936-8716 (2)
PD-AAF-594-B1

AGENCY FOR INTERNATIONAL DEVELOPMENT
PROJECT AUTHORIZATION AND REQUEST FOR ALLOTMENT OF FUNDS PART I

1. TRANSACTION CODE: C (A = ADD, C = CHANGE, D = DELETE)

PAF 57p

2. DOCUMENT CODE: 5

3. COUNTRY/ENTITY: Interregional

4. DOCUMENT REVISION NUMBER:

5. PROJECT NUMBER (7 digits): 936-5716

6. BUREAU/OFFICE: A. SYMBOL: DSB; B. CODE: 10

7. PROJECT TITLE (Maximum 40 characters): Training in Alternative Energy Technologies

8. PROJECT APPROVAL DECISION — ACTION TAKEN: A - APPROVED; D - DISAPPROVED; DE - DEAUTHORIZED

9. EST. PERIOD OF IMPLEMENTATION: YRS. 3 QTRS.

10. APPROVED BUDGET AID APPROPRIATED FUNDS ($000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	PRIMARY TECH. CODE C. GRANT	PRIMARY TECH. CODE D. LOAN	E. 1ST FY 79 F. GRANT	E. 1ST FY 79 G. LOAN	H. 2ND FY 80 I. GRANT	H. 2ND FY 80 J. LOAN	K. 3RD FY ___ L. GRANT	K. 3RD FY ___ M. LOAN
1) SDA	J	J		1,000		1,100			
2)									
3)									
4)									
			TOTALS	1,000		1,100			

A. APPROPRIATION	N. 4TH FY ___ O. GRANT	N. 4TH FY ___ P. LOAN	Q. 5TH FY ___ R. GRANT	Q. 5TH FY ___ S. LOAN	LIFE OF PROJECT T. GRANT	LIFE OF PROJECT U. LOAN
1)					2,100	
2)						
3)						
4)						
TOTALS					2,100	

11. PROJECT FUNDING AUTHORIZED (ENTER APPROPRIATE CODE(S)) 1 = LIFE OF PROJECT; 2 = INCREMENTAL, LIFE OF PROJECT

	A. GRANT	B. LOAN

C. PROJECT FUNDING AUTHORIZED THRU FY 79

12. INITIAL PROJECT FUNDING ALLOTMENT REQUESTED ($000)

A. APPROPRIATION	B. ALLOTMENT REQUEST NO. ___ C. GRANT	D. LOAN
1) SDA	1,000	
2)		
3)		
4)		
TOTALS	1,000	

13. FUNDS RESERVED FOR ALLOTMENT

TYPED NAME (Chief, SER/FM/FSD)

SIGNATURE

DATE

14. SOURCE/ORIGIN OF GOODS AND SERVICES: ☐ 000 ☐ 941 ☐ LOCAL ☐ OTHER ___

15. FOR AMENDMENTS, NATURE OF CHANGE PROPOSED

Clearance: DS/EY, Alan B. Jacobs _____ Date _____

FOR BPC/PIAS USE ONLY	16. AUTHORIZING OFFICE SYMBOL	17. ACTION DATE MM DD YY	18. ACTION REFERENCE (Optional)	ACTION REFERENCE DATE MM DD YY

8/2/79

ACTION MEMORANDUM FOR THE DEPUTY ASSISTANT ADMINISTRATOR, DSB/DT

FROM: DS/EY, Alan B. Jacobs

Problem: To obtain DAA/DS/DT approval for support of the University of Florida Solar Energy and Energy Conversion Laboratory program for Training in Alternative Energy Technologies for Less Developed Countries as follows:

1. To approve a two year project (as opposed to the five year project proposed in the unsolicited proposal from Florida) that would authorize support of the University of Florida's Training in Alternative Energy Technologies program over a two year period (September 1979 through September 1981) of not to exceed $2.1 million.

2. To approve negotiation of a two year (September 1979 through September 1981) Cooperative Agreement with the University of Florida, under the authorization requested above, that would provide annual increments of funding subject to prescribed on-going program evaluation and the availability of funds.

3. To approve A.I.D. funding of up to $1 million for the University of Florida's FY 1979 program on completion of the Congressional Notification process making the project eligible for funding in FY 1979.

Discussion: LDCs, like the industrial countries, are precariously dependent on petroleum for their energy needs. In the face of growing uncertainty regarding dependable petroleum supply and the certainty of increasing petroleum prices these countries have expressed substantial interest in testing and installing alternative energy technologies based on locally available renewable energy resources. The Agency assigns a high priority to the provision of hands-on training in these alternative energy technologies.

The University of Florida Solar Energy and Energy Conversion Laboratory, one of the U.S. pioneers in small-scale alternative energy technology training, has submitted an unsolicited proposal (attached) to provide training in small scale alternative energy technologies to LDC

participants. It proposes to undertake two 15 week training sessions each year for up to 40 participants in each session of which 30 will be LDC participants supported by A.I.D. under this project. Participants will receive didactic training in the theory of alternative energy technologies, particularly small scale solar technologies, and will receive intensive hands-on training in machine shop and construction aspects of building low cost mechanisms to provide energy for such purposes as crop drying, hot water, refrigeration, and water purification in rural areas. The University of Florida will assist the USAID Missions in the identification and selection of appropriate LDC participants for training and will to the extent possible, tailor the training to the special needs of each of the participants.

Following the AA/DS review of this unsolicited proposal with the Bureau Energy Officers on June 12, 1979, the Geographic Bureau Energy Officers site visited the University of Florida facilities on June 19 and 20. The Energy Officers examined the proposed course composition and content, the University's special technical competence to provide the proposed training and the University's ability and competence to provide special training in the social, economic and cultural implications of technology transfer in the LDC setting. As a result of this visit the University of Florida agreed to devote four hours per week of training in the social, economic and cultural aspects of technology transfer by competent and experienced faculty.

It was also agreed that an evaluation and redesign of the program would take place following the second session of the training program. The redesign would aim at re-orienting the program, or a substantial portion of the program, to support the strengthening and growth of LDC solar energy training, research and development institutions, with the aim of assisting one such institution in each of the four geographic regions served by AID.

The proposed budget over the period of the two year program proposed for funding is as follows:

Budget Projection - FY 1979-FY 1980

	By Fiscal Years in $ Thousands	
	FY 1979	FY 1980
Faculty Staff Services	231	247
Support Services (Shop time, expendable construction material, equipment, supplies)	300	300
Trainee Travel, Insurance & Per Diem	351	375
Staff Travel, Evaluation-Follow-Up	30	32
Overhead (54% of Staff Salaries)	125	134
Total	$1,037	$1,088

By January 1981 AID will evaluate the University of Florida's program prior to Development Support Bureau approval and authorization of subsequent energy technology training programs.

Recommendation: That you approve the attached Project Proposal which would authorize a two year project with the University of Florida for Training in Alternative Energy Technologies. That you approve the attached Project Authorization and Request for Allotment of Funds (PAF II) which approved A.I.D. funding of up to $1,000,000 for the University of Florida's FY 1979 program. The Congressional Notification action is in process.

The project authorization addresses the major recommendations of the Regional Bureaus as noted in their clearances and comments which are attached. It provides for not more than a two year exclusive arrangement with the University of Florida, emphasizes training in solar energy technologies, and presumes a competitive award for the continuation, beyond FY 80, of a DS Bureau Training in Alternative Energy Technologies Project.

APPROVED: John A. Bruce

DISAPPROVED: _____

DATE: 8/6/79

Attachments:
1. Project Authorization and Request for Funds
2. Environmental Threshold Determination
3. PROP Face Sheet
4. Revised University of Florida's Project Proposal

Drafted by:
E. R. Backlund
DS/EY, 6/25/79
X 235-9020

Clearances:
for AFR/DR:LHeilman JB Date 8/2/79
ASIA/TR:TArndt ** Date
NE/TECH:KMacManus Date 8/2/79
LAC/DR:MBrown Date 8/2/79
PPC/EY:SKlein SK * Date 8/3/79
DS/PO:RSimpson Date 8/2/79

Memo, Blumgart to Jacobs, 7/5/79
**Memos, N. Brown to Jacobs, 6/25/79 and 7/20/79
Memo, Maushammer to Jacobs, 7/24/79
Memo, Klein to Jacobs, 7/2/79
Memo, Levin to Jacobs, 6/18/79

* See memo of Aug 3, 1979 re clarification of authority

AGENCY FOR INTERNATIONAL DEVELOPMENT

PROJECT PAPER FACESHEET

1. TRANSACTION CODE: C (A = ADD, C = CHANGE, D = DELETE)

PP

2. DOCUMENT CODE: 3

3. COUNTRY/ENTITY: Interregional

4. DOCUMENT REVISION NUMBER:

5. PROJECT NUMBER (7 digits): 936-5716

6. BUREAU/OFFICE: A. SYMBOL: DSB; B. CODE: 10

7. PROJECT TITLE (Maximum 40 characters): Training in Alternative Energy Technologies

8. ESTIMATED FY OF PROJECT COMPLETION: FY 82

9. ESTIMATED DATE OF OBLIGATION: A. INITIAL FY 79; B. QUARTER 4 (Enter 1, 2, 3, or 4); C. FINAL FY 83

10. ESTIMATED COSTS ($000 OR EQUIVALENT $1 –)

A. FUNDING SOURCE	FIRST FY B. FX	FIRST FY C. L/C	FIRST FY D. TOTAL	LIFE OF PROJECT E. FX	LIFE OF PROJECT F. L/C	LIFE OF PROJECT G. TOTAL
AID APPROPRIATED TOTAL				2,100		2,100
(GRANT)	( )	( )	( )	(2,100)	( )	(2,100)
(LOAN)	( )	( )	( )	( )	( )	( )
OTHER U.S. 1.						
OTHER U.S. 2.						
HOST COUNTRY						
OTHER DONOR(S)						
TOTALS				2,100		2,100

11. PROPOSED BUDGET APPROPRIATED FUNDS ($000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	PRIMARY TECH. CODE C. GRANT	PRIMARY TECH. CODE D. LOAN	E. 1ST FY 79 F. GRANT	E. 1ST FY 79 G. LOAN	H. 2ND FY 80 I. GRANT	H. 2ND FY 80 J. LOAN	K. 3RD FY 81 L. GRANT	K. 3RD FY 81 M. LOAN
(1) SDA	J	440		1,000		1,100			
(2)									
(3)									
(4)									
			TOTALS	1,000		1,100			

A. APPROPRIATION	N. 4TH FY ___ O. GRANT	N. 4TH FY ___ P. LOAN	Q. 5TH FY ___ R. GRANT	Q. 5TH FY ___ S. LOAN	LIFE OF PROJECT T. GRANT	LIFE OF PROJECT U. LOAN
(1)						
(2)						
(3)						
(4)						
TOTALS						

12. IN-DEPTH EVALUATION SCHEDULED: MM YY

13. DATA CHANGE INDICATOR. WERE CHANGES MADE IN THE PID FACESHEET DATA, BLOCKS 12, 13, 14, OR 15 OR IN PRP FACESHEET DATA, BLOCK 12? IF YES, ATTACH CHANGED PID FACESHEET.

1 (1 = NO, 2 = YES)

14. ORIGINATING OFFICE CLEARANCE

SIGNATURE

TITLE: DS/EY/Dir, Alan B. Jacobs

DATE SIGNED: MM DD YY

15. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION: MM DD YY

AID 1330-4 (3-78)

OPTIONAL FORM NO. 10
JULY 1962 EDITION
GSA FPMR (41 CFR) 101-11.6

UNITED STATES GOVERNMENT

Memorandum

TO : DAA/DSB, John Bruce

DATE: August 6, 1979

FROM : AA/PPC, Stephen Klein

SUBJECT: University of Florida Training Proposal

Attached herewith is the authorization package for the University of Fla. training proposal with my clearance subject to the following:

1. The project is a two year project .
2. Continuation project will be based on competitive award.
3. The University of Florida is informed formally during the contract negotiations that this contract is for two years, and that follow-on work will be bid competitively.

cc: AA/PPC, C. Paolillo
ASIA/TR, A. Jacobs
ASIA/TR, N. Brown
LAC/DR, R. Maushammer
NE/TECH, K. MacManus
AFR/DR, L. Heilman/J. Blumgart

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

5010-110

UNITED STATES GOVERNMENT

memorandum

DATE: JUL 5 1979

TO: AFR/DR/SDP, John D. Blumgart JB

SUBJECT: Florida Proposal

TO: DS/EY, Mr. Alan B. Jacobs

Pursuant to agreement Tuesday with Dr. Bosken, I have cleared your action memo on the understanding that a new paragraph will be added to page two of the memo which incorporates the third point of Mr. Backland's transmittal memo. I think it is important to include this point in the action memo, particularly since it is consistent with Mr. Levin's memo to you of June 18. The suggested language of the paragraph would be as follows:

> "It was also agreed that an evaluation and redesign of the program would take place following the second session of the training program. The redesign would aim at re-orienting the program, or a substantial portion of the program, to support the strengthening and growth of LDC solar energy training, research and development institutions, with the aim of assisting one such institution in each of the four geographic regions served by AID."

I also request that in the planning and implementation of the program, the following points be observed:

1. Solar fish drying should be one of the priority applications included in the items listed on page 9.

2. The selection process makes no mention of host government nominations; this oversight should be remedied.

3. In order to prepare a relevant curriculum (i.e. second paragraph, p.8) it is important that Florida achieve a good understanding of solar energy activities and needs in the LDCs, including sub-Sahara Africa. I recommend that representatives of the University visit solar energy institutions in that part of Africa, including in particular those in Senegal and Niger, where a great deal is going on.

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

OPTIONAL FORM NO. 10
(REV. 7-76)
GSA FPMR (41 CFR) 101-11.6
5010-112

UNITED STATES GOVERNMENT

memorandum

DATE: July 20, 1979

FILE TO FROM OF: ASIA/TR/STEP, Norman L. Brown NLB

SUBJECT: University of Florida (Unsolicited) Proposal for Energy Technology Training

TO: DS/EY, Alan Jacobs

I have reviewed the Action Memorandum and the subject proposal received from your office July 19th. Aside from the concerns I have expressed to both you and Mr. Levin in separate memoranda on our visit to the University of Florida, I regret to say I cannot clear the recommendation to Mr. Levin for several reasons, most of which are stated rather clearly in Steve Klein's memorandum of July 2, 1979 on the subject.

In addition, I am concerned about the issue of the unique capability of the University of Florida, discussed at the review chaired by Mr. Levin, on June 12, 1979. My recollection is that there was agreement then (confirmed by Mr. Levin in a comment made at the Energy Coordinating Group meeting on July 19th) that the agreement would be for two years only, and that the subject of energy technology training would be open to competitive bidding as soon as possible, at the latest at the end of the two-year period.

For these reasons, I am indicating that I have received the package for information only.

cc: ASIA/TR:TArndt
ASIA/TR/STEP:RIchord
AA/PPC:SKlein
AFR/DR:JBlumgart
LAC/DR:RMaushammer
ME/TECH:KMacManus

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

OPTIONAL FORM NO. 10
(REV. 7-76)
GSA FPMR (41 CFR) 101-11.6
5010-112

UNITED STATES GOVERNMENT

Memorandum

Action: EV
Levin Sander
Due Date: 7/5
Copies To: Bruce Levin

: AA/DS, Sander Levin

DATE: June 25, 2979

: ASIA/TR/STEP, Norman Brown

: Impressions from my visit to the University of Florida

It was obvious from my comments at the June 12 meeting that I had serious concerns about the choice of the University of Florida as a solar energy training center for LDC trainees. My visit there last week diminished some of my concerns but strengthened others.

There is no doubt that Professor Farber and his colleagues are engaged in a variety of solar technologies and device-development projects. Nevertheless, I did not get the feeling that the Florida group was uniquely well suited to becoming such a training center. The two major categories of concern are technology on the one hand, and cultural sensitivity/adaptability—of both people and devices—on the other.

Although we did not see many full-scale working units, we did see many laboratory-scale models. Many of these were interesting, and all demonstrated a breadth of interest on Professor Farber's part. (Their activities in wind-energy conversion are limited, however, and I would not recommend that the University of Florida be used as a training center in this field.) As might be expected, most of what we saw was developed and built with the entire industrial, technological, and educational infrastructure of the U.S. available. Some of the heat engine designs were intriguing, however, and demonstrated an adaptability to LDC materials that is good.

My overall impression, however, is decidedly negative. Professor Farber is absolutely convinced that only he knows the right way of doing anything technical. His entire presentation was based on how only he is "successful" because he can tell people in LDCs what they are doing wrong. Indeed, in response to a question from me, he stated that he has seen no laboratory or institution in any developing country that is doing competent work in solar energy—they are all doing things wrong. This included all the laboratories in India—a statement, I might add, made in the presence of a post-doctoral Indian student from IIT/Kanpur! This cultural insensitivity is compounded by his conviction—again expressed directly to me in conversation with a social scientist on the faculty—that engineers need absolutely no education in the social or cultural aspects of technology development and use, but rather need more technical education; that all problems are technical problems resulting from lowered standards in technical/engineering curricula.

On the basis of my visit I am convinced that Professor Farber is not an appropriate person to be selected to head a training program for LDC participants.

cc: AA/PPC, AKlein
ASIA/TR, RFIchord
ASIA/TR, TArndt
ASIA/TR, MADoyle

DS/EY, Mr. Alan Jacobs July 24, 1979

LAC/DR, Robert J. Mausharmer

Your July 19 Memo on visit to University of Florida

I cleared the referenced memo by phone with Randy Backlund with the understanding that a separate memo would explain additional concerns I had. This is that memo.

The subject memo is your report on the team's visit to Gainesville, giving your impressions of what we saw and heard there, as well as areas on which the group seemed to agree or disagree. My clearance on that memo, however, should not be construed as my agreement with all aspects of your report. For example, I thought the group had agreed that we would look to University of Florida only for solar technology training, to the exclusion of other alternative energy sources. Also, I thought the group agreed with Mr. Levin's memo of June 18 with regard to the non-exclusive nature of any contractual relationship with University of Florida. In fact, I had the LAC Bureau representative clear the authorization memo for the contract on the condition that these two points (plus the inclusion of socioeconomic training) would be incorporated into the final version of the memo -- something that was not done.

Given this situation -- hopefully an anomaly - I thought it best to register my concerns in writing.

cc: AA/DS:SLevin
DAA/DS/DT:JIBruce
AFR/DR:JBlumgart
ASIA/STEP:MBrown
ME/TECH:EMacManus
DS/EY:RBacklund
PPC/SKLein

Clearances:
LAC/DR:HLusk
LAC/DR:MBrown

LAC/DR:RJMaushammer:baw:07/24/79:Ext:22302

ATTACHMENT D

July 2, 1979

MEMORANDUM TO : DS/EY, Alan Jacobs

FROM: AA/PPC, Stephen Klein

SUBJECT: University of Florida, Unsolicited Training Proposal

I am not able to clear this PP for reasons explained below. I have put myself down for info because I was not a member of the team appraising this activity and I understand the team recommended proceeding with the project.

1. The PP only includes the unsolicited proposal from the University of Florida. There is no covering memo or documentation explaining how the project will be handled from AID's side.

2. There is no explanation of the mechanisms for project implementation, the responsibility of DSB, the responsibility of the Regional Bureaus, and the relationship of the project to USAID programs.

3. There is no discussion of eligibility for this program by students from LDC's. What countries are eligible, only countries presently receiving AID assistance, or some middle income countries? Will this program be open on a reimbursable basis for certain countries?

4. How are candidates selected for the program? By the host country, by AID and/or by the University of Florida. What say do the University of Florida have in accepting students? Do they take anyone nominated by AID? The unsolicited proposal touches on these points but leaves them open.

5. There is no report from the AID team which visited the project to appraise the University of Florida capability. The action memo has only a passing reference to the team visit and to the proposed incorporation of additional social, cultural, and economic aspects of the training. How is this to be handled?

6. At the PP review chaired by Sander Levin, the point was made that if the team recommended proceeding with the PP, we and they should understand this was not an exclusive

arrangement and that AID might pursue other training arrangements in addition to the University of Florida. The package makes no reference to this key point. I think it should.

cc: DAA/DSB, J. Bruce
ASIA, N. Brown
NE/TECH, E. Pike
AFR/DR, J. Blumgart
LAC/DR, R. Maushammer

MEMORANDUM

TO : DS/EY, Mr. Alan Jacobs DATE: JUN 18 19..

FROM : AA/DS, Sander Levin

SUBJECT: Unsolicited Proposal, University of Florida

It will be useful to list the conclusions reached during our 6/12/79 discussion with the regional bureau representatives.

There seems to be clear concensus that:

1. The University of Flordia training must not be an exclusive arrangement. Neither we nor the bureaus should feel inhibited from looking for additional training opportunities in other institutions either here in the U.S. or among LDC institutions abroad. The training proposed by the University of Florida may be only one of several such training courses we may later want to establish. The University of Florida should know our position regarding this.

2. We view the University of Florida proposal as a useful core-funded and centrally-managed mechanism for starting technical training.

3. The project will be a start-up activity, funded for 18 months to 2 years, with periodic evaluations beginning at the end of the second training cycle or first year of the project activity whichever is earlier. Further funding will be conditional upon results of evaluation and agreement between AID and University of Florida on the direction of the training for the future. It must be made clear to University of Florida that AID investment in the initial training project does not carry an implied commitment beyond that period.

4. There are reasons why AID may, in future, wish to consider various other approaches to LDC training in energy technology, such as:

   —The possibility of establishing multiple training centers in the U.S. each concerned with different geographic or geophysical regions.

   —The possibility of shifting such hands-on technical training to several overseas locations utilizing indigenous institutions to conduct the training with or without assistance of resident technical advisors.

   —The possibility of involving some minority contractors in technology training either as independent contractors or as subcontractors for specific training aspects. The possibility of using different institutions for different energy technologies—wind, water, geothermal, etc.

—AID considers itself free to enter into agreements with other institutions for any or all of the above activities if it determines that would be in its interest.

5. The social and economic factors are not adequately treated in the University of Florida proposal neither in the curriculum nor in the proposed staffing. This portion of the training should be further developed by consultation between University of Florida and AID.

6. Page 9 of the University of Florida proposal lists as technologies certain activities that appear to be uses of energy. The intent of the listing should be clarified with University of Florida.

7. A small group of five or six persons including representatives of the geographic bureaus should go to University of Florida within ten days to negotiate the items listed above directly with responsible authorities of the University of Florida. Mr. Brown, Ms. K. McManus and Mr. Maushammer agreed to participate. Mr. Blumgart will be asked to participate. DS Bureau will provide travel funds for the entire party. DS/RY will make the necessary preparation with University of Florida.

8. The preparations of the team should include a careful definition of the elements to be reviewed, clarified, and negotiated with University of Florida, and transmittal of this material to the University of Florida in advance of the teams arrival.

9. Based on the team's negotiations with the University of Florida, and its recommendations, I would be prepared to consider an unsolicited proposal with the University of Florida for a period of not to exceed 18 to 24 months.

cc: ASIA, N. Brown
NE, K. MacManus
PPC, S. Klein
AFR, J. Blumgart
LAC, R. Maushammer

Clearance: DS/PO:TO'Keefe (Draft) Date 6/14/79
DS/PO:BChapnick (Draft) Date 6/14/79

TRAINING IN ALTERNATIVE ENERGY TECHNOLOGY FOR LESS DEVELOPED COUNTRIES

AN UNSOLICITED PROPOSAL

Submitted to

U.S. State Department AID Energy Office

by

University of Florida

Solar Energy and Energy Conversion Laboratory

Executive Summary

The University of Florida (Solar Energy and Energy Conversion Laboratory) proposes to contract with the Agency for International Development (AID) Energy Office for a comprehensive program to assist Less Developed Countries (LDC) develop and utilize solar energy and other renewable energy resources to meet their energy needs. The proposed program will accomplish its objectives through an extensive training and follow-up effort.

The program will build on the existing competence and experience of the University of Florida Solar Energy and Energy Conversion Laboratory to provide in-depth training in small scale renewable energy technology, particularly small scale solar technology. The University of Florida SEECL is one of the pioneers in the development of and training in small scale renewable energy. It has worked in this area over a 25-year period and is considered a trail blazer in this field, and its faculty has been engaged in the transfer of technology to the LDC's over a great number of years.

The proposal would also provide a continuing program of follow-up consultations to the LDC's. Those follow-up activities, combined with the development of local training programs by the LDC's themselves will result in a multiplication effort which will provide the insights, experience and capabilities for LDC's to help overcome the energy challenges facing them.

The University of Florida program would provide two 15 week training sessions annually for approximately 40 students at each session of whom 30 would be LDC participants selected and funded under this project: the balance of the students are expected to be funded by Peace Corps, DOE or LDC students funded directly by their countries.

The University of Florida is pleased to submit this proposal which it believes can make a significant and lasting contribution to the advancement and application of small scale renewable energy technologies, particularly solar technology, for both small industry and the low income people in the rural and urban areas of the LDC's.

The Energy Problem in LDC'S

Dependency on conventional energy sources influences the planning and commitments of all governments. In view of the uncertainty of petroleum supplies and the certainty of rapidly increasing prices, decision makers in Less Developed Countries (LDC) face the necessity of improving the efficiency of their current conventional energy facilities and of undertaking the testing and application of alternative energy technologies which are based on locally available renewable energy resources.

Solar energy is considered one of the prime renewable energy resources available to LDC's especially since it involves the direct conversion of solar energy at the point of need, enabling direct response to local energy demands. Unfortunately, the current level of information transfer to these countries is not providing them with a clear understanding of small scale renewable energy potential, particularly solar energy applications. This has prevented most solar energy efforts from being carried out under proper conditions, which hinders obtaining desired performance levels.

The potential of small scale solar energy---for LDC used in pumping, water purification, hot water, crop drying, etc.,---not only involves the transfer of technology but also the acceptability of these alternative technologies in the specific LDC settings which is a question based on political, social and economic factors. While the latter problem of acceptability is best handled by local leaders within the LDC, it is essential that the donor organizations involved in this transfer be sensitive to and experienced in effecting an acceptable transfer of these technologies.

The donor organization involved in the transfer of these new technologies must design their programs torecognize that:

1) Non-technical LDC policy makers are not aware of the full range and potential of solar and other renewable energy technologies.
2) Inadequate communications exist between those who are involved in R & D for the LDC and those who are in need of assistance.
3) LDC people at policy levels responsible for carrying out rural development programs are not yet sufficiently aware of local energy supplies, materials, behavior and needs.
4) Those LDC persons in the best position to introduce improved and more appropriate technologies often lack the skills necessary to successfully introduce renewable energy resources to local groups.

Most of the constraints hindering LDC's use of solar and other renewable energy resources pivot around the lack of a logical plan of action designed to move the technology from the laboratory to the field. By developing and implementing this orientation, training and consulting mechanism to transfer technology from the lab to the field many of the constraints can be overcome and the alternative energy technologies will be successfully transferred and installed in the LDC settings.

Goals

Currently the major exchange of alternative energy information acquired by LDC's is made at conferences, seminars, and workshops. Experience indicates that the LDC's frequently leave these sessions disappointed, for many speakers spend these sessions refuting previously published information which results in inconsistency and confusion.

Previous efforts to rectify this shortcoming has involved the use of consultants. These consultants visit LDC's for short periods of time attempting to gain insight into the country's need. Visits are followed by reports which are used as a vehicle for recommendations. While this system has the advantage of addressing site specific problems, it is constrained by the experts' limited time available to address the problems. In addition, it does not strengthen sufficiently the LDC human and institutional capabilities to provide continuing service.

There is therefore an important need to be filled by a program which is structured specifically to train and build LDC human and institutional capabilities in small scale renewable energy technologies and thus develop sustainable in-country skills and expertise.

The program by the University of Florida aims at two goals:

1. The development of LDC human and thus institutional technical skills in renewable energy technologies, particularly solar;
2. The application of these trained human and institutional skills to site and problem specific situations in the LDCs.

To meet the first goal, an intensive training program for LDC representatives would be conducted by the University of Florida Solar Energy and Energy Conversion Lab. The University would offer two training sessions of 15 weeks each annually. These sessions would be open to 40 students per session of whom 30 would be LDC students supported under this program. The sessions would involve classroom and laboratory activities designed to provide participants with the skills necessary to build, test and install renewable energy technologies in their LDC's. The trainees would provide the LDC's with a roster of technically skilled persons capable of leading their LDC's in the field of renewable energy technologies.

Meeting the second goal involves follow-up consultations with the former LDC students by the University of Florida SEECL. This requires the establishment of continuing contact and support essential to these students and their institutions to carry out training in-country and to construct, test, adapt and replicate their small scale renewable energy technologies as required.

The University of Florida Training Program

With U.S. AID support, the University of Florida Solar Energy and Energy Conversion Laboratory proposes to operate a five-year training program through which LDC representatives will be trained in the technical aspects of the full range of small scale renewable energy technology and particularly in direct solar energy applications. The program includes:

1. Two 15 week sessions of didactic, shop and laboratory training.
2. Field follow-up by the University of Florida SEECL faculty for training and field testing, to support the training and program installation activities of former students, and;
3. Continuous evaluation of course and student/alumni performance.

The training program is built upon the existing facilities and expertise involved in renewable energy activities at the University of Florida. It is designed to expand and extend these existing capabilities and to shape the curriculum in such a way as to provide instructional, administrative, and support services to 40 students at two 15 week training sessions annually.

The program consists of three principal parts: instructional outreach, in-country training activity and follow-up and support services.

1. Instructional Outreach

   The instructional effort can be placed into three distinct categories: formal training, follow-up, and evaluation. These categories are interrelated, each being expanded as information is developed. The following descriptions illustrate their interrelationships.

A) Formal Training

The initial training session is to be held six months after award of contract. The project will be put into implementation readiness within the first six months, including the recruitment and selection of LDC participants nominated by the USAID Mission, the publication of the training and laboratory manuals, and the coordination of instructor and shop manager schedules.

The large collection of existing information on the subjects being considered for each session will be closely evaluated. Those topics found to be the most pertinent for the incoming participants will be used in the development of lecture, text, and laboratory materials.

After the major topics have been formalized, participating university faculty, the Director, and full time instructional staff will begin the process of developing training manuals. In essence, complete text material will be written and printed for this program.

During the first six months of operation staff members will prepare materials for 12 hour of weekly lectures on direct solar conversion, four hours a week on other renewable energy resources, and four hours a week on application of renewable energy resources to meet LDC needs. In addition, another four hours each week will be set aside for design projects.

The first portion of the formal training structure will be didactic training. Each session will concentrate lecture, shop, and testing activities on the following topics related to the conversion and adaption of direct solar energy technology:

1. solar properties of materials;
2. design of flat plate collectors;
3. domestic hot water;
4. refrigeration;
5. crop drying;
6. greenhouses;
7. high temperature systems;
8. cooking;
9. pumps;
10. engines;
11. water purification;
12. generation of electricity.

Lectures and shop work on each of the above topics will begin with the basic theories of heat transfer and conclude with the construction of specific systems.

Each session will also concentrate lecture, shop and testing activities on the following topics related to renewable energy technologies:

1. wind energy;
2. hydropower;
3. methane generation;
4. development of liquid fuels (alcohol);
5. wood and silviculture.

Every effort will be made to match these topics with the major interest and needs of the individual LDC participant, providing information and technology skills on those resources which have the greatest potential for local use in their individual countries.

An additional four hours each week will be spent in discussing specific applications. During this period, technical information will focus on the integration of various energy resources into systems having applicability to LDC settings; and in particular applicability for those LDC's having representatives at the sessions. Information of this nature would be developed during the selection process. The political, social, and economic factors to be considered in the introduction of these technologies in the LDC's will be an integral portion of this lecture period.

The final four hours set aside for classroom activities each week will be used as follows: In the first several weeks the trainee will receive instruction on the use of shop tools available at the University of Florida. After 16 hours of this activity, the trainee's four hour session will be devoted to learning skills required in the drafting room. The students will devote the remaining time in preparation of construction drawings for field size systems.

Four full time instructors, the Director, and a number of University of Florida faculty will be involved in this phase of the training program. The lecture components will be coordinated through the Assistant Director for Research and Training.

The second portion of formal training structures will consist of laboratory and field studies. A minimum of 16 hours a week are to be devoted to these activities.

Laboratory exercises will be developed during the first six months. These exercises will correspond with the lecture materials. Trainees will use this time to test theories and experiments with small scale systems already found at the University of Florida.

After several weeks of structured exercises, the trainee will be encouraged and expected to build a small scale alternative energy device which has application to his LDC setting. During the last few weeks the device will be field tested.

The formal training program will be concluded with the presentation of their designs and project data by the students. A jury composed of University faculty will be on hand during the presentation to evaluate the design and presentation for adoptability and technical soundness.

In addition to the structured activities taking place during the work week, week-end tours will be planned so that trainees can observe examples of operable systems found near the training site. Examples of touring facilities are:

1. Reedy Creek Office Complex Solar Installation;
2. Kaplan Industries Methane Production and Aquacultures System;
3. St. Petersburg Times Solar and Wind Generation System;
4. Gainesville Airport Solar System and;
5. There are other examples within the area which could be substituted for any of the above.

A typical week for formal training might be structured in the following way; however, adjustments in this structure can be made to make the most effective use of personnel and materials.

Monday:	8:30 - 12:00	Lecture on Use of Solar Energy for Refrigeration
	1:00 - 5:00	Laboratory - Shop work on design construction of adaptor for refrigeration.
Tuesday:	8:30 - 12:00	Lecture on Solar Energy for Crop Drying
	1:00 - 5:00	Laboratory - Shop work on design and construction of adaptor for crop drying.
Wednesday:	8:30 - 12:00	Lecture on Decentralized Hydro.
	1:00 - 5:00	Laboratory - Shop work on design and construction of low head hydro unit.
Thursday:	8:30 - 12:00	Lecture - Methane Generation.
	1:00 - 5:00	Laboratory - Shop work on equipment for Methane generation
Friday:	8:30 - 12:00	Lecture on Design of Flat Plate Collectors.
	1:00 - 5:00	Laboratory - Shop work on design and construction of flat plate collectors.

B) Field Follow-up For Training - Field Testing

The training program staff will maintain continuous contact with student alumni to support their activities involving in-country training of LDC personnel, field testing and replication of small scale renewable energy demonstrations. This contact will also provide a continuous flow of evaluation information on which to base adjustment in curricula, shop and laboratory training, and construction and field tests.

Staff members will make periodic visits to LDC alumni providing technical and program support as required to strengthen in-country training and institutional strength of the LDC. This assistance will include consultation with LDC planners, researchers, and practitioners as well as program alumni in support of local training, demonstration, and replication work. Direct contact with the trainee would be maintained to help them solve technical problems and to update their information on latest developments in the field.

This follow-up effort will be coordinated by the training program staff with AID/Washington and USAID Missions. This will enable most effective programming of inputs and allocation of inputs according to AID priorities and LDC political realities.

C) Continuous Evaluation of Participant Performance and Utilization

The training program staff will observe and report on alumni performance, use and application and utility of material and training received during the training sessions. Copies of these reports will be issued to AID/Washington, the local AID Missions, the LDC's and the participants.

Data from the follow-up evaluation reports are expected to identify the program's strong and weak points. These reports will indicate how improvements and adjustments can be implemented. These reports will give evidence of overall effectiveness of the training program. The test of effectiveness will be the ability of the trainee to incorporate learned skills into improved use of renewable energy technologies in the LDC settings.

Additionally, on-going LDC participants will provide important evaluation substance. Their reaction to various activities within the formal training element will be used to examine procedural, technical and administrative matters. Their inputs will also be used to update training manuals, lectures, shop and field work. Adjustments to the program and its material would be made during the period between formal training sessions.

Selecting Participants

The recruitment and selection of LDC participants will be one of the key elements affecting program importance, utilization, and effectiveness, for it is through the participants that information and action will be transferred to LDC's. The degree to which renewable energy technologies will advance in the LDC's will be directly related to the quality and position of the persons selected as trainees. It is therefore imperative that the targetting of potential candidates, their nomination and selection receive the most careful attention.

AID Missions will be responsible for nominating the best candidates. A rating system will be devised by the University and supplied to mission personnel to list candidates in order of qualifications.

The majority of the participants selected for the formal training program should be technical and managerial persons engaged in renewable energy work in national institutes, regional energy centers, ministries of energy, university engineering departments and local and district field engineering. It is through these people that the major energy development work and local energy training programs will be initiated.

Recruiting participants will be a major task, ongoing throughout the year. Close collaboration between the University of Florida and AID Missions in foreign countries will be vital.

Other potential AID supported trainees will be sought among those persons who have had previous contact with the Solar Lab. A listing of these people will be supplied to each USAID Mission so they may consider them under the agreed rating system. The University Solar Lab will also rely on a number of former foreign students to assist in the nomination process. Assistance from these people will be used in selecting potential candidates.

After a complete list of potential trainees has been developed, the training center's administrative personnel will submit the list to the AID/Washington for review, comment and recommendation. These inputs will be important in the final selection process.

Upon return of the list to the University, 30 trainee candidates will be invited to attend the next available session. This invitation will be issued six months before the next training session. The selection to the first session will be an exception with invitations to be issued three months prior to that session. All invitations will be issued with approval of AID.

After a candidate has been selected and invited to attend the training program the University will begin making necessary preparation for this person. This preparation includes:

1. Providing lodging and arranging for utilities;
2. Arranging meals (if desired);
3. Making travel arrangements;
4. Issuing transportation tickets.

Upon arrival in Gainesville, participants will be met and escorted to their lodging. Soon thereafter complete registration activities will occur.

During the training program, trainees will be evaluated. Data will be kept so that a report can be written on each participant.

While the trainee is attending the sessions, a portion of his weekend activities will be coordinated through the program staff. This insures that the trainee will have an opportunity to visit solar energy installations through the southeast. As the session draws to an end, transportation for their return home will be arranged. At this point the selection process and related activities begin anew.

Administration Functions

Administration of the program will be handled in such a manner as to make full use of the existing University structure while operating as a separate program maintaining flexibility and a degree of autonomy.

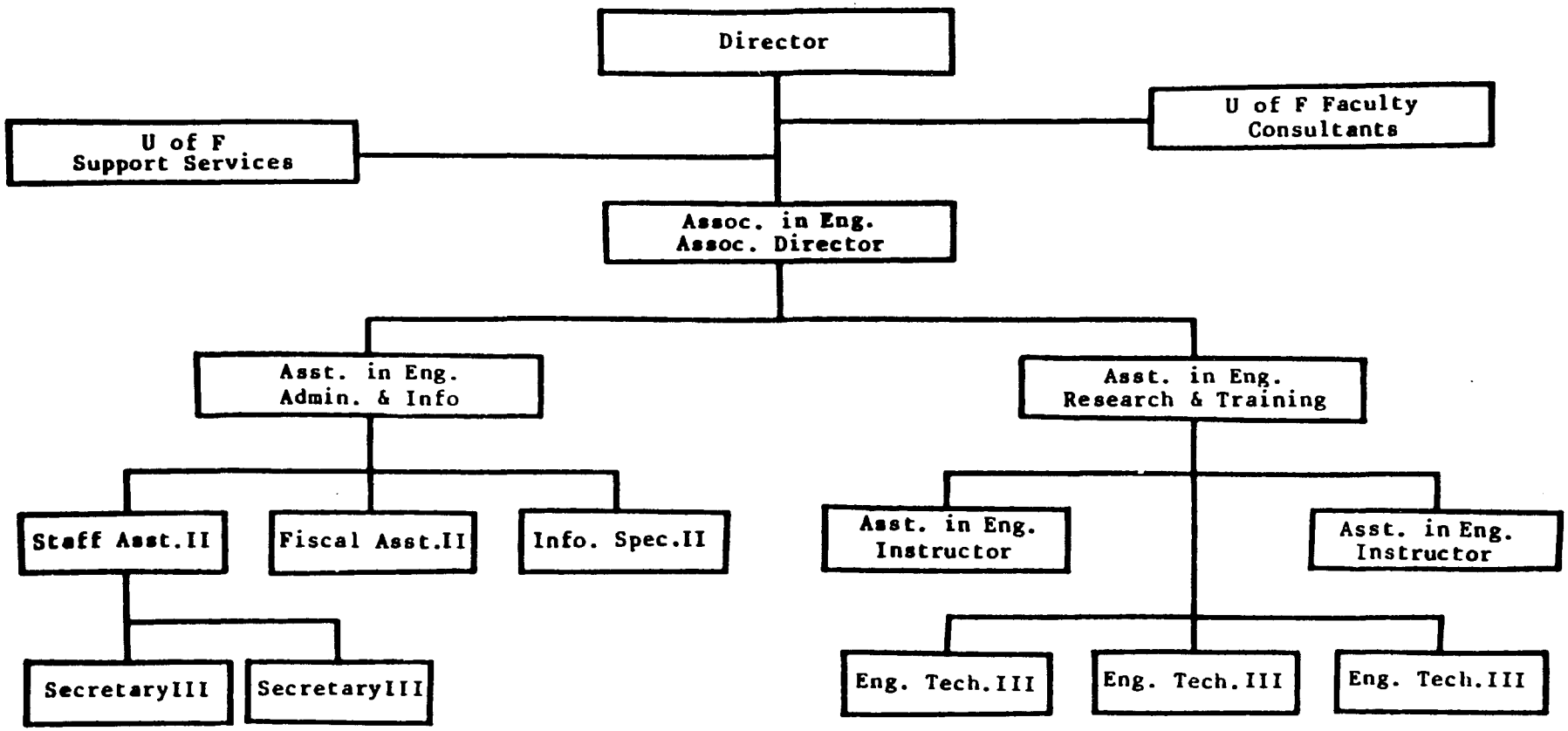
The Program Director, who will coordinate all operational components through several key assistants, will be selected by the University with the approval and concurrence of AID/Washington. The Director will be responsible for the overall program development and implementation and will serve as the liaison between those handling day-to-day operations, the University administration, and AID.

Much of the day-to-day program activities will be coordinated by an Associate Director who responds to the Director and is given broad program and policy guidance by a technical committee composed of University faculty involved in the program. These advisors will be used to review program material, provide guest lecturers, and prepare one element of the program evaluation. The Associate Director will also have two assistants responsible for training and for the administrative support of the participants. One assistant will oversee tasks involving budgetary updates, selection of trainees, preparation of reports, evaluation activities, public information, provision of housing for the trainees, purchasing supplies and coordinating week-end tours.

The second assistant will coordinate the laboratory-field activities with the classroom activities. This person will also look at various LDC needs to determine which should be thoroughly researched.

Organization Chart

Center For Training in Solar Applications



The Proposing Group

The University of Florida Solar Energy and Energy Conversion Laboratory maintains one of America's oldest ongoing solar energy research programs. This quarter century effort has been under the directorship of Dr. Erich A. Farber.

During its existence the laboratory's personnel and students have shown that practical solar energy systems can be built to supply the energy needed for our daily activities. These devices range from simple distillation for water purification to complicated solar electric transportation units.

The Lab's philosophy has always been one of widely using all our resources to supply our energy needs. In doing this, the Solar Lab has developed many pieces of equipment which can easily be adapted for LDC applications.

Because of the Laboratory's approach to meeting energy needs, Dr. Farber has counseled with representatives from many of the world's less developed countries, including President Marcos of the Philippines, and the Ministers of Energy of Mali, Morocco, Mexico, Peru, Barbados, Tonga and India. Many LDC governments have sent graduate students to the University of Florida to work with the Solar Lab. This is providing trained persons capable of directing energy programs in their respective countries.

Many of these former students who are now in important or leadership positions are requesting additional assistance from the University's Solar Lab. Additionally, other LDC's who have not had students in the University's program are hearing of the Solar Lab and are seeking assistance.

In addition to Dr. Farber, who will be deeply involved in the training program, other University faculty participating are:

Dr. C. D. Baird (solar crop drying);

Dr. E. D. Lincoln (micro-algae production);

Dr. V. Roan (wind and water systems);

Dr. P. H. Smith (biological contents of methane systems);

Dr. H. A. Ingley (methane generation);

Dr. W. Smith (wood and re-forestation).

This faculty will be used to develop textual materials and laboratory exercises that demonstrate lecture topics. They will also serve as lecturers.

Additionally, several full time instructional staff will be hired. They will be selected on the basis of their expertise in the various major aspects of renewable energy and will be responsible for presenting the bulk of the information given in the classroom. One of the primary qualifications of these people is that of having "hands on" experience involving design, construction, and operation of practical systems.

University of Florida Support Services to the Training Program

The University of Florida maintains a support structure which services a student faculty population of 30,000. This support structure will be drawn upon to provide essential support assistance to the training program and the LDC participants. The use of this already developed support structure will facilitate the start up of this program and will ensure that operational costs are reasonable.

Cooperating Departments Include:

1. Department of Continuing Education

This group traditionally coordinates workshop and seminar programs for the University. When conducting normal programs this group arranges for participant housing, food, registration, and other related services.

Similar services are needed in this training program on a year round basis to:

a. locate trainees;

b. issue invitations;

c. develop information profile on each attendee;

d. issue transportation tickets for the attendee;

e. coordinate week-end tours including arranging suitable transportation and locating lodging;

f. assist trainees as personal problems arise.

2. Center for International Studies

This program has been in operation at the University of Florida since the turn of the century. The training program will draw upon this organization's expertise for inputs regarding the political, cultural, social, and economic implications and factors which must be considered in the transfer of renewable energy knowledge and practices to the LDC's. Organizations expected to participate include:

Center for International Relations;

Center for Latin American Studies;

Center for Tropical Agriculture;

The Organization for Tropical Studies.

3. The College of Engineering

As the parent organization for the Solar Energy and Energy Conversion Lab, the College will provide the required services through its research arm, the Engineering and Industrial Experiment Station (EIES).

The College also supports the Lab's activities through an accounting office. By maintaining accurate records of expenditures, budgeting financial resources to maximize their impact is made simple.

Additional support from the College will be in space allocations currently provided to the Lab. In keeping with its support to the Solar Lab, the College will support the training program by providing office and laboratory space.

The College of Engineering will provide complete shop facilities and publications services to the program.

4. Division of Housing

This group will provide contacts necessary to secure housing for the trainees for 15 weeks. Through its off-campus housing program, suitable living quarters will be obtained.

5. Transportation

This University support group will provide transportation to the students. They will require mass transportation to move them about the University campus and to the field laboratory.

6. Library Services

The University of Florida maintains over a million catalogued volumes in its many libraries. The Engineering and Physics Library is a depository for Department of Energy, and its predecessor agency ERDA, and will be a ready source of material for the students.

7. The Energy Research and Education Park (EREP)

A 23 acre research facility has been set aside by the University for the extensive study of renewable energy resources and energy conservation. The Solar Energy Lab utilizes this facility in exploring various applications of solar energy.

The research site is located less than a mile from the University campus. Its location is such that research activities are free from the movement of the University's 30,000 students; yet, it provides easy access to students wishing to be involved in research.

This facility will be available for use by persons attending the training program. It is expected that field size equipment will be built and tested at this location, giving the trainee adequate room for his work and allowing him to work with other University researchers.

BUDGET

PROPOSED 5-YEAR TRAINING PROGRAM FOR LDC PARTICIPANTS

	Year 1	Year 2	Year 3	Year 4	Year 5
E.A. Farber 25%	$ 10,000	$ 10,700	$ 11,449	$ 12,250	$ 13,108
Assoc. Director	25,000	26,750	28,623	30,626	32,770
Asst. Director Admin.	22,000	23,540	25,188	26,951	28,835
Asst. Director R&T	22,000	23,540	25,188	26,951	28,835
Eng./Inst.	18,000	19,260	20,608	22,051	23,594
Eng./Inst.	18,000	19,260	20,608	22,051	23,594
Eng./Tech.	11,000	11,770	12,594	13,475	14,419
Eng./Tech.	11,000	11,770	12,594	13,475	14,419
Eng./Tech.	11,000	11,770	12,594	13,475	14,419
Tech Writer	11,000	11,770	12,594	13,475	14,419
Staff Asst.	10,800	11,556	12,365	13,230	14,156
Fiscal Asst.	10,000	10,700	11,449	12,250	13,108
Secretary	8,500	9,095	9,732	10,413	11,142
Secretary	8,500	9,095	9,732	10,413	11,142
Sub Total	196,800	210,576	225,318	241,086	257,960
Fringe .16	31,488	33,692	36,050	38,573	41,273
Ins $20/mm (159)	3,180	3,180	3,180	3,180	3,180
	231,468	247,448	264,548	282,839	302,413
O. H. @ 54%	124,992	133,621	142,855	152,733	163,303
Total Salary & O.H.	356,460	381,069	407,403	435,572	465,716
Travel (Domestic & Foreign)	30,000	32,100	34,347	34,347	40,000
Support Services	300,000	300,000	300,000	300,000	300,000

- Shoptime
- Expendable Materials
- Equipment
- Office Related
- Drafting Tables & Supplies
- Instrumentation
- Printing

These are but a few examples of items which fall under this category. Most of the expenses will be for supplying the trainee with the tools and materials required in this program. Some items will be one time expenses while others will be occurring.

TOTAL	686,460	713,169	741,750	769,919	805,716
Trainee Travel	120,000	128,400	137,388	147,000	157,295
Trainee Ins.	12,000	12,840	13,738	14,700	15,729
Per Diem	219,000	234,330	250,733	268,284	287,064
TOTAL	351,000	375,570	401,859	429,989	460,088
TOTAL PER YEAR	$1,037,460	$1,088,739	$1,143,609	$1,199,908	$1,265,804
PROJECT TOTAL	$5,735,520				

ERICH A. FARBER

Personal Record

Scholastic Training

Considerable part of his education in Austria and in addition:

1943	University of Missouri	B.S.	(Mechanical Engineering)
1946	University of Missouri	M.S.	(Mechanical Engineering)
1949	University of Iowa	Ph.D.	(Mechanical Engineering)

Experience

Teaching:

1942-43	Assistant in Mathematics, University of Missouri
1943-44	Instructor in Physics, University of Missouri
1946	Instructor in Mechanical Engineering, University of Missouri
1946-49	Instructor in Mechanical Engineering, University of Iowa
1949-54	Assistant Professor, Mechanical Engineering, University of Wisconsin
1954	Associate Professor, Mechanical Engineering, University of Wisconsin
1954-date	Professor & Research Professor, Mechanical Engineering Director, Solar Energy & Energy Conversion Laboratory University of Florida

Military:

U.S. Army, Reconnaissance, Battle Field Commission, Silver Star, Purple Heart with Clusters and other Decorations.

Industrial:

1941-43	University of Missouri and City of Columbia, Draftsman and Blueprints (part time)
1955-56	Oak Ridge National Laboratories, Tennessee Research Engineer
1962-63	Missile Development Center, White Sands, New Mexico, Research Engineer

Solar systems design for large installations, housing developments, trailer parks, condominiums, university buildings, hospitals, laundries, government buildings and schools.

Fluidic device development as gas detectors and gas concentration meters, resulted in new devices and applications, having capacilities heretofore unattainable.

Developed a new non-destructive structural integrity analysis technique to check out the space shuttle for reflight.

Solar radiation study analysis for detection of atmospheric pollution and deterioration, short and long range.

Fields of Interest

Thermodynamics
Heat Transfer
Fluid Flow
Energy Conversion
Solar Energy

Publications

More than 400 publications on heat transfer, fluid flow, energy conversion and solar energy as well as related subjects. A list of publications is available on request.

Co-author or contributor of books:

1. Building an Engineering Career, McGraw-Hill, 1957.
2. Solar Energy, MacMillian, 1958.
3. Standard Mechanical Engineers Handbook, McGraw-Hill, 7th Edition, 1967.
4. Energy, The Environment, and Human Health, publishing Science Group, Inc. 1974.
5. Energy & Resources, Plenum Press, 1974.
6. Handbook of Homemade Power, pp. 205-222, The Mother Earth News, Special Edition, A Bantam Book, May 1974.

Clearances

Army (Secret)
Air Force (Secret)
AEC "Q" Ch-100047-OR
Navy (Secret)
NASA (Secret)

Consulting:

1946-49	Standard Oil of Indiana, Steam Separation
1946-49	Foster Wheeler Corp., Boiler Circulation
1950-52	Bergstrom Manufacturing Corp., Heat Transfer
1950-54	Cleaver Brooks, Heat Transfer
1952-54	A.C. Spark Plugs, Heat Transfer, Aut. Pilot
1953-54	Perfex Corp., Heat Transfer
1954-date	E.I. Dupont de Nemours, Heat Transfer, Fluid Flow, Solar Energy
1955-date	Union Carbide, Oak Ridge National Laboratory
1957-74	Sperry Electron Tube Corp.
1958-66	Office of Saline Water, Department of Interior
1962-66	Directorate of Research Analyses, A.F. Office of Scientific Research
1963	Aquatron Engineering Corp.
1963-65	Electro Mechanical Corp.
1964-date	NASA
1967-date	U.S. Navy Ships Research & Development Center
1970	The Cadre Corp.
1970-date	Aerospace Corp.
	ETI Corp.
1971-date	University of New Mexico
	American Medical Association
	University of Florida Medical School
	Amelia Island Development Corp.
	Marshal Space Flight Center
1972-date	University of Deleware
	Smith, Hinchman & Grills, Architects & Engineers
	Reynold, Smith & Hills, Architects & Engineers
	Oak Ridge National Laboratories
	Department of Defense Explosives Safety Board
	Phillips Engineering Corp.
1973-date	McGraw Hill Book Co.
	Disneyworld
	Covington Developers
	Ruby Lake Ranch Architects & Developers
	Steelcraft Corp.
	Rainer Corp.
	Ozier
	Paris & Associates
	Bouse Corp.
	Auburn University
	Kramer & Associates
	Georgia Tech.
	Environmental Protection Agency of Colorado
	National Science Foundation
	National Research Council
	Academy of Sciences

1974-date	United Nations
	Japan
	US-USSR Cooperation in Solar Energy
	Utilities Regulatory Engineers
	R. Nichols
	Board of Regents
	Pratt & Whitney
	University of Michigan
	Federal Energy Administration
	FPHA
	Germeny
	Switzerland
	Austria
	University of Arizona (State)
	Sessume & Associates
1975-date	Winn Dixie Stores
	ARCO, Richfield Oil
	Roesser, White, Hubbs, etc. Associates
	Tennessee Legislature
	University of Kentucky
	Kentucky Legislature
	Oregon Legislature
	N.C. Environmental Services
	APMC
	NAPHCC
	Langley Research Center
	General Electric Co.
	Lawrence Radiation Laboratory
	NASA
	Ruby Lake Ranch
	Clemson University
	S.E. Regional Utility Commission
	University of Arizona
	Montgomery College
	Volicent & Associates
	General Electric
	Fitch Creations
	University of Maryland
	United Nations
	Eckerd College
	TVA
	Gulf Thermal
	National Swimming Pool Association
	Moore, May & Harrington
1976-date	PPIC
	PSEG
	Gainesville Housing Authority
	Environmental Metabollgri Laboratory
	Scotty's
	Ceolin Corp.

Have been invited by a number of Foreign Governments - at their expense - to visit and consult on conversion and utilization of solar energy (Australia, Switzerland, Russia, United Nations, Pakistan, India, Italy, etc.)

Societies and Organizations

American Society of Mechanical Engineers, also served as
Chairman, Solar Energy Division
Served as Member of Executive Committee of Heat Transfer Div.
Served as Member of Executive Committee of ASME Power Dept.
Director of International Solar Energy Society
Chairman of Meetings Committee of ISES
Publications and Nominating Committee of ISES
American Society for Engineering Education
American Radio Relay League
Previous Member of the Association for Applied Solar Energy
Florida Academy of Sciences
American Emergency Corps.
Tau Beta Pi
Sigma Xi
Sigma Tau
Phi Kappa Phi
First Presbytarian Church

Awards & Citations

Citation for work in solar energy conversion from the Research
Directorate, Air Force Office of Scientific Research
Worcester Reed Warner Gold Medal from the American Society
of Mechanical Engineers for "Outstanding Contributions
to the Permanent Literature of Engineering".
Gold Medal & Citation - Missouri Honor Award for Distinguished
Service in Engineering
Fellow - American Society of Mechanical Engineers
First Christian Church Scholarship Award
Pi Tau Sigma Scholarship Award
Knight of St. Patrick
World Who's Who in Science
Who's Who in the World
Who's Who in America
Who's Who in the South and Southwest
Leaders in American Science
American Men of Science
"Engineers of Distinction," Engineers Joint Council
"Outstanding Floridians"
Honors Certificates, University of Iowa
Wisconsin ASEE Technical Paper Award
Standard Oil of Indiana Fellowship
Twice selected Visiting Scientist by Florida Academy of Science,
sponsored by National Science Foundation
Florida Blue Key Distinguished Faculty Award
College of Engineering Outstanding Service Award
Appointed by Governor Askew to Florida Energy Committee
Appointed by Governor Task Force to work on Florida's Energy Problems
Appointed to NSF/NASA Solar Energy Panel which prepared report
"Solar Energy as a National Energy Resouce" (now being
implemented).
Appointed to Solar Energy Working Group for US-USSR Cooperative
Efforts in Solar Energy

Was invited and appeared on "To Tell the Truth"
Featured in Documentaries of ABC, NBS, CBS, German TV, French TV, Japanese TV, Danish TV, Italian TV, etc.
Featured on many radio stations - interviews
Featured in many magazines, newspapers, etc. (Congressional Records, Science, Popular Science, Mother Earth, Trends, Friends, Mechanix Illustrated, Encyclopedia Britannica, etc)

Built the Solar Energy & Energy Conversion Laboratory into one of the largest with National and International recognition, which pioneered in many fields and has a Solar House which does more with solar energy than any other in existence.

Citation for the Design of the Federal Office Building in Saginaw, Michigan from Progressive Architecture (Solar Design)

Research & Development Accomplishments

Developed a method of heat transfer surface treatment referred to as "Farberizing" in the literature
Assisted through model studies in the final design and selection of the boilers at the Whiting, Indiana Refinery of Standard Oil of Indiana
Published many of the findings of research efforts which were recognized by Gold Medals and Citations
Defined and experimentally verified the "Critical Mass" for liquid rocket propellants, the electric charge generation and explained for the first time both theoretically the behvaior of liquid propellants and proved it experimentally
Developed many solar energy conversion devices, low temperature air conditioning and refrigeration, phase shift engines, flat plate collectors, solar electric cars & buses
Established the "Boiling Curve" which is presented in every book on heat transfer
Developed a new "Gas Concentration Sensor" based upon Fluidic Principles
Developed a non-destructive, Infra-Red technique, for Determination of the Space Shuttle or other structural integrity
Developed special "Selective Surface" for use in solar energy collectors
Acted as Advisor to many of he largest solar energy installations

In addition conducted research in the following fields:

Jet Compressors
Surface and Bulk Boiling
Steam Separation & Purification
Boiling Film Coefficients
Boiler Circulation
Heat Transfer Characteristics at very high rates - burnout
Hot and Cold Air Tube
Forced Circulation Heat Transfer Coefficients and Rates
Heat Pump
Model Air Flow Analyses by Means of Smoke

Study and Determination of Thermal Conductivities as Effected by Temperature
Efficiency Studies on Domestic Oil Burner
Temperature and Film Coefficient Distribution under Free & Forced Convection on Vertical, Horizontal & Inclined Surfaces
Forced Convection Heat Transfer from Tubes under Different Fluid Approach Angles
Effect of Thermocouple Junction Manufacture upon EMF Generation
Study of the Proper Use of Thermcouples in Surface Temperature Measurements
Effect of Pressure Upon Convection Film Coefficients
Electrical-Heat Transfer Analogy for Steady and Unsteady Heat Conduction
Hydraulic Analog for Unsteady Heat Transfer Problems
Temperature Measurements on Rotating Components
Thermocouple Response Time
Solar Pumps
Solar Engines
Solar Parabolic Reflector-Absorber Performance
Solar High Temperature Absorbers
Solar Dual Circulation Water Heaters
Solar Refrigeration
Multi-Fuel Burner from - 80 to 140°F Operation
Volume and Bulk Boiling
Bubble and Slug Flow Characteristics
GammaRay Density and Concentration Metering
Solar Furnace High Temperature Work
Selective Surfaces and Solar Absorbers
Solar Stills
Fresh Water from Atmosphere
Transmission through Glazing
Radiation Characteristics as a Function of Geometric Configuration
Crystal Growth of High Temperature Materials
Scale Effect Upon Operating Cost of Heat Exchanger Equipment
Thermal Analysis of Orbiting Astronomical Observatory (OAO) Satellite

NASA contract over one million dollars to study and predict explosive effects of large liquid propellant rockets. First measurements ever taken inside exploding rockets (ignition points, shock and reaction front velocitiesm detonation velocities, etc.)

Saturn V destruct system analysis - expected explosive yield from Destruct System Activation. (This work resulted in a number of recommendations for design changes)

Critical mass, electrostatic charge generation and other phenomena important during the mixing processes of liquid rocket propellants.

Development on solar engines, solar-electric cars, swimming pool heating, liquid waste recycling, sewage digesters solarly heated, solar heating and cooling, refrigeration, etc.

ENVIRONMENTAL THRESHOLD DETERMINATION

TO : DAA/DS/DT, John I. Bruce

FROM : DS/EY, Alan B. Jacobs

SUBJECT: Environmental Threshold Determination

Project Title: Training in Alternative Energy Technologies
Project #: 936-5716
Specific Activity (if applicable) _____
REFERENCE: Initial Environmental/Examination (IEE) contained in _____ dated _____

I recommend that you make the following determination:

X 1. The proposed agency action is not a major Federal action which will have a significant effect on the human environment.

_____ 2. The proposed agency action is a major Federal action which will have a significant effect on the human environment, and:

_____ a. An Environmental Assessment is required; or

_____ b. An Environmental Impact Statement is required.

The cost of and schedule for this requirement is fully described in the referenced document.

_____ 3. Our environmental examination is not complete. We will submit the analysis no later than _____ with our recommendation for an environmental threshold decision.

Approved: _____

Disapproved: _____

Date: 8/1/79

IMPACT IDENTIFICATION AND EVALUATION FORM

Impact Areas and Sub-areas 1/	Impact Identification and Evaluation 2/
A. LAND USE	
1. Changing the character of the land through:	
a. Increasing the population	N
b. Extracting natural resources	N
c. Land clearing	L
d. Changing soil character	N
2. Altering natural defenses	N
3. Foreclosing important uses	N
4. Jeopardizing man or his works	N
5. Other factors	
_____	_____
_____	_____
B. WATER QUALITY	
1. Physical state of water	N
2. Chemical and biological states	N
3. Ecological balance	N
4. Other factors	
_____	_____
_____	_____

1/ See Explanatory Notes for this form.

2/ Use the following symbols:
- N - No environmental impact
- L - Little environmental impact
- M - Moderate environmental impact
- H - High environmental impact
- U - Unknown environmental impact

IMPACT IDENTIFICATION AND EVALUATION FORM

C. ATMOSPHERIC

1. Air additives ---------- N
2. Air pollution ---------- N
3. Noise pollution ---------- N
4. Other factors

D. NATURAL RESOURCES

1. Diversion, altered use of water ---------- N
2. Irreversible, inefficient commitments ---------- N
3. Other factors

E. CULTURAL

1. Altering physical symbols ---------- N
2. Dilution of cultural traditions ---------- N
3. Other factors

F. SOCIOECONOMIC

1. Changes in economic/employment patterns ---------- M
2. Changes in population ---------- N
3. Changes in cultural patterns ---------- L
4. Other factors

IMPACT IDENTIFICATION AND EVALUATION FORM

G. HEALTH

1. Changing a natural environment ---------- N

2. Eliminating an ecosystem element ---------- N

3. Other factors

H. GENERAL

1. International impacts ---------- N

2. Contrversial impacts ---------- N

3. Larger program impacts ---------- N

4. Other factors

I. OTHER POSSIBLE IMPACTS (not listed above)

See attached Discussion of Impacts.

Contents of the Initial Environmental Examination

1. **Examination of the Nature, Scope and Magnitude of Environmental Impacts**

Description of the Project

...A direct support grant to the University of Florida to enable the Training of LDC participants in alternative energy technologies.

Identification and Evaluation of Environmental Impacts

...AID assistance to the University of Florida aimed at more effective use of locally available renewable energy resources to supply energy to rural and urban poor has negligible environmental impact.

Recommendation for Environmental Action

...This project should receive a "Negative Determination" since the training of LDC participants in alternative energy technologies will have negligib environmental impact.

PROJECT AUTHORIZATION AND REQUEST FOR ALLOTMENT OF FUNDS

PART II

Name of Country/Entity: Worldwide

Name of Project: Training in Alternative Energy Technologies for LDCs University of Florida

Number of Project: 936-5716

I hereby authorize a Grant of not to exceed $2,100,000 to finance the project for not to exceed the two year period September 1979 through September 1981 as described in the attached unsolicited proposal.

Of this amount, I approve the total level of A.I.D. appropriated funding for this project of not to exceed $1,000,000 during FY 1979.

By January 1981 A.I.D. will evaluate the University of Florida's program prior to Development Support Bureau approval and authorization of subsequent energy technology training programs.

John I. Bruce, Ph.D.
Deputy Assistant Administrator
for Development Technology
Bureau for Development Support

8/6/79
Date

DS/PO:RSimpson