriculum.

B. Industrial Counselling

The Industrial Management Counsellor for the project was Mr. Vernal Taylor who also served in the capacity of Chief of Party. Mr. Taylor was extremely cooperative in sharing information with the evaluation team regarding the objectives and accomplishments of the Industrial Counselling effort. The following observations, comments and recommendations summarize our findings on this topic.

Observations - There were six specific tasks accomplished in addition to several general ones that should be of long term benefit to the Polytechnic. These are:

- Student Record Tracking System
- Training and Job Analysis Survey
- Follow-up on Graduates
- Student/Supervisor Guide - Industrial Attachment
- Student Retention/Drop Out Study
- Evaluation Forms for the Industrial Attachment Program

There were several comments of praise regarding the Industrial Counselling effort and a few slightly negative inputs. The main criticism stemmed from the fact that Mr. Taylor did not teach a class and hence did not really know the student body he was trying to counsel. This point of view was expressed repeatedly. At least one other individual objected on the grounds that a full-time administrator was not needed.

Comments - The documentation developed by the Industrial Counsellor was examined and found to be of excellent quality. The establishment of the Industrial Counselling concept is good, and the mechanism and procedures for continuing this effort are in place. As the industrial base in Malawi and the Polytechnic continue to grow and mature, the importance of having a dedicated link between the two will become more apparent. Funding for and allocation of staff time to industrial counselling are issues which must be considered by Polytechnic leadership. At the present time, staff shortages and other funding demands have resulted in a low priority for the industrial counselling position which has not been funded as a separate position to date.

Recommendations - The Industrial Counsellor position should be permanently established and the individual occupying this position should report directly to the Dean, Vice Principal, or some other high level administrator. It is equally important that the Industrial Counsellor have a joint appointment with an appropriate academic department. The division of effort between teaching and counselling will depend somewhat on the abilities of the individual that occupies the position, the Polytechnic's overall staffing requirements and availability of funding; but experience will soon suggest the proper balance.

C. Curriculum Review and Modification

The issue that brought out the most comments and the strongest personal convictions was that of the curriculum. Each individual interviewed on this subject voiced direct and adamant opinions and provided the evaluation team with ample information.

Observations - The input from the students, faculty, industrial and government personnel, and even some administrators, was overwhelmingly in support of changing the existing curriculum. The clear consensus was to eliminate lower level and repetitive material and to develop broad-based degrees in each of the following disciplines: electrical engineering, civil engineering and mechanical engineering. There appeared to be several past and on-going efforts to modify sub-sets of the curriculum, but there were constraints, either real or perceived, regarding the review and modification of the entire curriculum.

The FAMU Team utilized the input from several systematic surveys to provide documentable evidence that a curriculum modification is in order. The evaluation team detected strong pressure from some rather influential individuals that have a vested interest in Polytechnic graduates to switch from the general engineering program. Examples of this pressure are evidenced by the letter from the Board of Engineers to the Vice Chancellor (Appendix D) and by the personal visit with the Deputy Postmaster General. It is interesting to note that the Vice Chancellor did not appear to be opposed to such a change.

The FAMU Team also provided some specific suggestions regarding the curriculum and are leaving behind a proposed curriculum structure that should be useful input to the ongoing evaluation of the curriculum.

Comments - The input was clear, concise and unequivocal, and action needs to be taken. It was sad to hear the commentary that even after six years at the Polytechnic the degree graduate is not admissible to most graduate programs because of the miss-match between the general B.Sc. degree and discipline specific master's degree programs; and, furthermore, the degree graduate does not have the proper training for productive employment by some of Malawi's major employers. There were similar indictments regarding the diploma program but certainly not as severe. The main suggestion here was to implement the selection process for entry into the degree program at the end of the second year such that the last year for the diploma students can be structured to make them more useful to industry.

Recommendations - The engineering curriculum needs to be updated. Additional technical assistance will probably be needed to strengthen the understaffed departments until Malawians can fill those positions, but this is deemed to be a preferable alternative to the existing situation. According to the Education Development Plan (1984-1994) released by the Ministry of Education and Culture, the Polytechnic will be doubling their staff (49 to 110, p. 8.3) to accommodate an additional 470 students (1,020 to 1,490, p. 8.2). Thus, each department should have a critical mass to support independent programs in the near future. There are one or more classes of students at the Polytechnic that are already too far advanced to make a curriculum change that would affect them. It is imperative that if action is forthcoming it should be taken quickly in order to keep the total number of graduates with the less acceptable general curriculum to a minimum.

D. General Institutional Impacts

In considering the institutional impact of the project, the evaluation team has concentrated on those additions to or changes in the Polytechnic and its function which might last beyond the presence of the Technical Assistance Team. Certainly the teaching efforts of individual team members outlined in the previous section, "Classroom and Laboratory Instruction" (page 9) have long lasting implications for the students and, in some cases, colleagues of the team members. However, this section of the evaluation report will concentrate on the long-term implications of the project for the institution itself.

Specifically, we are dealing with the project objective, "... to assist the Principal and Department Chairman of the Polytechnic in developing, reviewing, assessing and, as necessary, modifying the Institute's existing curriculum." (AID contract number AFR-0201-00-3014-00 Appendix A, Operational Plan). Closely linked to the curriculum development portion of the project and ideally, of a similar long-term impact, is the proposed development of a guidance counselling system, a records system for tracking students through the Polytechnic and beyond, and stronger linkages with industry representatives. Additionally, team members contributed to the development of equipment lists for the engineering program. However, the evaluation team was not charged with the consideration of equipment procurement since this is being conducted by FAMU under a separate, Procurement Services Agent Contract and has, therefore, not pursued this matter further.

Both in the case of the curriculum development effort and in the focus on strengthening industry linkages, the FAMU team's ability to have an institutional impact was hampered by its isolation from the major function of the Polytechnic. Throughout the evaluation team's interview process, Malawians, expatriates and the FAMU Team voiced concern that the team as a whole never really became a part of the institution (although in some cases individual team members were able to do so). Reasons suggested by those interviewed for this lack of integration included:

- the team's apparent lack of responsibility to report within the line and staff structure of the Polytechnic;
- an unending battle between British and American faculty members regarding roles, responsibilities, priorities, educational philosophy, course content, etc. with neither apparently trying to understand the other's position or system;
- difficulties for an American team in understanding a system of education based largely on the British model;
- a resentment on the part of expatriate faculty members of the "strings" attached to AID funding such as the mandate to buy American made goods as well as the particular benefits package made available to the Team;

- failure on the part of USAID/Malawi to fully support the FAMU Team and give it appropriate recognition;
- a tendency on the part of some USAID/Malawi officials to inadvertently hamper relations between the FAMU Team and the Polytechnic leadership by meeting independently with Polytechnic administration;
- a lack of understanding on the part of the FAMU Team of appropriate roles and responsibilities of USAID/Malawi vis a vis the project;
- a lack of understanding of the role and responsibilities of the FAMU Team on the part of the Polytechnic faculty;
- lack of input on the part of Polytechnic and University of Malawi officials regarding the specific roles and responsibilities of the team and its members;
- failure of the Polytechnic leadership to accept the roles and responsibilities of the Team and include them in Polytechnic planning; and
- failure of some members of the team to accept the leadership role of the administration of the Polytechnic.

While none of these reasons can be singled out as the one reason for the apparent lack of direct institutional impact of the FAMU project on the Polytechnic, it is clear that each reason contains an element of truth.

Within the scope of the technical assistance plan there appear to have been several areas of potential long-term institutional impact: implementation of Team proposed changes to the curriculum, the maintenance of an industrial counselling system, continued use of the records system for tracking students through the Polytechnic and beyond, and the strengthening of linkages and responsiveness to industry. Additionally there is the institutional impact of AID sponsored participants receiving degree training in the U.S. Each of these potential impacts will be considered separately.

1. Curriculum Revisions

Observations - The curriculum proposal developed by the FAMU Team is conceptually sound given the needs of industry and staffing patterns at the Polytechnic. The concepts presented in the proposal are generally supported by industry representatives and Polytechnic staff. However, the development of the curriculum proposed by the FAMU Team is generally perceived by the Polytechnic Staff as having occurred completely separate from them and from the institution's hierarchy. Several of the Malawians assigned as counterparts to the Team felt that the counterparts, at least, should have had an opportunity to participate in the Team's curriculum development

process. Even though all of the staff members interviewed who had seen the FAMU curriculum proposal spoke positively about its technical and educational merit, none thought it would be adopted in the short term and few thought it would be adopted in its entirety in the long term. In almost every case, the reason given for the probable lack of adoption was the failure of the Team to work within the system. It is important to note that, in general, the Principal has not been supportive of curriculum revision in the recent past. However, there is reason to believe that he may consider other curriculum options at this time, especially if they are presented with supporting documentation.

Comments - It is extremely ironic that the forecasted failure of the Polytechnic to adopt the FAMU Team's curriculum proposal should be caused primarily by its having been written in isolation. It seems probable that had staff input been solicited, the staff would have been supportive of much of the proposal. The major tenets of the FAMU curriculum document are consistent with those which have been proposed over time by various members of the Polytechnic faculty. In fact, it is likely that the document developed by the Team members was influenced by their experience at the Polytechnic and professional interaction with their colleagues. Professor Gill, for example, was involved in the Team's curriculum development effort as well as the Polytechnic's. He served as a member of the Curriculum Revision Committee of the Faculty of Engineering and was able to bring about modifications in course offerings for the Diploma program as well as revision of course syllabi for some subjects in the Diploma and Degree programs.

The end result of all this is the FAMU curriculum proposal, a technically and educationally sound, well written document, potentially rejected because of the process of its development or at least the perception of that process. Even considering the Principal's hesitancy to endorse unsubstantiated curriculum change, extensive pressure for such change by Polytechnic staff, industry and the higher administration of the University of Malawi could have been aided by the FAMU proposal under different circumstances.

Recommendations - Because of the inherent technical and educational soundness of the curriculum document prepared by the FAMU Team, we suggest that Dr. Gill, in his role as the remaining team member (Reference the recommendation regarding Dr. Gill on Page 11), attempt to insure wide distribution of the document. We further propose that it be presented to Polytechnic faculty members as a draft proposal for their input with the hope that this will counter any problems which may have resulted from their lack of initial involvement. Finally, we propose that the plan, revised to include faculty inputs, be moved through the regular channels of the Polytechnic and the University for (hopefully) acceptance and implementation.

2. Industrial Counselling System

Observations - Under the leadership of Mr. V.L. Taylor, the Industrial Counsellor, what had been a simple program of industrial placement of students during their long vacation now has the potential of not only better serving that function but also providing an important feedback mechanism to the Polytechnic from industry. Several Polytechnic staff identified progress made regarding the linkage with and support of students on industrial attachment as a high point of the FAMU project. The extensive data collected through this project are generally seen as a resource for further Polytechnic decision making. Unfortunately, plans have not been set by the Polytechnic for the continuation of industrial counselling as a centralized function.

Comments - The issue of Mr. Taylor's responsibilities, which include no teaching load, appears to have overshadowed the importance of the function of the industrial counsellor. As indicated previously, at least a minimal teaching load (3-4 hours per week) is generally seen by those interviewed as essential to the role of the industrial counsellor so that he/she has contact with students and an understanding of classroom problems. It seems clear at this point that as soon as Mr. Taylor's lack of any teaching load was identified to be a source of conflict between authorities at the Polytechnic and FAMU Team, procedures should have been followed to change his scope of work and include a minimum teaching load in Mr. Taylor's responsibilities. An issue which could have been settled by a minor change in one Team member's responsibilities may threaten the ultimate institutionalization of the industrial counselling program.

Ideally, the training of a counterpart in the Industrial Counsellor role should have ensured the carry over of that role after the departure of the FAMU Team. While a Malawian counterpart Mr. Chitani, was assigned to Mr. Taylor this was done later on in the project. The counterpart only worked part-time with Mr. Taylor and does not feel that he has sufficient knowledge of Mr. Taylor's work to ensure that it is continued. At least a part of the problem has been a lack of time for the counterpart to dedicate to work with Mr. Taylor.

Recommendation - As mentioned in the recommendations regarding Industrial Counselling (page 12) all efforts should be made to hire or assign someone to fill the industrial counsellor position. This should be done as quickly as possible, preferably prior to the departure of Mr. Taylor. It is extremely important that Mr. Taylor have an opportunity to share the systems he has developed with his replacement in order to ensure the smooth transfer of responsibility and ultimate use of the data already collected.

3. Student Record System

The automated student record system developed by the FAMU Team is complete but must be adapted to the new computer system which will be used at the Polytechnic. The need for the system was reiterated by the Principal with every intention of using it for the entire Polytechnic as soon as it is operational. The system has been tested on a limited number of students and must be expanded to include the total student population.

4. Linkages with Industry

Observations - The majority of those interviewed felt that the FAMU team was able to strengthen linkages between industry and the Polytechnic. However, concern was expressed that the job of maintaining industry linkages should be the responsibility of all Polytechnic staff.

Comments - The newly elected Dean of Engineering responded very positively to the need to build upon the foundations laid by Mr. Taylor. His plans are to make institutional linkages a priority during his tenure as Dean. These plans may be difficult to bring to fruition in that the rest of the hierarchy of the Polytechnic has tended to identify a focus on industry linkages as a lesser priority and certainly not a centralized function. Additionally, as a new Dean and the first Malawian Dean of Engineering, whose election was somewhat unexpected, he may not be able to concentrate on his own priorities but, rather, may be required to focus on the response to other demands.

Recommendations - Prior to Mr. Taylor's departure he should have at least one de-briefing meeting with the in-coming Dean to ensure that all information passes smoothly to the next person focusing on industry relations as a priority.

E. Project Management

1. Home Office Support

Quality of logistics and technical support from the Office of International Programs at Florida A & M University was considered both from the perspective of the technical assistance team and through the collection of data at the home office. The evaluation team interviewed the three FAMU Team members still in Malawi and those Team members who had already returned to the U.S. were interviewed by telephone. A site visit was made to the FAMU campus to collect additional data.

Observations - The technical assistance team still in Malawi had only praise for the backstopping provided by the FAMU home office. The field technical assistance team seems to have had a close working relationship with Dr. Peter Hartmann, Director of

International Programs at FAMU. Dr. Hartmann has not only handled logistical and technical requests from the team quickly and effectively, he has taken a personal and professional interest in the project itself. During his visits to the Polytechnic he has been accepted as a member of the team and has been able to work closely with the staff at the Polytechnic. However, when interviewed by the evaluation team, Dr. Hartmann did not seem to be aware of either the severity of the problems involving Mr. Rigby or of the negative impact of the lack of integration of the FAMU Team into the Polytechnic system although some individual members of the Team were successful. While it is not clear why Dr. Hartmann was unaware of these problems, it can certainly be said that communication between the field and the home office was not completely effective.

Both Erickson and McCloud experienced difficulties in receiving surface shipments; however, these problems were eventually resolved and were found to be caused primarily by the carrier. Also, a personal visit to the Office of International Programs at FAMU revealed that office conditions are good and organization is excellent. The office is structured with a procurement specialist, a manager, and project coordinators who could answer the bulk of any incoming questions in the absence of Dr. Peter Hartman. The office has an operative TELEX system. A visit with the University President, Dr. Frederick Humphries, and the dean of the School of Engineering, Dr. Charles Kidd, revealed that the University is fully supportive of strong international programs. The evaluator also visited with Sponsored Research and reviewed the accounting procedures, contract approvals, reporting procedures and other supporting activities, and found all of these activities to be quite adequate.

The assistance provided by Dr. Hartman's office when Dr. Ajit Gill experienced an accident in a borrowed car in a neighboring country is an excellent example of home office support. This accident required several man-days of effort to coordinate the sending of a Boeing 7 medical jet from South Africa to Zambia to pick up Dr. Gill. There were a multitude of administrative details regarding the follow-up to this accident which were apparently handled successfully. The home office also set up a \$20,000 local account in Malawi for the Chief of Party to use as a revolving account. This provided the FAMU team with a certain degree of local autonomy which proved to be valuable.

a. Recruitment of Short Term Consultants

The proposed recruitment procedures for identifying short-term consultants who would travel to Malawi for the purpose of setting up and commissioning new equipment is outlined below:

- (i) Announce job description to relevant academic units and international contact persons.

- (ii) Contact, by telephone, most probable candidates.
- (iii) Announce positions that require outside resources and individuals by posting through the State University System (SUS).
- (iv) Contact, simultaneously, academic units from non-SUS universities by telephone and written announcement (mostly through deans).
- (v) Request that interested candidates submit resume, three letters of reference and completed SUS employment/OPS form.
- (vi) Depending on the materials received in Item 5, nature of assignment and knowledge of the candidate, an interview may be requested.
- (vii) Compensation is made on University and funding agency guidelines.

It appears that FAMU has the ability to identify appropriate short-term consultants; however, Dr. Hartman must guard against the internal pressure the internal pressure to appoint large numbers of FAMU faculty members.

b. Institutional Policies Regarding International Service

The academic policies of an institution can preclude the involvement of highly qualified faculty in international projects when those policies fail to give credit toward tenure and promotion for international service. Florida A & M University's written policy on "Foreign Faculty Service" as it appears in the Faculty Handbook States:

"Full-time faculty members of the University who work for the University in foreign countries shall retain all the rights and privileges of on-campus faculty members, including those of salary increases, promotion and tenure." (FAMU Faculty Handbook, Page 43)

This policy, teamed with the overall support for International Programs within the total University system of the State of Florida is an example of academic policies which, in fact, encourage international involvement.

Full time FAMU faculty members on the technical assistance team were not aware of the University Policies regarding international services.

While lack of specific knowledge of University Policies regarding international services did not seem to be of particular concern to the two Team members still in Malawi who are full-time FAMU faculty members, this lack of knowledge could be a severe problem for less senior, less secure faculty. We recommend that all faculty agreeing to international service be fully briefed, orally and in writing, prior to making such a commitment as well as shortly before their return to FAMU following time in an international post.

2. USAID/Malawi Project Management

Observations - Responsibility for USAID/Malawi management of the Polytechnic Expansion Project changed hands three times during the life of the project. The current project manager, Mr. Richard Day, appears to have quickly developed a very close professional linkage with the Polytechnic administration. Mr. Day has been especially active in his management role considering the fact that his tenure in this position should require somewhat less involvement than his predecessors since he is overseeing the closeout of the project.

Comments - The evaluation team was unable to interview Mr. Day's predecessors. However, it seems evident from the problems described earlier in this document that USAID/Malawi's management of the project was not sufficient to prevent those problems.

Recommendations - The hindsight of a final evaluation clearly identifies a need for closer monitoring of the FAMU team early in the life of the project as well as strong direct linkages between USAID/Malawi and the Polytechnic Administration. It is unclear what, if anything precluded USAID from maintaining closer controls over the project except that it is much easier to identify that need in retrospect than it is at the time of implementation.

3. Polytechnic Administration Project Management

Observations - Interviews with Polytechnic and University of Malawi administration revealed a perception of the lack of control over the Project and the FAMU team by institutional leaders. This perception seemed to extend throughout the project from its beginnings when administration officials felt they lacked influence over the basic characteristics of the project. The Polytechnic administration acknowledged their ability to adopt measures to deal with the more severe problems connected with the project, however, they chose not to do so because of past experiences in dealing with U.S. technical assistance. Ultimately, the Polytechnic administration seems to have adopted a laissez faire approach to dealing with the FAMU team.

Comment - A closer linkage between USAID/Malawi and the Polytechnic administration, especially at the beginning of the Project, might have encouraged stronger project management by the administration. Fears of the repeat of a previous incident in which high level

government officials became involved in settling a dispute related to U.S. technical assistants at the Polytechnic might have been mediated through a closer working relationship with USAID.

Recommendations - The strength of the current working relationship between USAID and the Polytechnic administration precludes the need for recommendations for action to be taken at this time.

F. Areas of Continued USAID/FAMU/Polytechnic Collaboration

The triad of USAID/FAMU/Polytechnic have shared the common goal of enhancing the Polytechnic's ability to generate local technological talent that can be utilized to support and stimulate the development of a stronger industrial base in Malawi. In order to maintain progress toward this goal it is highly recommended that the appointment of Dr. Ajit Gill be extended through the 1986-1987 term. The presence of Dr. Gill will be beneficial not only for his teaching contributions, but he can provide local FAMU assistance regarding the equipment procurement and he can direct the commissioning of the civil engineering related equipment. Dr. Gill can likewise monitor the commissioning of the equipment being procured for the electrical and mechanical engineering programs and the development of teaching modules related to the use of the equipment, and can provide early counsel if the need for the services of special short-term technical consultants arises and can serve as the Polytechnic/FAMU liaison for the provision of those consultants.

It may be advisable for FAMU to contract, with USAID support, for a part-time one-year appointment of an Industrial Counsellor. Mr. Vernal Taylor should likewise be placed on a limited state-side appointment, with allowance for a follow-up visit to Malawi, to monitor and provide transitional guidance to the new counsellor.

The remainder of the Counsellor's appointment should be provided by an appropriate academic department.

The evaluation team believes that the above recommendations will lead to an orderly phase out of the FAMU Team and will provide increased assurance that the investment already made by USAID and FAMU will come to fruition.

It is encouraging to note that a formal Memorandum of Understanding has been signed between Florida A & M University and the University of Malawi. This agreement bodes well for a continuation of the professional linkages that have already been formed.

G. Project Activities After Termination of USAID Funding

It is felt that the recommendations presented in the previous sections would lead to an orderly phase-out of the FAMU efforts and would probably provide the maximum long term benefits for the Polytechnic. If the FAMU project is completely terminated on August 31, 1986, there would indeed be reason to believe that some of their work would be carried on but the prospects for maximum impact are not good.

V. ADDITIONAL RECOMMENDATIONS

Based on our review of the Polytechnic history and the input from numerous senior faculty and staff it is felt that even though the presence of American staff in Malawi might be kept at a minimum, the presence of USAID support should be reasonably continuous. More than one of the interviewees took the opportunity to remind us that while the U.S. helped to establish the Polytechnic, in essence, the U.S. abandoned the Polytechnic for many years.

The evaluation team has detected a rather strong interest in having a quality master's level program available in Malawi. There is probably a backlog of individuals that would collectively pursue a master's degree to justify at least a one-time offering. It is probably advisable to contract with a reputable U.S. University to provide a part-time master's program spread over a three to four year period with classes offered primarily during the evenings and holiday periods. It is very likely that a few of the Polytechnic faculty would qualify to serve as lecturers and co-advisors for thesis research for the U.S. University. This type of activity would not only serve a basic educational need, but would also serve as a stimulus to get the Malawi faculty upgraded and involved in research which is extremely important to the long term enhancement of the Polytechnic, and would also be beneficial to participating industries. Mr. Mwakikunga, Chief Engineer at Ministry of Works and Supplies, for example, cited the importance of having the Polytechnic faculty do research, and he expressed a strong willingness to establish joint projects with the Polytechnic.

If USAID initiates another project involving technical assistance for the Polytechnic we feel that it is important that the Polytechnic officials are involved in the contract development and signing process, and that clearly defined lines of responsibility and authority are established for the project personnel.

The participant training component of the Polytechnic Expansion Project was not the responsibility of the Florida A & M Team. A total of 17 Malawians are in training or have completed training at B.Sc. and/or M.S. and/or Ph.D. levels. Among those 17 students there will be a total of nine B.Sc., thirteen M.S., three M.A., and two Ph.D. degrees awarded.

In most projects with participant training components, but especially those focusing on or contracted to an educational institution, a strong linkage between the contractor team and participants studying in the U.S. can be advantageous. Such a link, even when maintained only through letters and newsletters from the field and/or the contractor's home office, can help maintain the participant's commitment to the his/her home institution. It can also help prepare the participant for the changes that have occurred during his/her absence and can help provide a support system for students in the U.S. linking them to one another.

These linkages can be maintained without significant additional funding. However, when funding is available, a stronger support mechanism can be offered including conferences and/or workshops for participants, assistance in seeking industrial placement for "internships," and access to resources to allow students to plan M.Sc. or Ph.D. thesis research relevant to their home country/institution needs.

All of this can be planned with a focus on helping the individual while maintaining his/her commitment to the home institution and thus greater strengthening of the institution itself. In the case of the Polytechnic Expansion Project, the Principal is interested in maintaining links with staff on study leave and has, in fact, initiated efforts in this direction. Perhaps a similar dedication from the FAMU Team would have strengthened their ability to respond to the Polytechnic administration.

We recommend that future projects be designed to include this type of component.

VI. APPENDICES

APPENDIX A

Malawi Polytechnic Project Evaluation

Interview List

Mr. E.F. Banda Lecturer Department of Electrical Engineering Malawi Polytechnic	Mr. F. Chitani Lecturer Department of Mechanical Engineering Malawi Polytechnic
Mr. N.T. Ben Lecturer Department of Mechanical Engineering Malawi Polytechnic	Mr. Richard C. Day Program Officer USAID/Malawi
Mr. R.G. Binali Printing Department Malawi Polytechnic	Dr. E. Erickson Professor Electrical Engineering and Communication Sciences Department University of Central Florida Former Florida A & M University Team Member
Mr. M.M. Bizaliele Lecturer Department of Civil Engineering Malawi Polytechnic	Dr. A. Gill Professor and Head of Department of Civil Engineering Member of Florida A & M University Technical Assistance Team
Dr. P.L. Chikhula Vice Principal Malawi Polytechnic	
Mr. C.B. Chipofya Department of Electrical Engineering Incoming Dean of Engineering Malawi Polytechnic	Dr. J. Harris Head of Department of Mechanical Engineering Malawi Polytechnic
Mr. Wilson T.M. Chirwa Polytechnic Graduate LSC Brunette & Partners	Dr. Peter Hartmann Director of International Programs Florida A & M University
Mr. V.R. Kacelenga Lecturer Department of Electrical Engineering Malawi Polytechnic	*Dr. Barrett Hazeltine Associate Dean of the College Brown University

Mr. A.V. Kambalmetore
Principal
Malawi Polytechnic

Mr. G.R. Kamwanja
Senior Lecturer
Civil Engineering
Malawi Polytechnic

Dr. David Kimble
Vice Chancellor
University of Malawi

*Mr. J.L. McCloud
Assistant Professor
Electronics Engineering Technology
Florida A & M University
Former Florida A & M University
Team Member

Mr. D.L. Maganga
Lecturer
Department of Business
Member of Polytechnic Computer
Committee
Malawi Polytechnic

Mr. B.K. Masamba
Lecturer
Telecommunications
Department of Electrical Engineering
Malawi Polytechnic

Mr. Jackson A.K. Ndala
Polytechnic Graduate
Halls Holdings

Dr. L.G.M. Mhango
Dean of Applied Sciences
Malawi Polytechnic

Mr. Mkandawire
Chairman, Board of Engineers
Ministry of Works and Supplies

Mr. Peter C. Mtonda
Polytechnic Graduate
Electricity Supply Commission of
of Malawi (ESCOM)

Mr. Mwakikunga
Engineer
Ministry of Works and Supplies
Member of Malawi Board of Engineers

Dr. M.R. Mumbwa
Head of Department of Technical
Education
Malawi Polytechnic

Mr. Mwanza
Deputy Postmaster General
Department of Posts and
Telecommunications

Prof. J.A. Myers
Professor and Head of Department
of Electrical Engineering
Malawi Polytechnic

Mr. G. Ngwalo
Lecturer
Department of Mechanical Engineering
Malawi Polytechnic

Mr. S. Nyirenda
Assistant Registrar
University of Malawi

Mr. C.J. Rigby
Lecturer
Department of Mechanical Engineering
Member Florida A & M University
Technical Assistance Team

Mr. Stoddart
Senior Lecturer
Department of Civil Engineering
Malawi Polytechnic

Mr. V.L. Taylor
Chief of Party and Industrial Counsellor
Florida A & M University
Technical Assistance Team

Mr. Uko
Chief Engineer
Electricity Supply Commission of Malawi
(ESCOM)

* Contacted by telephone

APPENDIX B

APPENDIX C

APPENDIX D

VII. REFERENCES

Malawi Polytechnic Engineering
Project Paper (612-0201)

Background Information on Malawi and on the
AID Assistance Program
July, 1984 USAID/Malawi

The University of Malawi - Education
Development Plan (1984-1994)
Operational Supplement Part 8
from Ministry of Education and Culture

Ministry of Overseas Development
Report on the Visit of the Curriculum Development Consulting
Team to Malawi and Advise on the Setting Up of a Degree Course
in Engineering at the University
March, 1975
Gray, Field and Wills

The Degree of Professional Engineering in Malawi
A Personal View by T. Laws
December, 1976

The Desirability, Feasibility and Implementation of Setting Up
Degree Work in Engineering in the University of Malawi
Inter-University Council for Higher Education
Overseas September, 1974

Projects Submissions
Project A Degree in Engineering
Project B Bachelor of Commerce Degree in Accountancy
G. Hunnings, University of Malawi, 1976

Malawi Polytechnic Expansion Proposal
USAID No. 612-0201
Patrick, Slattery, Taylor, Davis & Mortimer
First Work Draft September, 1979

Evaluation Documentation
FAMU/USAID/Malawi Polytechnic Expansion Project
Contract AFR-0201-c-00-3014-00

A Survey on Malawi's Engineering Manpower
Needs - Training, Job Analysis and Trends
FAMU Technical Assistance Project

Engineering Students Retention - to - Drop Out
Ratio and Related Studies Survey, 1980-1985
Office of Industrial Counsellor
FAMU Technical Assistance Project

A Follow-Up Study on B.Sc. Engineering
Graduates May, 1986
FAMU Technical Assistance Project

Proposed Innovations for the Engineering
Curriculum April, 1986
FAMU Technical Assistance Project

Various Papers and Report
James McCloud
FAMU Technical Assistance Project

Diploma and B.Sc. Degree Syllabi
From the File of Dr. Ajit Gill
FAMU Technical Assistance Project

Statement of Responsibilities
Dr. Ajit Gill
FAMU Technical Assistance Project

Classroom Notes, Samples Exams,
and Student Project Reports
Cornel Rigby
FAMU Technical Assistance Project

Collection of Letters and Memos Relating
to Mr. Cornel Rigby
Dean John Meyers
Malawi Polytechnic

Industrial Career Counsellor
Job Description
Vernal Taylor
FAMU Technical Assistance Project

Education Development Plan 1985 - 1995, A Summary
Ministry of Education and Culture
Republic of Malawi
May 1985

University of Malawi - The Polytechnic
Polytechnic Expansion Policy Statement
Mr. Kambalmetore
January, 1981

The Polytechnic Industrial Attachment
programme, Supervisor Guide
1986

Evaluation Document
Florida A & M University Office of
International Programs
June, 1986

June 23, 1987

Mr. Barry Shuman
Institute for International Education
809 United Nations Plaza
New York, New York 10017

Dear Mr. Shuman:

Enclosed please find the technical section of Creative Associates International's proposed approach to in-country training for the Zimman II proposal. A capability statement including resumes and past project descriptions is attached in the appendix. If you have any questions, need additional information or require a formal letter of intent from Creative Associates for inclusion in the proposal, please do not hesitate to contact Brenda Bryant, Vice President.

Sincerely,

Danuta Lockett
Director
International Programs

39

Creative Associates