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FINAL REPORT: TECHNICAL ASSISTANCE
FOR THE CONVENTIONAL ENERGY
TRAINING PROGRAM (# 936-9997)

Work Order Number 10
IQC # AID/SOD/PDC-C-0306

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FINAL REPORT: TECHNICAL ASSISTANCE
FOR THE CONVENTIONAL ENERGY TRAINING PROGRAM (# 936-9997)

INTRODUCTION

Development Sciences Inc. was given the assignment of preparing initial materials and then describing an AID program in conventional energy training (CET) opportunities to a selected number of countries. The written materials (in English, Spanish and French) and the outreach effort were to be designed and implemented for USAID Mission personnel as well as government officials in the following AID-assisted countries:

Africa - Botswana, Kenya, Mali,
Niger, Tanzania

Asia - Bangladesh, Burma, India,
Thailand, Sri Lanka,
Philippines

Latin America/Caribbean - Barbados, Costa Rica,
Dominican Republic,
Ecuador, Guatemala,
Honduras, Panama

Near East - Egypt

The purpose of this assignment was to assist AID (DS/EY) in describing this new training program to Mission staffs and local government officials, collecting pertinent information on each country's conventional energy plans and prospects, and expediting the identification of and subsequent receipt of applications from appropriate candidates. The Conventional Energy Training Program includes both short-term and post-graduate university training opportunities. All work was to be completed in the time period of December 12, 1980, to April 17, 1981.

This report is a compilation of submissions prepared at various times during this project to assist Missions and DS/EY staff in accomplishing the goals of the overall training project. The document is, therefore, essentially an introduction with chapters and exhibits made up of materials prepared previously and not rewritten for the purpose of the report.

Two specific tasks were defined for Development Sciences in the Statement of Work. The Contractor shall perform the following tasks:

One: Prepare written materials in brochure form suitable for presenting and explaining in detail the Conventional Energy Training Program to USAID Mission personnel and government officials in AID-assisted countries. Such materials shall include:

- A description of the purposes of the program.
- Explanation of the required linkage between selection of participants and national plans and prospects for conventional energy development.
- Disciplines and categories of practical experience of participants.
- General criteria and qualifications for selection of participants.
- Procedures to be followed in making and forwarding nominations.

One hundred copies of the brochure will be produced in each of three languages: English, French and Spanish.

Two: Conduct a combined survey and outreach effort in selected AID-assisted countries to achieve the following specific results:

- Acquisition and compilation of information, to be obtained through interviews, correspondence and surveys of selected Missions and host governments, with respect to:
 1. AID recipient countries' needs for training in each of the specific training fields offered through the CET project; and
 2. AID recipient countries' plans and prospects for conventional energy exploration and development, particularly as these plans and prospects relate to manpower and training requirements.
- Development of widespread awareness of the familiarity with the CET project among USAID Missions and governments and AID-assisted countries.
- Preliminary identification, to the maximum extent practicable, of persons interested in being considered as candidates for the first round of training under the CET project.

In addition, DSI was asked to review the need for and interest in technical assistance (TA) within the conventional energy field for the 19 countries visited.

The following three chapters contain the trip reports for Latin America, including the Caribbean area; Asia; and Africa, including the Near East country of Egypt. The chapters present descriptions of the meetings held in the countries, the information gathered on existing and prospective conventional energy development plans, and additional facts such as possible candidates and potential problems.

The brochures in English, French and Spanish were prepared with sufficient copies for distribution to the selected countries. These materials may be found in Exhibit A, "Conventional Energy Training Program Brochures."

After the trip visits described in the following chapters, subsequent activities included the preparation of draft cables to provide general information and also answer specific questions for the USAID Mission personnel responsible for the CET program. These cables may be found in Exhibit B, "Additional Activities: Cables and Course Data."

Next, a review of selected American colleges and universities with applicable courses in the conventional energy fields was conducted. Data sheets were prepared which indicate the relevant school department, chairman, telephone, program description, courses, admission requirements, graduation requirements, and additional remarks. These data sheets, developed to be included in follow-up information packages sent to Missions, are also included in Exhibit B.

The chapter trip reports include much documentation on the individual countries, their interest in the program, past and present activities related to conventional energy development and training, and any expression of interest in TA services. In general there were more similarities among the countries within a geographical area than between the geographical areas. In many cases this relates to language compatibility and similar development stages. For these reasons it seems appropriate to group the conclusions by geographical area to increase their usefulness. The recommendations have been put into one listing and follow the conclusions.

The conclusions demonstrate the high level of interest shown by both the Mission personnel and AID-assisted country officials in all of the countries visited. In addition, there is a memorandum dated March 13, 1981, briefly summarizing the overall response to the conventional energy training program in Exhibit C, "Memoranda." Exhibit C also includes a memorandum describing our concerns about the follow-on services necessary to select candidates from the applications received and to place them in appropriate universities.

It should be noted that a substantial effort was expended by Mission staff and host government officials with short notice to bring together relevant individuals to learn about the program and initiate an application procedure. AID DS/EY staff, especially Ms. Pamela Baldwin, also provided large amounts of assistance and help in formulating the presentations and preparing for the visits. The assistance and cooperation of Mission and embassy staff personnel was excellent and should also be mentioned. The interest of host government personnel was at a high level and we have recommended a set of activities to continue this program and attract the most qualified candidates for this and future years.

CONCLUSIONS FOR AFRICAN AND NEAR EAST COUNTRIES OF BOTSWANA, EGYPT, KENYA, MALI, NIGER AND TANZANIA

General Program Comments

1. There was great interest in the program and a strong desire to participate expressed by all the governments.
2. Each of the countries believed that the United States' educational and commercial opportunities in conventional energy technology were superior and felt that the U.S. was the best place for masters level training in conventional energy technology.
3. The missions were pleased with this opportunity to meet energy ministers (many of them newly appointed), and the embassies were interested in encouraging the training program as a preliminary introduction to American business contacts for the participants.
4. The necessity for management training at the masters level including financial and legal courses was considered to be as important or more important than technical training.

Anticipated Results

1. Each of the countries will make a serious effort to identify candidates for this year's program. Approximately 20-25 applications should be expected from Egypt, Tanzania and Kenya, combined; and less than five from Botswana, Niger and Mali, combined. Botswana has a small number of ministry personnel and Niger and Mali will require additional English training.
2. All or most of the candidates will be from public and parastatal groups as there is little private enterprise in the energy field.
3. The program's success in 1981 will require additional communications with DS/EY to provide answers for specific issues which could slow down applications.

Further Issues

1. Other program interests in conventional energy training were identified as follows:
 - a. Lower level institutional courses for older members of ministries.
 - b. Lower level technical courses for younger members of ministries.

2. The issue of families and possible travel arrangements should be addressed, as many potential candidates are older and prefer to bring families. Several countries have potential funding for spouses under specified conditions.
3. A compromise which includes intensive English locally at the start combined with second semester entrance into training program could be considered for French speaking countries.

CONCLUSIONS AND IMPRESSIONS FROM ASIAN COUNTRIES OF BANGLADESH, BURMA, INDIA, THAILAND, SRI LANKA, AND THE PHILIPPINES

1. All of the six countries visited were very positive about the program and seemed eager to participate. They generally all expressed the opinion that there was a clear need for such a training program.
2. All of the countries preferred short-term training (6-12 months) directed at providing skills for existing needs. Most of the technical offices could list the fields of desired training. The officials also preferred "hands-on" participatory experience as that provided by the internship program rather than pure academic work.
3. International travel expenses would be a major obstacle for both Burma and Bangladesh. (Bangladesh could finance air fare on National Bangladesh airlines to London.) India and the Philippines expressed some concern over air fare. Thailand and Sri Lanka did not express a major concern although they did believe that the process would be quicker if air fare were provided.
4. In each country there is an agency (generally in the Ministry of Finance) which deals with economic and technical assistance and is a critical link in the chain. In all of the countries, this agency's role is to coordinate and administer the applications and to act as a screen for candidates. With the exception of Thailand, I discussed the training program with both the technical and financial agencies in each country. In no country was there a major obstacle encountered with the finance ministry.
5. Greater documentation and a catalogue of programs, both academic and internship, was requested by all of the countries.
6. They wanted to know how many training positions were available to them annually so that they could do advance planning.

7. The issue of trainees failing to return home was not a major concern. Past experience has shown that the great majority of trainees return and fulfill their contractual obligation to the government. However, if they have received a degree then they often leave the country later for higher paying jobs in foreign countries.
8. It is expected that the great majority, if not all, applications will be from the public sector. All trainees will have jobs to return to. In general, the government continues to pay the trainee's salary during the training period.
9. With the exception of Thailand, the April 15 deadline did not pose a major problem. Most agencies gave this program a high priority so that the applications could be quickly moved through the system.
10. In general, the USAID missions were well prepared for the visit and were very helpful in arranging meetings with the proper offices. It is anticipated that they can be counted on to administer the initial screening and to process the applications in a timely fashion.
11. Trainees from India, Sri Lanka and the Philippines are usually exempt from TOEFL requirements since the language of instruction is English. This issue should be settled for the Conventional Energy Training Program and the policy transmitted to the Missions.
12. The Philippines, Bangladesh and India expressed an interest in training in energy use in such areas as utility management, industrial energy conservation, pipeline planning, etc.

CONCLUSIONS FROM LATIN AMERICAN COUNTRIES OF BARBADOS, COSTA RICA, DOMINICAN REPUBLIC, ECUADOR, GUATEMALA, HONDURAS AND PANAMA

- 1) Language skills will be the limiting factor in receiving applications for the 1981 year in Latin America and if possible, a number of stipends for intensive language training should be offered the first years (at least two per country). This language training will not be important in later years, but a few should always be available for Latin America.
- 2) The first two academic years coincide with campaigning and political activities in and of the countries which I visited. Because many middle and high level people in the conventional energy sector are appointed or hold positions because of politics, they will be hesitant to be away from their country during 1981 and 1982.
- 3) Many institutions do not want to let people go for one year or more and are hesitant to nominate people for post graduate training. The reasons for this hesitancy include:

- a) Public sector positions are poorly paid and a person with a masters degree can get a much higher paying job in the private sector.
- b) The public institutions usually hold jobs open and pay salaries for people who are away and this places a burden on the agency.
- c) Many mid and high level people in many government institutions are contract employees and are not official employees of agencies. They are contractors or consultants.
- d) The effort required to learn English in these countries is substantial and the time required is significant.

There are counter arguments to all the above, but in the end, short term training or internships are much more attractive to the institution and in general per dollar spent, they are felt to be more directly beneficial to the performance of the institutions work.

- 4) The politics, differences in agency goals and objectives, "turf" fights and developing and rapidly changing nature of the conventional energy sector in many countries, make it almost impossible to find one person who can and will act as the overall contact and nominator in a country. Short of having this decision made at the highest levels of government (and the training program is not big or significant enough to warrant this) there likely will be several contacts and nominators in almost all of the Latin American countries. This is also true for technical assistance requests and unless AID wants to designate someone, we can only hope for an attempt by people in most countries to coordinate, (but not integrate or prioritize) requests. If AID were to designate one person as the principal contact and only nominator, I think it would limit the number of applications received and in general not improve the quality of applicants or requests. In later years, some countries might pick a central coordinating body or person and this is likely to be someone in a position of coordinating government training. For at least the first year of the training program, AID should accept and encourage applications and requests from anyone in the government.
- 5) At the mission level, most of the training officers had been with AID for many years, were well connected in the country's government and will be very able to handle paper work and assist candidates. The mission engineering or science and technology officers are the best contacts for substantive requirements.

- 6) A quick short (few pages) reinforcing telegram to each mission, even those not visited, would help immensely. At some later date, a news letter in Spanish describing the response to this program, etc., would also be excellent and help very much in next years program.
- 7) The technical assistance program was extremely interesting to almost every host country official. I met with. I was only able to describe possibilities and discuss expected timing and the process for a country to express interest. Because there was a large amount of interest in this program, I believe a follow-up cable should be sent to each mission. This cable should provide more detail on selection criteria and timing and any other facts of the program.
- 8) It is important that AID Washington instruct the missions how and when to communicate with DS/EY and IIE. This telegram should be sent to the people in each mission identified in the background summary.
- 9) The American Language Institute, Georgetown University English usage test for non native speakers of English Forms K or L should be used by the Mission or their selected examining agency to test the English capability of candidates. I understand that most Missions will have this test booklet and that it is routinely used for this purpose. I also recommend that the Missions be instructed to pay special attention to a candidates ability to understand spoken English.
- 10) AID's Development Training Guide U.S. Department of State, AID Office of International Training Appendix to AID Handbook for participant training published in 1979 and likely available in each Mission is an excellent source book. This large volume contains descriptions of many short-term training and intern-type training opportunities.
- 11) The long-term fellowships in natural resources law, economics and management should be further explained. How many will be offered, what criteria will be used to select candidates etc., should be addressed in a cable to the Missions.

RECOMMENDATIONS FOR FURTHER ACTION

- 1) Establish how many people can be given extensive English training this year and communicate to Missions immediately. If there are a number, there will be more candidates, but this must be known immediately.
- 2) Can short courses be given in Spanish/French or with simultaneous translation and can any be given in-country or regionally?
- 3) Confirm application procedure to missions and send instructions on such things as:
 - TOEFL level requirements and other previous academic levels as limiting factors for selection.
 - Opportunities for organization and payment of advance English language programs.
 - Do candidates have to pay for medical exam before being accepted?
 - Where will English ability be the deciding factor and do candidates for short courses or internships have to take the TOEFL Exam?
 - Will security checks on candidates be necessary?
 - Can governments nominate private sector people (people hired on contract)?
 - Can anyone in government nominate people?
 - Is there any upper age limit?
 - Will Mission be required to issue travel advances, and if so, will PTOP's be necessary?
 - When will information on short courses be forthcoming?
 - When will more data on TA be available and what are criteria for selection?
 - Is there a limit to the number of candidates to be selected from a country?
 - If a candidate wishes to bring wife and family, what are criteria for this to be permitted?
 - Is there a limit on number of people from a country who can get short course training; by year or over the course of the program?

- 4) Data on universities that will participate and any other data on type of graduate programs available should be sent to Missions as soon as possible.
- 5) Data on internship opportunities and technical assistance programs should be sent to Missions.
- 6) Instructions to Missions on the type and nature of comments they should make on applicants would be helpful.
- 7) An official description of the forms to be used and the people to be contacted in IIE as well as IIE's current and future role will help the Mission deal with people in the various agencies.
- 8) Send cables within two weeks which bring Missions up to date on specific countries visited and other related facts to stress continuity of project.

CHAPTER ONE

TRIP REPORT: LATIN AMERICAN COUNTRIES
OF BARBADOS, COSTA RICA, DOMINICAN REPUBLIC,
ECUADOR, GUATEMALA, HONDURAS, PANAMA

January 29, 1981

PRELIMINARY CONCLUSIONS AND RECOMMENDATIONS
FOR
CONVENTIONAL ENERGY TRAINING PROJECT
BASED ON LATIN AMERICAN VISITS

- 1) Language skills will be the limiting factor in receiving applications for the 1981 year in Latin America and if possible, a number of stipends for intensive language training should be offered the first years (at least two per country). This language training will not be important in later years, but a few should always be available for Latin America.
- 2) The first two academic years coincide with campaigning and political activities in and of the countries which I visited. Because many middle and high level people in the conventional energy sector are appointed or hold positions because of politics, they will be hesitant to be away from their country during 1981 and 1982.
- 3) Many institutions do not want to let people go for one year or more and are hesitant to nominate people for post graduate training. The reasons for this hesitancy include:
 - a) Public sector positions are poorly paid and a person with a masters degree can get a much higher paying job in the private sector.
 - b) The public institutions usually hold jobs open and pay salaries for people who are away and this places a burden on the agency.
 - c) Many mid and high level people in many government institutions are contract employees and are not official employees of agencies. They are contractors or consultants.
 - d) The effort required to learn English in these countries is substantial and the time required is significant.

There are counter arguments to all the above, but in the end, short term training or internships are much more attractive to the institution and in general per dollar spent, they are felt to be more directly beneficial to the performance of the institutions work.

- 4) The politics, differences in agency goals and objectives, "turf" fights and developing and rapidly changing nature of the conventional energy sector in many countries, make it almost impossible to find one person who can and will act as the overall contact and nominator in a country. Short of having this decision made at the highest levels of government (and the training program is not big or significant enough to warrant this),

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- 5) At the mission level, most of the training officers had been with AID for many years, were well connected in the country's government and will be very able to handle paper work and assist candidates. The mission engineering or science and technology officers are the best contacts for substantive requirements.
- 6) A quick short (few pages) reinforcing telegram to each mission, even those not visited, would help immensely. At some later date, a news letter in Spanish describing the response to this program, etc., would also be excellent and help very much in next years program.
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- 8) It is important that AID Washington instruct the missions how and when to communicate with DS/EY and EEI. This telegram should be sent to the people in each mission identified in the background summary.
- 9) The American Language Institute, Georgetown University English usage test for non native speakers of English Forms K or L should be used by the Mission or their selected examining agency to test the English capability of candidates. I understand that most Missions will have this test booklet and that it is routinely used for this purpose. I also recommend that the Missions be instructed to pay special attention to a candidates ability to understand spoken English.

- 10) AID's Development Training Guide U.S. Department of State, AID Office of International Training Appendix to AID Handbook for participant training published in 1979 and likely available in each Mission is an excellent source book. This large volume contains descriptions of many short-term training and intern-type training opportunities.
- 11) The long-term fellowships in natural resources law, economics and management should be further explained. How many will be offered, what criteria will be used to select candidates etc., should be addressed in a cable to the Missions.

January 24, 1981

MAJOR QUESTIONS AND SUGGESTIONS
FOR
DS/EY ACTION

- 1) Establish how many people can be given extensive English training this year and communicate to missions immediately. If there are a number, there will be more candidates, but this must be known immediately.
- 2) Can short courses be given in Spanish or with simultaneous translation and can any be given in country or regionally?
- 3) Confirm application procedure to missions and send instructions on such things as:
 - Do candidates have to pay for medical exam before being accepted?
 - Where will English ability be the deciding factor and do candidates for short courses or internships have to take the TOEFL Exam?
 - Will security checks on candidates be necessary?
 - Can governments nominate private sector people (people hired on contract)?
 - Can anyone in government nominate people?
 - Is there any upper age limit?
 - Will mission be required to issue travel advances, and if so, will PTO's be necessary?
 - When will information on short courses be forthcoming?
 - When will more data on TA be available and what are criteria for selection?
 - Is there a limit to the number of candidates to be selected from a country?
 - If a candidate wishes to bring wife and family, what are criteria for this to be permitted?
 - Is there a limit on number of people from a country who can get short course training; by year or over the course of the program?
- 4) Data on universities that will participate and any other data on type of graduate programs available should be sent to missions as soon as possible.
- 5) Data on internship opportunities should be sent to missions.
- 6) Instructions to missions on the type and nature of comments they should make on applicants would be helpful.
- 7) An official description of the forms to be used and the people to be contacted in EEI and EEI's current and future role will help the mission deal with people in the various agencies.

BACKGROUND DATA

Guatemala

GENERAL COUNTRY DATA

Area: 108,780 km²

Population: 7 million in 1980

GNP: \$5.5 billion

Adult Literacy: 38%

Life Expectancy: 52 years

Per Capita Income: \$846/year

Significant amount of civil strife in cities and countryside associated with El Salvador problem.

CONVENTIONAL ENERGY RESOURCES

Guatemala has discovered oil and, with the help of Mexico and Venezuela, is producing oil at seven sites. The most recent discovery, near the border with Mexico, is projected to yield 10,000 barrels per day when production starts in a few months. This high yielding well plus the six others are beginning to make Guatemala a major oil producer in Central America. Oil is the most important fossile fuel resource.

Coal has been discovered, however, it is thought to be of non-commercial quality (mostly lignite) and there is little current interest in further study or development. Because oil is so important and because they have been very successful in their recent exploration efforts, the Government will not divert much attention to other fossile resources in the near future.

It has been estimated that Guatemala has 11,000 MW new major hydro potential and 1,800 MW potential for geothermal.

GOVERNMENT ORGANIZATION

The Government is a democracy and all major office holders, as well as members of congress, are elected each four years. The next election will be in March of 1982 and starting in March of 1981, one year of intensive campaigning will begin. Elected officials cannot run for reelection until they have been out of office four years. Ministers and senior staff are generally not reappointed to major positions in a new government. Most outgoing senior staff and ministers go into the private sector and/or into teaching. Appendix A-G is a brief description (in Spanish) of the major ministries, commissions and autonomous organization in the government.

There are four governmental organizations which are important to conventional energy development. These are as follows:

CNPE - National Council of Economic Planning (in the Office of the President)

MHEN - General Directorate of Mines, Hydrocarbons & Nuclear Energy

INDE - National Institute of Electrification

UNG - National University of Guatemala

The CNPE is a planning agency reporting to the President. They have prepared an overall five-year national plan and there is a part of the plan directed to the energy sector. Generally, a four-year national plan is produced by each administration. However, the first year of the administration is taken up with producing the plan and the last year very little new is started, and only that activity which completes projects is emphasized. Thus the plan is in fact a two-year action guide. The last administration plan, 1979-83, includes a fifth year. This was instituted to assist the new administration in their first year in office -- 1982-83. The plan is not officially released publicly and is more of an internal document. It does not bind the ministers and the annual budgeting process and ministerial priorities are more important than the plan. During this term, the head of the planning process was assassinated and no one has followed up to push the plan. The national planning council is appointed by the President and, although people from each ministry are detailed to the staff, the ministers do not actively participate in the planning process. The planning staff are also often consultants and contractors.

MHEN is a very powerful directorate, especially because of the oil production. They have a large budget and are very independent from other ministries and government entities. They did not attend any meetings during this visit and they already have a large training program.

INDE is also a very powerful and independent part of the government and they are very involved in hydropower development and geothermal exploration. They are an autonomous organization and have a major ongoing training program.

The National University of Guatemala has undergraduate and graduate programs in conventional energy but stresses mostly traditional engineering fields -- civil, electrical, mechanical, etc. They did not attend any meetings, but this was because they were in the middle of their vacation and people were not available on short notice.

In general, the government is emphasizing colonization, reading and writing for adults in rural areas, and oil exploration. There is a significant problem with respect to the El Salvador uprisings and the

government is also starting a major political campaign year. While English is familiar to many and most professionals can read technical English, it is not spoken or well understood in the government.

STAFFING

The important organization in conventional energy includes INDE, CNPE, MHEN, and the University of Guatemala. INDE and CNPE have large staffs and will very likely each nominate candidates. I do not think that MHEN will nominate long-term people because they have their own and well-funded training programs. The UNG has programs in geology and traditional engineering disciplines. They are interested in extending their skills, however, many professors also have private sector jobs because teaching and government employment pays very poorly.

There is not a central nominating entity in the government and for at least the first year, contact with the government should be made through the AID Mission. At the Mission, Carlos Crowe, the Engineering Officer and Elvira Saenez, the Training Officer, should be contacted.

ROCAP is located in Guatemala and they offer a wide range of programs. They deal mostly with regional agencies such as IADB, CABEI (Central Bank of Economic Integration), etc. It is possible, since their counterpart institutions are involved in energy development projects, that they may find candidates for this program. At ROCAP, either Andy Chacon, the Energy and Science and Technology Officer, or Ed Nadeau, the General Development Officer, can be contacted.

AID/COUNTRY EXPERIENCE IN TRAINING AND ENERGY

In the past, the government has not responded well to programs of out of country training.

For example, for two recent courses at University of Missouri;

- a. Economic/Financial Planning & Principles, June 8-27, 1980
- b. UMR/NRECA - System Distribution Planning for Electrical Distribution Systems, June 30 - July 25, 1980

the Country had only to supply RT airfare and nominate a candidate, but did not send one candidate.

The Stony Brook program has not gotten much interest. ROCAP just sent one nomination to Stony Brook. The Florida program has had two Guatemalans.

There are several problems in Guatemala with US-based training at university level:

- a. English is not commonly spoken, even at the technical level.

b. Once trained, people leave the government and go to work in the private sector. Even if the trainee is required to pay back to the government all expenses, this often does not deter a person from leaving the government. Salaries are much better in the private sector and companies will help persons pay back costs. If the contract offered by the government requires several years of work after return, 2 or 3 for one year of training, most senior people will not accept this.

c. Politics play an important part in candidate selection and technical evaluations are often not given enough emphasis.

d. This next year is a campaign year and elections are in 1982. The national planning council and most high level people are politically chosen and each election is important to them. People do not want to be out of the country during the next two years for fear of losing contact with the political process or of being forgotten when new people are appointed in 1982.

e. There are many competing opportunities for training and institutions haven't yet developed a good way to compare opportunities or respond quickly.

EDUCATIONAL INSTITUTES

The university and technical schools (both public and private) graduate people who should have no problem with graduate school or short courses. They do not train specialized people in the conventional energy area. The schools will probably not nominate candidates, however, for long-term training.

CANDIDATES

I did not meet any potential candidates but I believe that there will be both short and long-term nominations. The long-term training will have fewer nominations because of the reasons cited earlier. All candidates will likely have English language problems.

OTHER COMMENTS

The Mission people especially the engineering and training officers are very enthusiastic and knowledgeable. They will be excellent promoters and representatives of the program. Through their work they should develop the maximum exposure for the program, and the candidates that they produce and recommend will, no doubt, be excellent. People in the country, except representatives from mining and hydrocarbons, were also very enthusiastic about the training program.

The ROCAP personnel also are good points of contact and they should also be included in future contacts.

MEETING SUMMARY

16 January 1981

9:00 AM

Ing. Renato Fernandez R.
Jefe Depto DuProyectos INDE

Ing. Carlos Quintana
Planning Section INDE

Ing. Luis Paz
National Planning Council (Energy Sector)

Ing. Alfredo Bustomante
National Planning Council
Chief of Training

Ing. Eduardo Miron
Div. Head Operation INDE

The concensus of the meeting was that there was a need for short courses and internships and especially if these could be offered in Spanish. Specific requests were made for the following:

- Stanford courses on project management and administration
- GE Schenectady type courses on small electric system operation
- Courses on general subjects such as hydroelectric development
- Geothermal energy development
- Energy management (planning and balances)
- Oil development (drilling and production)

A suggestion was made that AID should consider offering regional courses possibly in Guatemala in Spanish or in Puerto Rico. If this couldn't be funded under the training project consideration should be given to offering courses under the TA project.

A study is being made of training needs in conventional energy and INDE is working on a document. As soon as this is completed they will talk to AID about their needs.

The long-term training (post-graduate) will be poorly used the first year. The language difficulties and short time between now and application time will severely limit the number of people who will qualify. The people in the meeting will attempt to meet with others especially a mining and hydro-carbon representative to discuss candidates and possible additional short

course needs. The people from Mines and Hydrocarbons didn't send a representative to the meeting. They have so much money at this time that they are more interested in exploration and production than in education. There are a number of competing training and post-graduate education opportunities:

OLADE (Latin American Energy Development Organization) has fellowships and offers short courses

AID LOANS have several training programs especially the Rural Electrification Project

France, Japan, Germany and Mexico have in the past offered training fellowships

BACKGROUND DATA

Honduras

GENERAL COUNTRY DATA

Area: 112,088 km²

Population: 3,148,000 in 1978; 3.5% growth rate; 62% rural

Capital: Tegucigalpa

GNP: 1.7 billion in 1979

Agriculture is most important export.

Oil use in 1978 was 650,000 tons.

1978 per capita annual income of \$528

It is least developed of Central American countries and second poorest in western hemisphere.

Literacy rate in 1978 was 47% and life expectancy was 53 years.

CONVENTIONAL ENERGY RESOURCES

A summary taken from the 1978-1983 Plan Nacional de Energia and AID's Energy and Development in Central America Report is as follows:

- Hydroelectric -- capacity installed 109 mw with a new project "El Cajon" 292 mw underway and scheduled for completion in 1985.
- Oil and Gas -- no reserves proven but drilling is underway. A refinery on the south coast can handle 15,000 barrels/day.
- Coal -- approximately 15,000,000 tons of lignite are thought to be in Ocotopque Province.
- Geothermal -- over 100 possible sites have been identified in a UNDP financed study and there are 4 particularly good sites.

The emphasis in the country is on hydro development, on-shore oil exploration and geothermal development. Coal is not now seriously being considered. There is some interest in coal development by CONADI (the national investment corporation), but this is only beginning. In the renewable area, forests (there are over 6 x 10⁶ hectares of forest), sugar to alcohol, and mini-hydro are considered as possible future energy resources.

GOVERNMENT ORGANIZATION

The elections of 1980 produced a provisional president who will serve until 1981 (summer) when there will be new elections. Table 1, attached, shows the general organization of the national government. There are four offices that have major roles in conventional energy: Mines and Hydrocarbons (M&H) in the Ministry of Natural Resources, Superior Council of Economic Planning (CONSUPLANE) in the Office of the President, the Energy Advisory Commission (EAC)

in the Ministry of Economy, and the National Electric Authority (ENEE). It appears that oil exploration responsibilities and geothermal development are split between M&H and EAC. EAC seems to be dealing with and guiding the initial planning and negotiations with foreign parties. They also seem to control the contract for management of the refinery. ENEE is the agency which handles the power development. It is a decentralized organization like utilities in the US, only more associated with the government. CONADI does have a project to investigate the possibility of lignite development. This is managed by Eng. Norman Garcia. He will be contacted by Marc Scott to pursue their interest in training.

STAFFING

The agencies in the government mentioned above, except for ENEE, have very small staffs and several have already been trained overseas. The most senior people and most of the people with knowledge of the institution could not participate in long-term training. Each agency mentioned above will separately nominate people for training, both long- and short-term, and may request technical assistance. I suggested that a coordinated request be prepared and that during each meeting I mentioned the names of other people I was seeing. However, there was no central person who could or would speak for all the entities involved in conventional energy resource development. As an example of this lack of coordination, although I mentioned coal to everyone, it was only when discussing this subject with Eng. Castro of CDI that I learned of a possible lignite development program. Even Eng. Murillo of Mines and Hydrocarbons did not mention coal development.

The people in AID to be contacted are as follows:

Substantive & Project Level Contacts:

Marc Scott, the new Director of the Office of Environment
and Technology

Peter Deinken, the Mission Energy Officer and in the
E&T Office

Applications & English Capability:

Ms. Albertina Centeno, Mission Training Officer

AID/COUNTRY EXPERIENCE IN TRAINING AND ENERGY

AID has not had any energy projects. The central AID (Washington, DS/EY) financed Energy and Development in Central America study does summarize the energy situation in-country. There is a National Energy Plan for 1979-1983 prepared by CONSUPLANE. The above section on conventional energy resources presents energy development priorities.

The training experience in AID has been good but English capability has always been a problem. Several people have been sent to the courses at

Stony Brook, Florida, and the EEI arranged energy tours in the US. AID does have an ongoing training course with ENEE to upgrade operating personnel. This includes placing people at GE in New Jersey for on-the-job training and short courses. The training priorities include the following:

- Their principal interest was by far short-term training.
- M&H and CNE were interested in courses that would prepare people to design and manage oil exploration activities. This would include negotiating with suppliers and exploration firms.
- There were specific requests for training in
 - a) remote sensing (M&H),
 - b) hydrocarbon chemistry and analysis (M&H),
 - c) project administration (ENEE),
 - d) small dam construction (ENEE),
 - e) electric company operation (ENEE), and
 - f) geothermal engineering (CONSUPLANE).
- Almost everyone indicated that, while long-term training was very interesting, the problems of being away, the up-coming election, a lack of basic English skills and already strained technical resources would limit the people who could be nominated for post-graduate training.

EDUCATIONAL INSTITUTIONS

There are several good degree granting institutions in Honduras. Anyone graduating with close to a B average from one of the engineering schools will be able to complete a graduate program in the United States. This is, of course, dependent on English skills and the person's attitude and desire.

CANDIDATES

I did not meet anyone who would be a candidate except possibly Sr. Lic. Doras C. de Gonzalez. However, her group (small- and medium-sized industries) was not especially involved in the development of the conventional energy resources of Honduras. I think that there may be some candidates for short-term training from CDI; I have attached a listing of their proposed training program. Lic. de Gonzalez was, herself, interested, but she does not speak English well. She would like long-term post-graduate training and may apply.

I also believe that Mines and Hydrocarbons will nominate people for the USGS short courses in remote sensing, and possibly one person for long-term training in coal development. ENEE will surely ask for short courses in load management and small electric system operation and may request help in starting a training school.

In general, I believe that candidates from Honduras will not be able to meet the English language criterion but will otherwise be well-qualified. I also believe that there will be nominations from different agencies rather than one centrally submitted package. Most of the agencies do not participate in integrated programs, and, at this time, there is no strong coordinating or integrating body, nor is there any strong desire by the various groups to be coordinated.

OTHER COMMENTS

Honduras is one of the poorest of the countries in Latin America and, in terms of development and training, has large needs but is not generally as far along as other countries. However, in the energy sector they do have a national strategy and development of conventional energy resources is a high priority. The people I visited were enthusiastic and saw the benefits from the program, but because of a series of political, personnel shortage, language, and existing arrangement problems their response to this program may not be rapid or extensive. Because of their need for help and their desire, I would expect an increasing (over the 3 years of the program) interest and more applications.

MEETING SUMMARY

19 January 1981

9:00 - 10:30 AM

Ing. Edgardo Murillo
Chief, Mines & Hydrocarbons Directorate (M&H)
Ministry of Natural Resources

He speaks excellent English and is trained in meteorology and civil engineering.

- A) Introduced program and discussed process for making nominations.
- B) I asked for a description of energy planning in M&H and the following is a summary:
 - 1) They (M&H) do not have an energy plan, but are working on one.
 - 2) They import oil from Venezuela and have a new contract with Mexico. There is a Texaco-operated refinery on the coast (this is now for political reasons operated by the Ministry of Economy).
 - 3) They are now negotiating contracts for exploratory drilling of oil with private firms. They now have no oil or natural gas.
 - 4) The Japanese are meeting with country representatives to work out an arrangement for assistance from Japan in building a new refinery. This negotiation is principally with the Ministry of Economy.
 - 5) They have a certain amount of coal (not well defined) but they are not planning to develop it yet. They are focusing on oil exploration.
- C) Ing. Murillo indicated that the following were short-term training needs:
 - 1) Oil and natural gas exploration and especially well drilling and conduct of a test drilling program.
 - 2) Remote sensing for hydro, minerals, forest products; he wants training as well as equipment. He has the USGS course announcement.
 - 3) Hydrocarbon chemistry and laboratory analysis.
 - 4) Short courses for chemical and civil engineers on the basics of geology and mining engineering.

- D) M&E will also try to nominate one or more people for long-term post-graduate training; however, there are two problems:
- 1) B.S. holders who qualify otherwise may not have acceptable English, and he believes that they cannot get their English improved fast enough for 1981.
 - 2) Unless the government allows him to consider nominating people from private universities or private companies, he may have trouble finding qualified people.
- E) There is a major proposal he is considering for remote sensing. The proposal comes from CONSUPLANE and Dr. Stanley A. Moran, Technology & Applied Sciences, University of New Mexico, Albuquerque, New Mexico.
- This will cost approximately $\$2 \times 10^6$ US and have several phases. It is principally satellite photo evaluation with very little ground truth evaluation. There is training, equipment, etc.
- F) Another interest of Ing. Murillo is for help with their oil exploration program. Specifically the supply of a Senior Geophysist and a Senior Geologist to work with his Directorate to help manage their new drilling program, analyze results, and train assistants.
- G) Ing. Murillo will write a letter to Mr. Zumwalt or Peter Deinken or Marc Scott summarizing his interest and indicating his plans for taking advantage of this program. He will also write to Ms. Albertina Centeno, the AID Training Officer, to ask for forms, and will contact her in April to ask about any further information on short courses.

MEETING SUMMARY

19 January 1981

1:00 PM

Eng. Rafael Ochoa
Chief, Energy Department
Consejo Superior de Planificacion Economica
(CONSUPLANE)

Marc Scott, the Environment and Technology Officer designate in AID, and I met with Eng Ochoa in his office. I explained the AID program and encouraged him to look for candidates. He described CONSUPLANE's program and showed us a copy of their 1979-1983 national plan and the energy volume. He indicated that Francisco Figeroa, in the AID engineering office had a copy of the energy plan. He indicated that there were training needs in general, identified in the plan, but they had not established the specifics of training.

In the area of the AID program, the following were his quick thoughts on short term training:

- Economics and financial studies associated with electrification
- Geothermal engineering
- Basic training of engineers in hydro power principles

He indicated that they would have trouble finding candidates who they would be willing to let go for one or two years and who could speak English well enough to qualify. He had sent people to Florida and one person was now in the United States for three months of intensive English prior to going to North Carolina for transportation studies. He said he favored short term studies, but English would be a problem. He would search for candidates and would talk with Mr. Deinken or Scott in the following weeks.

MEETING SUMMARY

19 January 1981

3:00 PM

Eng. Dalmiro Caballero
Chief, Energy Advisory Commission (CNE)
Ministry of Economy

Marc Scott and I met in his office. The Commission is made up of contractors, people on loan from other agencies and has a Board of Directors of people from other agencies. The staff is very small, two to four people, and they use contractors or other ministries to do studies. They report directly to the Head of State.

We described AID's program and he said that they now had people in training at the United States. The person at North Carolina mentioned by Ochoa was also mentioned by Caballero. They would consider appointing someone and might have a candidate who is just completing a BS Degree in the United States in Petroleum Engineering. He was very interested, but because of the type of commission, didn't know if they could send people long term. He was interested in short term courses for other agencies and in technical assistance. They will meet and he will write a letter to AID describing his interest in short courses.

MEETING SUMMARY

20 January 1981

9:00 AM

Lic. Dorcos C. de Gonzalez
Director, Center for Industrial
Development

also

Ing. Jose Raul Castro
Technical Chief

I explained the AID program and indicated that I wanted their recommendations on short courses. She explained the centers' program and indicated that they had a description of their training needs. Ing. Castro will deliver this to me at AID this afternoon. They now have nominated one person to the Florida course, starting in February and are very interested in conventional energy, especially administration and economics. Mrs. Gonzalez does not speak English and if she could get intensive English training, she would possibly be interested in a one year program in the United States.

They might nominate people from their staff, but more likely they will nominate someone from the private sector. They work with industries: to start new ones; solve problems with existing industries and offer training. They are very interested in short courses, but again English will be a problem.

MEETING SUMMARY

20 January 1981

10:00 AM

Engl. German Aparicio
General Manager
National Electric Authority (ENEE)

also

Lic. Mauricio Mossi
Director of Planning and Project Management

I met for a short time with Eng Aparicio and continued a full explanation with Lic. Mossi. Mr. Mossi said that ENEE was presently preparing a training program and was planning to start a training school for electricity in Tegucigalpa. He said that they tried to send people outside the country for training, but could let only one or two persons go each year. This year they have one man at Missouri for training in Hydro-electricity. Even this person needed three months of intensive English before he could get accepted.

ENEE's priorities for short term training were as follows:

- 1) Administration of projects (civil works)
- 2) Small dam construction and engineering
- 3) Operation of generation plants and stations
- 4) Administration of small electric companies
- 5) General administrative training for engineers

He said that he knew the Bureau of Reclamation had given administration and small dam construction courses. He also indicated that he had seen flyers from universities in San Francisco and Chicago for short courses in administration of small electric companies. He felt that candidates for short courses in the United States would need intensive English training and that the best program would be training given in Spanish. He will talk to AID (Deinken and Scott) about this after he talks to other people in ENEE.

He asked if AID would consider, under the technical assistance part of the program, assistance in starting up their training center. ENEE needs equipment, training for their trainers and help in course preparation. He will write a letter to AID describing this need in more detail.

MEETING SUMMARY

Several meetings with:

Fred Zumwalt-Outgoing Director - Office E & T AID

Marc Scott-New Director - Office E & T AID

Ms. Albertino Centeno-Training Officer

Julius Schlotthauer-Acting Director - Off. Program & Capital Resources

I was introduced to the AID program in Honduras by Fred Zumwalt and he explained my itinerary for the two day visit. Peter Deinken was on leave and Marc Scott was in Spanish training every morning. Since there is no broad coordination in energy in the country and several institutions have major responsibilities for particular parts of the conventional energy field, separate visits to several offices were scheduled. Marc Scott and Peter Deinken were to be the contact people in the Mission and Ms. Albertino Centeno the Mission training officer would handle forms, English screening, etc.

COUNTRY BACKGROUND

Costa Rica

GENERAL COUNTRY DATA

Area: 51,000 km², 7 Provinces

Population: 2.2 x 10⁶ people (1979)

GDP: \$3,400 x 10⁶ (1978)

Adult literacy rate 90%, life expectancy 68 years.

Average per capita income is \$1,600 annually.

Importation of approximately 6 x 10⁶ barrels of oil per year.

CONVENTIONAL ENERGY RESOURCES

The country has hydro, oil, coal (lignite), and geothermal. All have not been confirmed to be commercially exploitable and only hydro potential is well explored. Imported oil and oil products satisfy approximately 56% of the country's energy demand. It is estimated that if all the hydro potential in the country were used to generate electricity the result would be enough power for the next 50 years of development. The energy strategy of the country is based on hydro development.

- Coal is also important to the future and a recently completed study shows that there is a major bituminous coal deposit (40 km²) in Baja Talamaca (south of the country). The average caloric content is over 6,500 kcal/kg. The coal is deposited in thin layers and mining will be difficult.
- Oil exploration (drilling) is about to start and their geological studies indicate that the country in the north should have oil. The amount and quality is as yet unknown.
- Geothermal exploration is just beginning. At present there is no good information on geothermal potential, however, several areas of geothermal activity have been identified. More investigation is planned in this area.

GOVERNMENT ORGANIZATION

The government is headed by an elected president who has several staff offices including a national planning staff (PFIPLAN) and an economic council. Below this there are 13 Ministries including the Ministry of

Energy (small staff) and the Ministry of Economics, Industry and Commerce (involved in energy projects). There are 14 decentralized institutions including the (CNP) National Council for the Production of Alcohol, ICE the Electrification Institution and (RECOPE) the national refinery. Below this level there are a range of autonomous and semi-autonomous organizations. The main entities involved in Conventional Energy include:

MOE	(oil, coal, geothermal)
OFIPLAN	(overall country energy strategy)
ICE	(hydro and electrification)
RECOPE	(oil refining)
CNP	(gasohol production)
UCR	University of Costa Rica

STAFFING

In the above agencies the MOE, ICE and UCR are the most important entities and most likely to participate in this program. The MOE is attempting to coordinate and manage the activities of others. Because MOE does not have a large staff but will coordinate energy development they will need some highly trained people. ICE is a much larger organization and should be a major participant in the training program. At this time there will be no single contract in the country, rather individuals in the various agencies must be dealt with. The University of Costa Rica is probably the one entity which will be interested in nominating several candidates this year for long-term training. Because of this Dr. Alvaro Umana should be contacted again and any material sent to Costa Rica should be directed to him also.

In AID Mr. Heriberto Rodriguez should be the main contact. He is very interested in the program and will work to see that it is well publicized. Inez Rodriguez, the training officer, has been with AID for many years and is thoroughly familiar with training programs. She made some excellent suggestions and asked several questions which I have included in my summary comments. She should be contacted for data on forms and candidate English skills.

AID/COUNTRY EXPERIENCE IN TRAINING AND ENERGY

The AID Mission has a PID for an energy project. The project includes energy policy research, renewable energy studies, conservation and energy efficiency studies, national energy planning assistance, and training and information exchange. The proposed training will include short courses and seminars mostly in Latin America. This project will include MOE AND OFIPLAN involvement and involves one million dollars from AID over two years. In other AID training projects they have had excellent success with candidates. Language is always a problem but academic background has not been.

In the interviews the following requests for internships and short-term training were mentioned:

- Small Dam Design (MOE)
- Coal exploration and development (MOE)
- Energy planning but using CR data (ICE)
- Grid interconnections and load management (UCR)
- Small hydro turbine design (UCR)
- Geothermal power development (UCR)

EDUCATIONAL INSTITUTIONS

The University and the technological Institute of Costa Rica are excellent schools and graduate well qualified personnel. Both work together on programs and were interested in developing a request for TA in the geothermal area. They may try to develop a proposal for staff, curriculum and laboratory support to develop a degree program in geothermal engineering.

CANDIDATES

I believe that Mario Barboza of OFIPLAN will be nominated for long-term training. He has an excellent background in energy planning and speaks English. I also believe that UCR will nominate some people for long-term training this year. I do not feel that ICE will nominate people for long-term training but they were very interested in short-term programs especially if they could be in Spanish.

OTHER

Costa Rica seemed to have an excellent and well coordinated program for conventional energy development. AID was integrally involved in this and had excellent relationships with the agencies. The people I spoke with were enthusiastic and had well defined interests. I believe that over the 3 years of the program they will propose people and I feel that this program will be very beneficial to them.

There was much interest in the TA program and I feel that AID will receive one or more requests in this area. The requests will likely be comprehensive and coordinated.

MEETING SUMMARY

Several Meetings

Heriberto Rodriguez
Engineering AID

Mary D. June
Loan Office AID

Gussie Daniels
Program Office AID

Inez Rodriguez
Training Office AID

Mario H. Barboza S.
Office of National Planning
& Economic Policy (OFIPLAN)

The meeting was a general briefing and Mario Barboza was in attendance because he could not be at other meetings and he might be a candidate for post-graduate training. The AID personnel asked about the process of selection and Inez suggested that for English screening the American Language Institute, Georgetown University Form K be used. She also suggested using their oral rating form. She indicated that all missions have these. I was given a briefing on the upcoming meetings.

Mario Barboza works in the National Planning Council (OFIPLAN) has had experience in energy planning. He was the national coordinator for the unsponsored national energy balance study completed in June, 1980. He would be an ideal candidate for training if he is nominated.

Inez asked whether candidates needed to have a security check and whether those accepted would be given travel advances by the Mission or directly by IIE. The Mission has had approximately 1750 participants in training over her 17 years as a mission training officer. They now have two people in the U.S. on long and short-term training on the LACPR project. They have not had problems with trainees not completing courses or not coming back. She thinks that the only problem that most candidates will have with English is in speaking and understanding. She will be careful to check these areas when she gives the screening tests.

MEETING SUMMARY

23 January 1981

10:00 AM

Ing. Jorge Carvajal
Advisor to the Minister
Ministry of Energy & Mines (MOE)

Hereberto Rodriguez AID

MOE is newly created and has a small staff. Their responsibility is to coordinate and advise the President on energy policy and matters. They have formed a Secretariat of the Energy Sector with members from the autonomous organizations and ministries involved in energy matters. This group has met three times and is beginning to function as an advisory group.

Ing. Carvajal indicated that the Ministry would like to help in the development of a coordinated request for long and short-term training and technical assistance. He will meet with others who we have spoken to and see that they respond with knowledge of what others are requesting.

In terms of short-term training he felt that the small dam design and coal development were priority areas. He also supported the idea of Ing. Cruz that a team approach to long-term training would be best for Costa Rica.

He showed us the study investigation covering coal in Baja Talamaca, Costa Rica. This study indicates a substantial area of coal deposits in thin layers (over 40 km²) with an average caloric value of 6555 k cal/kg. The coal is classed as bituminous with high combustibility. He also indicated that the oil development program was not being financed with a fund of 30% of imports from Mexico and Venezuela that goes to studies and exploration financing and they are relying on people and technology from Mexico. They are also working with China on possible ways of exploiting the coal (this is in the very early stages of discussion). They are considering using UN funds to extend the geophysical studies of the country.

MEETING SUMMARY

22 January 1981

2:00 PM (AID)

Heriberto Rodriguez AID

Ing. Alejandro Cruz M.
Director, Division of Investigation
and Technical Development
Technological Institute of Costa Rica

Ing. Alvaro Jimenez
Director, CONICIT

CONICIT has a small staff and is organized to consider, find and give support to projects and training of professionals in Costa Rica. Some of their activities include:

- Support studies of others in government
- Give additional salaries to researchers in universities
- Pay to bring experts to teach and do research in Costa Rica
- Pay for people to travel to and attend international meetings
- Pay costs for advanced training outside of Costa Rica
- Pay for books and supplies

They are funded by Costa Rican Government, UN, AID, NSF, other countries. Ing. A. Jimenez suggested that they might help some candidates with costs of travel to and from U.S. They would also look for people who might want long or short-term training and would see if they had requests for training which would fit under this program. He also suggested the Department of Geology of the University of Costa Rica for interest in fossil fuels. Ing. Cruz said that the Technical Institute was most interested in short-term training and that his program was directed to renewable energy resources. He would speak with people to see if he could find the types of short courses which would best suit their needs. He felt that the best approach to the long-term training was for Costa Rica to form a team of several candidates. These would be nominated to receive training in subjects of importance to the country in the next several years; industrial energy use, oil exploration (technical and management), coal development, etc. He volunteered to speak to others and try to put together an integrated request for training based on the above concept. This was an excellent recommendation. He will also work with Heriberto and schedule a joint planning meeting of all interested parties in the next few weeks.

MEETING SUMMARY

22 January 1981

9:00 AM

Instituto Costarricense De Electricidad

Ing. Eugenio Odio
Chief of Electricity Planning

Ing. Luis Guillermo Salas M.
Chief Office of Energy Training

Ing. TeoFilo De La Torre A.
Sub Director Energy Development

Heriberto Rodriguez
AID Engineering

The meeting was in two parts. The first part was with Odio, Salas and Rodriguez. The program was explained and the ICE people made the following points:

- A) They might be interested in the long-term training but this was more appropriate for the Ministry of Energy (MOE) or the Universities.
- B) They were interested in short courses especially in training in energy planning. They want to get their people thinking about the energy implications of the actions of ICE, a course in energy planning focusing on what has already been done, and on the specific problems and opportunities in Costa Rica. The UN sponsored a study to prepare historical energy balances 1965 - 1979 (Balance Energetico Nacional; Serie Historica 1965 - 1979, Programa Energetico Del Istimo CentroAmericano Protecto RLA (761012 June 1980) and ICE wants to go from this to policy implications. They want to train their people by using their data and information. They want a more specific course than Stony Brook. They would also like other short courses. They will write a letter to Heriberto about the energy planning and other courses.
- C) They were very interested in the technical assistance component of the program. Their first priority was studies of coal. Specifically they wanted to have a program of several steps:
 - 1) Look at all existing information and summarize and evaluate this.

- 2) Design a program of development including:
 - a) Geophysical and chemical analysis to identify best mining techniques and ultimate uses
 - b) Project feasibility studies to define initial development steps
 - c) Project feasibility studies for possible electricity production
 - 1) Single thermal plants
 - 2) Joint thermal and hydro facilities

The second priority was oil exploration and they suggested an initial study focusing on evaluating the existing data to determine the potential for finding oil and to suggest the next steps. The second step would probably be additional data collection.

In the second part of the meeting the above parties spoke with Ing. De La Torre. In this meeting the conclusions of the first were presented and Ing. De La Torre agreed that they should write two letters to the mission. The first would cover their recommendations for training courses and the second would define their interest in technical assistance.

Following this we were shown and given rides in ICE's new electric car and trucks. They have 6 battery driven panel trucks and a car. The trucks and car were purchased from Austin, Texas (Jet Industries).

ICE felt that their people had good enough training at the BS level and that long-term academic training would result in substantial benefit to the individual with little benefit to the institution. They preferred to send people to short courses and felt that the individual and the institution benefited equally from internships and short courses.

MEETING SUMMARY

23 January 1981

Dr. Alvaro Umana Q
Environmental & Energy Engineering
School of Civil Engineering
University of Costa Rica

Heriberto Rodriguez
Engineering AID

The University has several conventional energy related programs. There are also several ongoing projects in renewable energy, especially gasahol, solar and biogas. In the conventional energy area they are working in hydro power coal and coal chemistry, and geothermal. The university will nominate one and very possibly more candidates for long-term post-graduate education. The hydraulics program will nominate a recent graduate who is now teaching and the Chemical Engineering Department will nominate a professor to study coal and coal gasification. They also hope to work with the Technological Institute of Costa Rica and find a candidate that can be involved in both teaching programs.

The engineering school's desires in short courses include:

- Large grid interconnections and load management techniques
- Interconnection of small hydro to the grid
- Small hydro turbine design
- Geothermal power development (emphasis on technology)

A number of the staff members read and understand English, however, their speaking ability is generally not good. Dr. Umana went to graduate school in the U.S. (Stanford) and speaks fluent English.

BACKGROUND DATA

Panama

GENERAL COUNTRY DATA

Area: ~~77,000~~ km²
Population: 1.8×10^6 in 1979
Capital: Panama City
GDP: $\$2.25 \times 10^9$ in 1977
51% Urban.
Approximately 15% of people speak English
Adult literacy rate is 80%
Life expectancy: 59 years
1977 per capita income \$1,025

FOSSIL ENERGY RESOURCES

The major conventional energy source indigenous to the country is hydro-power. A major hydro and mineral development (copper) project is now underway and the north coast of Panama has tremendous hydro potential. Oil has not been discovered, but there is a large IBRD Loan Project just starting to look at existing geological data and begin test drilling. Coal has been discovered, but little is known about its quantity or quality. Geothermal sources are also being identified, but this work is just beginning. The country imports all of its oil and oil imports account for a major part of the imports of the country.

GOVERNMENT ORGANIZATION

The attached diagram presents the general organization of the Panamanian government. In addition to this formal structure, there is General Torrios and the National Guard, the equally influential and possibly more powerful governing force. In the official government, the following entities have responsibilities in conventional energy development.

- (MPEP) Ministry of Planning and Economic Policy - training and national planning
- (MCI) Ministry of Commerce and Industry - Hydrocarbon development
- (UOP) University of Panama - Education in conventional energy
- (IRIIE) Institute of Hydraulic Resources and Electrification - Hydro and thermal electricity

There is also a National Energy Commission. This is funded by UNDP funds and is a coordinating body. Representatives from the above government bodies as well as others and a small staff are involved in the preparation of an overall national energy plan. This will be completed in December of this year and the AID Renewable Energy Project will contribute to this.

STAFFING

The agency staffs are well trained and many professionals read and understand English. The ability to speak is not as widespread. Because of the long history of US involvement in the country and the tourism which is continually expanding, English is more familiar to Panamanians than most other Central and South Americans. Many engineers have received some post BS training. This includes training in-country in short courses, as well as out of country short courses and graduate classes.

MPEP and MCI have very small staffs assigned to conventional energy matters at this time. If oil or coal are discovered and developed, the staff of MCI will grow or another ministry will be created. There are indications that there will be staff additions to MCI in the near future to deal with the oil exploration program. UOP does not have a large staff but several departments are beginning to develop specialists in the conventional energy field.

IHRE has a large number of employees and they have numerous ongoing training programs. During 1979 they had approximately 360 people in training outside the country and over 5,000 people in in-country training programs. The attached table summarizes their 1979 training activities. IHRE is developing an overall energy strategy for the country and, because of the major hydro resources in the country, will be the center for energy development for some time.

The people to contact for training in AID are:

Aurita Othon, AID Training Officer

Lynn Sheldon, AID Engineering Office and Energy Officer

The people to be contacted in the Government are:

Oscar Chevarria, MPEP Overall Country Training Plan

Jose Pascal, IRHE Studies Department and Energy Planning

AID/COUNTRY EXPERIENCE IN TRAINING AND ENERGY

There have been several AID projects related training programs in Panama and the experience has been good. An Education Project-Section II (0179) Project No. 525-0179 (600) is about to finish. The candidates have done well and because most of the training was short term and for low level people, they had a wide audience to select from. The Panamanian Training Office in the Ministry of Planning is publishing a general training prospectus and opportunities for the 1981 year. This booklet will be available in approximately two weeks. The head of this office, Mr. Omar Charvarria asked that AID Mission write an official letter to the Minister of Planning describing the program. If this was done, then he could advertise the course from his office. The Mission was asked to write this letter. The Mission will discuss the upcoming training program with the

ministry to see if any of the planned training programs could be assisted by this AID training program.

IRHE has had an extensive ongoing training program and during the last year (1980), 363 people from the agency participated in training programs outside the country. There were also 5,500 people trained in courses inside the country. It is obvious that there are a number of other training programs in place and this AID project will compete for people with other opportunities.

AID presently has an ongoing Alternative Energy Project. The project includes some in-country training, but no out-of-country or academic education fellowships are included. Several people have attended the Florida and Stony Brook courses. Panama has also been the location for several regional energy training programs funded by UNDP, OLADE, IBRD, etc.

EDUCATIONAL INSTITUTIONS

The university of Panama, Nova University and several colleges, offer BS degrees in science and engineering. There is a large number of well educated people who could qualify for this type of training. Petroleum and coal are not included in degree granting programs in the universities, however, Geology and Hydropower are covered.

CANDIDATES

It is difficult to even give a rough estimate of candidates for the first year from Panama. I believe IRHE will nominate at least one person for long term training and possibly so will MCI in the hydrocarbon area. I believe there will be requests for short term training and internships, however, they will probably wait for more information from IIE on the short term training program.

OTHER

Panama has many people who could qualify for this program, however, their participation is dependent on the recommendation of their employer and I do not know how enthusiastic they will be. I think they are very interested in TA and in short term training.

IRHE 1979 TRAINING ACTIVITIES

Un total de 342 acciones Internas fueron desarrolladas con 5,535 participantes. -De ese total 191 acciones se efectuaron bajo la coordinación de la Sección de Desarrollo y Adiestramiento de Personal las cuales abarcaron 3,119 participantes.

-A continuación el

RESUMEN ESTADISTICO DE ACCIONES INTERNAS DESARROLLADAS EN 1980

	No. de Acciones	No. de Participantes
Acciones programadas y Ejecutadas por la Sección de Desarrollo y Adiestramiento de Personal	174	
Participantes		2,748
Acciones no Programadas y Ejecutadas por la Sección de Desarrollo y Adiestramiento de Personal	17	
Participantes		371
Sub-Total=	191	3,119
Acciones Desarrolladas por Seguridad Industrial	134	
Participantes		2,205
Acciones Desarrolladas por el Centro de Formación y Perfeccionamiento de Electricistas	7	
Participantes		95
Acciones Desarrolladas por la Coordinación de Formación Técnica	5	
Participantes		42
Acciones Desarrolladas por Asistencia Comercial	5	
Participantes		74
Sub-Total=	151	2,416
Gran Total=	342	5,535

RESUMEN DE ACCIONES EXTERNAS FUERA DE PANAMA

	No. de Acciones	No. de Participantes
1. Becas Internacionales 1980	22	27
2. Compromisos de 1979	5	5
3. Maestrías desarrolladas en 1980	3	3
4. Maestrías Iniciadas en 1978 y 1979 y continuadas en 1980	9	9

5. Programa Gilbert Associates

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ACCIONES EXTERNAS EN PANAMA - 1980

ORGANISMO PATROCINADOR	CANTIDAD PARTICIPANTES
M.I.P.P.E	50
APEDE	8
SPIA	119
INCAE	3
EXPONSA	2
Nova University	3
CIMAR	9
Academia Panameña del Derecho	4
AZID, S.A.	6
Cámara de Comercio	1
Canal Zona Callejo	1
KODAK	12
INDE	5
Guardia Nacional Técnica Superior Interamericana	67
SUPER, S.A. (Dale Carnegie)	1
Inst. Relaciones Humanas	4
CAPAC	3
Congreso Nal. Contadores	5
IDAAN	1
Universidad de Panamá	1
ASIRHE	1
Sindicato de Periodistas	5
Contraloría General de la República	9
Centro de Arte y Cultura	2
BID	2
CRUD	1
Sociedad Panameña Psiquiatría	1
Ministerio de Trabajo y Bienestar Social	35
Ministerio de Salud	1
	<u>363</u>

MEETING SUMMARY

24 - 26 January 1981

Lynn Sheldon, AID Engineering Office

Aurita Othon, AID Training Officer and Program Officer

At these meetings, both people were informed of the program and several questions were asked. Most of the questions have been mentioned previously. A list of unanswered questions from all missions, as well as promises for future information, are included in this package.

As a result of my discussions, a large number of people from IRHE (The National Institution of Hydraulic Resources and Electrification) were invited to a meeting at IRHE at 10:00 am on 26 January.

In a meeting at 8:30 on the 26th with Sra. Othon, the handling of applications was explained and she also arranged a meeting for 3:00 pm with Sr. Omar Chavarria, Director of Training for the Ministry of Planning. Sr. Chavarria handles all requests for training of government personnel and coordinates the program between AID and the Government.

AID has an ongoing energy project under Lynn Sheldon in energy planning and alternative energy. The project is behind schedule and the first part (the energy planning part) will be completed in December 1981. There is no future energy program planned at the mission in 1982-83. Future programs are now being developed.

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MEETING SUMMARY

26 January 1981

Eng. Omar R. Chavarria De G.
Chief of Training
Minister of Planning & Economic Policy

The Ministry of Planning & Economic Policy is responsible for coordinating training for all Government offices. Each year they publish a training program digest announcing training opportunities. They have just sent the 1981 version to the printers. The AID mission will get a copy in 2-3 weeks. Ing. Chavarria asked that AID mission send a letter to his Minister or Vice Minister:

Gustavo Gonzalez, Minister
Abdiel Julio, Vice Minister

describing the conventional energy training program and asking them to advertise this opportunity. If this is done and a copy sent to Ing. Chavarria, he will immediately send to all ministries, autonomous organizations, universities, etc. the descriptions. He will also coordinate requests, etc. He deals with AID on training matters. He was enthusiastic and felt he could coordinate the requests.

I asked Aurita Othon of AID to see that the letter he requested would be written.

MEETING SUMMARY

26 January 1981

Eng. Ramon Argote
IRIE Chief, Department of Energy & Tariffs

Eng. Dr. Daniel Esquivel K.
Director of Mineral Resources
Ministry of Commerce & Industries

Eng. Jose Pascal
Chief, Department of Studies, IRIE

Lynn Sheldon
AID, Engineering Office

The meeting involved a discussion of the AID program and the interests and desires of Panama in participation. The outcome was that they would attempt to put together a coordinated request for long-term training and would work with Lynn Sheldon and others at AID to formulate this. There was also interest in short courses, but they felt that the people that they would want to train would have trouble with English. They asked about training being presented in Spanish.

There was also interest, especially by Dr. Esquivel, in the technical assistance. They will all speak to others to try to come up with a request. Dr. Esquivel was interested in a remote sensing program including training, equipment and consultants. He will work on a proposal. He also asked if AID would pay for a building to house a remote sensing center under this program. I said I felt the answer was no, but I would check.

They said that they and IBRD were about to complete a large loan agreement. Hydro carbons will have $\$4.4 \times 10^6$ in Phase I to do a reevaluation of oil potential in Panama. The second phase of the project will go to IRIE for overall energy planning.

BACKGROUND DATA

Ecuador

GENERAL COUNTRY DATA

Area: 283,000 km²

Population: Over 8 million in 1980

GDP: 6.1 billion.- 1977

Adult literary rate is 77%.

Life expectancy is 57 years.

Per capita income is \$1,131/year in 1980.

This is one of the least developed countries in South America. Even though some current indicators are high, past development was very poor.

Rural sector has 57% of population

CONVENTIONAL ENERGY RESOURCES

Oil was discovered in the East of Ecuador in 1970 and now contributes more than 50% of the nation's exports. Also about 25% of the nation's budget is paid for by oil resources. Gasoline is subsidized with 80 octane, selling at the pumps at approximately \$.20/gallon. Large scale development of oil and natural gas is projected to keep Ecuador a net exporter of oil until between 1990 and 2000. To meet the challenge of diminishing oil reserves, massive exploitation programs in natural gas and hydro are underway, and a renewed effort to find oil is also being undertaken. Approximately 19% of the next 5-year investment by government is to be spent in hydrocarbon development and 15% will go to hydropower development. The grid will be extended to reach 55% of the country's population by 1985. Also the amount of electric energy supplied by hydro in 1985 is projected to be 70% of the total with the remaining being fossile. There is a goal of 2,260 mw hydro capacity by 1990.

IBRD and IDB are considering funding of oil and gas exploration, including \$81.2 million for an oil and gas pipeline project and a hydroelectric project. There are several other hydro, oil and gas projects amounting to over \$1.4 billion in loans and counterpart funds.

There are large coal deposits in the center of the country, but they are not developed. There are also tar sands to the south along and near the border with Peru. There are also several known geothermal sources.

GOVERNMENT ORGANIZATION

Since 1978 Ecuador has had a new constitution. This new constitution created a unicameral legislature and an executive branch. The Executive

Branch has 12 support groups attached to it (Planning Office, Statistical Institute, etc.), 11 ministries with 43 decentralized offices reporting to them, 24 municipal enterprises and 9 public sector financial institutions. More detail is shown in the attached figure.

The entities most involved in conventional energy include the following:

CSE - An interministerial Superior Council on Energy (newly formed to recommend energy policy)

MNRE - Ministry of Energy and Natural Resources - has the following bodies:

DFH - Directorate General of Hydrocarbons

DGGM - Directorate General of Geology and Mines

CEPE - Equatorian State Petroleum Corporation

INELEC - Equatorian Institute of Electrification

INE - National Institute of Energy

CONADE - National Development Council

Office of Energy

CONACYT - National Council for Science and Technology

At present, INE is a coordinating body for energy and is responsible for planning; however, implementation of plans will be the responsibility of others, such as CEPE, INELEC, DGGM, etc. The following are brief descriptions of some of the most important energy agencies:

INE - INE presently has 17 professional staff and 8 administrative and secretarial staff. For the next year, they have in their budget approximately \$900,000 for operating expenses and \$2 million for investigations and programs. To date, INE has concentrated in expanding and consolidating its staff, and in compiling the country's first energy balance. It also has completed preliminary policy reviews of INELEC's large hydroelectric development program, of energy prices, and it has begun pilot testing of efficient cookstoves, biogas, and micro hydro.

MNRE & CSE - The MNRE is the largest GOE institution in the energy sector, it is charged with supervising the activities of attached institutions, such as CEPE and INELEC. The Ministry is divided into two basic subsecretariats: (1) natural resources and energy, and (2) fishery resources. The natural resources and energy subsecretariat is further divided into the Directorate General of Hydrocarbons (DGH), and the Directorate General of Geology and Mines (DGGM). As is apparent from this organizational

description, MNRE encompasses a variety of disparate activities in energy, mining and marine resources.

The Superior Council on Energy (CSE) is an interministerial committee with ministerial or other high level representatives from MNRE, Ministry of Finance, the Ministry of Industry, Commerce and Trade, CONADE, the Military Chiefs of Staff, the National Security Council, the Chamber of Production and the Association of Municipalities. The Council was created under the previous government in an attempt to coordinate energy policy between the Ministry, autonomous agencies and the military. INE's Board of Directors (Consejo Tecnico) also may provide the energy sector with a useful forum for the formulation of energy policies.

INELEC - INELEC is the country's large national electric utility. Through its own programs, and through controlling interests in many local utilities, it carries out electric generation and distribution activities. It is currently involved in a massive effort to complete various large hydro-electric projects.

CONADE - CONADE is the successor agency to the Junta Nacional de Planificacion (JUNAPLA). Three parts of CONADE have energy planning responsibilities. The Office of Energy, equipped with a small staff in the areas of conventional and non-conventional agency. The National Council for Science and Technology (CONACYT) is another organization under the umbrella of CONADE which will play a role in energy policy. CONACYT was only recently created to coordinate research and information transfer in the entire area of science and technology. Finally, the office of the Vice President within CONADE has an advisor in energy and science and technology who provides overall policy guidance to CONADE in this area.

CEPE - CEPE has over 3,000 employees and is responsible for the exploration and exploitation of the country's petroleum and natural gas resources. Of the 3,000 employees, 700-800 are professionals with undergraduate degrees. CEPE has a training office as well as several project-oriented divisions. In 1980, CEPE spent almost \$1 billion on hydrocarbon projects. Because of its major role in the development of the country's conventional energy resources, it is very forceful and often operates independently.

STAFFING

The most important agencies in conventional energy and their staffing levels are mentioned above. INE may some day develop into an overall coordinating agency; however, at this time, they have not developed to that point. CEPE and INELEC are too large and well established to give up responsibility and very likely each of the major agencies will want to deal directly with AID on this program.

Within AID, Mr. Gary Vaughan, the Energy Advisor, is the person to be dealt with. The mission has no training officer and may not for some time, and for that reason, Mr. Vaughan will handle all arrangements. He is currently developing a conventional energy project and is routinely in contact with all the major energy agencies in Ecuador.

AID/COUNTRY EXPERIENCE IN TRAINING AND ENERGY

There will be a renewable energy project in place early this year. The project, approximately \$6 million in grant and loan funds, includes no long-term training and only minor in-country short-term training. An upcoming S&T project to be managed by Leo Garza, the Mission General Development Officer, will include some training but it will not be a major component. Because the mission has not been active too long, it is reinitiating a number of projects. Training will probably not be a major component of its upcoming programs.

The types of short courses asked for by those interviewed included:

- Geothermal Applications and Technologies
- Fuel Pricing and Substitution
- Energy Analysis (Data Systems)
- Oil and Gas Reserve Potential Evaluation
- Hydrocarbon Exploration and Development
- Petroleum Economics
- Technology for Hydrocarbon Processing
- Coal Exploration and Mining Techniques

EDUCATIONAL INSTITUTIONS

The National University is an excellent degree granting institution. Anyone graduating with a B average from the engineering school will be able to complete a graduate program in the United States. This is, of course, dependent on English skills and the person's attitude and desire. The University of New Mexico has a cooperative study program with the American University and the University of Texas is working with the National University to develop training programs.

CANDIDATES

I did not meet with any candidates; however, I believe that the Geology and Mines Directorate will nominate people. This agency has a number of people who have basic training in conventional energy resources and who would be anxious to have post graduate training. The director of the agency was very enthusiastic about the post graduate training and was going to work with INE and AID in developing a long-term approach to this program. There will likely be more candidates for short-term training and internships than for long-term training. The present lack of definition in the short-term training program will cause some problems. Until more direction is provided by AID on this part of the project, applications will be erratic at best.

OTHER COMMENTS

The need for this type of program in Ecuador is very evident and well recognized. Because of language problems, their response to long-term training will not be thorough the first year. Later on it could be larger but not until they learn more about the program and its success or failure. Initial response to the short-term training program was enthusiastic, but this also needs more explanation before they can respond adequately.

SM

MEETING SUMMARY

Gary Vaughan, Energy Officer

Leo Garza, General Development Officer

Gary handled the arrangements and tried to coordinate meetings through Dr. Quevedo of INE. He indicated that many government agencies should be interested as well as universities. He said that the mission is still small and that there is no training officer so he would have to handle applications as well as further attempts to publicize the program. Leo indicated he would meet with CONACYT since he has a S&T project with them and he knew the people and he would also try to meet with INELEC (Mario Oscario, the head of planning).

The lack of English skill and the short time for applications would probably limit the number of candidates for 1981 to a very few. Future applications would probably be larger in number, but not substantial for long-term training. Gary would try to encourage Dr. Quevedo to push for people to apply and to publicize the program to the universities. Gary attempted to set up a meeting with Ron Glass of the Embassy, who is knowledgeable about oil and gas, but Mr. Glass was not available during the two days I was in Quito.

MEETING SUMMARY

Dr. Carlos E. Quevedo T.
Chief, National Energy Institute (INE)

INE is the central planning and coordinating arm for the government in energy. Last year was their first and they were funded at approximately \$800,000 by the government. This year, they hope to start a major renewable energy project with AID. This \$6 - \$7 million loan and grant project will include training, data development and energy planning and demonstration projects.

Dr. Quevedo had discussed the conventional energy project with Gary Vaughan of the Mission, and had tried to contact others to set up meetings. He suggested several other places to visit and indicated he would attempt to discuss the program with people who I could not visit.

Dr. Quevedo felt that INE would not recommend anyone on the staff for post graduate training this year. Possibly he would have one candidate during the program. He felt that CEPE, the Ecquatorian State Petroleum Corporation and the Ministry of Natural Resources and Energy, The Department of Geology and Mines would be good places to discuss this program. He said that both these organizations already had training programs and, thus, would be better able to take advantage of this year's long-term fellowships. He will contact INELEC, the Ecquatorian Institute of Electrification (the national utility), the universities and the National Polytechnical Schools in the next few weeks to describe the program.

Dr. Quevedo was most interested in short-term training and work assignments. For INE, he requested courses in geothermal applications and equipment and in the area of fuel substitution and pricing. He was also interested in training in energy information handling (not balances) but data systems and in energy audit techniques. For the government, as a whole, he felt net energy analysis techniques, evaluation of oil and gas reserve potential and training in hydrocarbon exploration and development was the most critical areas for short courses.

In terms of technical assistance, he would hold discussions with others and see if over the next several months the government could come up with one or two proposed T A projects. He will speak further with Gary Vaughan about this.

He will also write a letter detailing his needs for short courses and will try to include in this letter a summary of the needs of others.

In general, he thought that Ecuador would try to take advantage of all three parts of the program, but for the long and short-term training, English would be a problem.

MEETING SUMMARY

28 January 1981

Eng. Edmundo Rojas
Chief, Training Department, CEPE

Eng. Rojas said that CEPE has over 3,000 total employees with about 750 professionals who have at least BS or BA degrees. CEPE has an extensive training program and each year at least 60 people are sent to other countries for advanced training, mostly medium and short courses in Latin America. Last year, 5 people received post graduate training. In 1981, they will nominate three people for Fulbright Scholarships. All will deal with production of petroleum. In 1982, they hope to have three more Fulbright Scholarships, this time in industrial engineering and refining. He said their biggest problem was English. They had a sponsored English language program for night study at the British Academy near their office for engineers and professionals who wanted to learn English, but it was difficult because not a lot of people spoke English. He was interested in the long-term training but didn't know if he could find candidates for 1981. He would try, however.

For short-term training, he had an extensive program of courses planned for 1981. Some had been scheduled and others were still in the planning stage. He would select out descriptions of the kind of training they wanted and mail these to Gary Vaughan. Possibly AID would offer one or more of the courses under this program. Again, however, English would be a problem. He was especially interested in a course in evaluation and selection of technologies for hydrocarbon processing and in economics of petroleum (exploration through marketing).

He will speak to Dr. Quevedo about CEPE's interest in technical assistance.

MEETING SUMMARY

28 January 1981

Eng. Celiano Almeida Dominguez
Director General of Geology & Mines

Geology and Mines has about 80 professionals approximately the same number as Hydrocarbons -- the other office in the Ministry of Energy and Natural Resources. Most of these 80 have BS degrees in geology and mining, but do not have MS degrees. They have an ongoing training program in Ecuador and they send a few candidates each year to other universities in Latin America.

Eng. Almeida was very enthusiastic about the long-term training program and felt that there were several professionals in his department who would be good candidates. These men and women would have had several years experience in the Ministry and would be involved in the country's energy program. He did not know if they could come up with candidates this year, but he would try. He would also speak with Dr. Quevedo about short courses and technical assistance. He felt that the experience in mining and coal exploration would be especially useful

CONVENTIONAL ENERGY TRAINING TRIP REPORT

BARBADOS AND DOMINICAN REPUBLIC

22 - 28 FEBRUARY 1981

During the month of February, 1981, a trip was planned to include Barbados, the Dominican Republic, Ghana and Liberia. The trip was started on February 22 and while in Barbados I was notified by AID Washington (DS/DY) that the portion of the trip to Africa was to be cancelled. The following trip report covers the visits to two countries.

BARBADOS

The trip to Barbados involved meetings with personnel from:

- AID's regional office manage AID's Caribbean Regional Energy Project
Alex Sundyman
T. Too-Chung
- Barbados Ministry of Trade
Ms. Pat Rudman, Training Coordinator
Mr. Cox
- Caribbean Development Bank
Dr. Jeffrey Dellimore, Manager of the Energy U
- Interamerican Development Bank
Mr. K. Jelley, Regional Sectional Specialist
- UNDP
Dr. Trevor Gordon-Summers
- University of the West Indies
Dr. P. St. Louis, Department of Biology
Mr. R.G. Ball, Department of Physics

During the meetings in Barbados, a number of planned and ongoing activities important to the Conventional Energy Training Project were identified. These included:

- The imminent creation of a National Petroleum Board to handle oil exploration, importation, refining and distribution.
- The world Bank is financing a major fossil fuel project in Barbados and is considering an expansion of the project. This expansion has a small training component.
- IDB is funding a seismic survey (under a loan of approximately \$28 million U.S.) and there are opportunities for cooperation.

- The National Science Technical Council has one person involved in helping the government plan a conventional energy strategy.
- Barbados Light and Power have a small training program and they are considering fuel switching (oil to coal).
- The UNDP is considering a training grant covering oil pricing and negotiations with suppliers.
- The UNDP people question the appropriateness of a stipend of \$400 - 500 per month for long term trainees. For long term training in the U.S. - G.W. University, V.N.D.P. gives \$800/month for living expenses.
- There are possibilities for geothermal development in the following countries and thus training could be useful:
 - St. Lucia
 - Monseratt
 - St. Vincent
 - Dominica
- Hydro development potential exists in:
 - Guyana
 - Belize
- Oil development potential exists in:
 - Barbados
 - Jamaica

Several people mentioned possible long term candidates, especially the Ministry of Trade and possibly Mr. Cox will be proposed. Short term training in conventional energy should include, basic principles of geothermal and small hydro development and small scale utility operation. There was also a request for courses on pricing and management of imported fuels.

DOMINICAN REPUBLIC

Meetings in the Dominican Republic were limited to discussions with AID mission personnel. A major energy policy development project (#517-0143) is underway and a substantial amount of work in the energy field has already been undertaken. Mr. Allen Merrill is serving as the mission energy officer and is handling the project.

The visit involved discussions with Mr. Merrill about the conventional energy training project and other related activities such as technical

assistance. Mr. Merrill was going to arrange a variety of meetings with appropriate people to describe the program and to encourage the government to nominate candidates. It was expected that English language capability would be a problem, but that there would be no shortage of otherwise qualified candidates.

Mr. Merrill had the following recommendations with respect to additional data and public information needs:

- 1) Questions about stipend amount should immediately be resolved (see Barbados report).
- 2) Additional information on typical university program contents should be developed and sent to missions.
- 3) More details on selection criteria, timing, number of openings available to each country, etc. should be sent to the missions.
- 4) The Spanish version of the announcement should be updated and a large number of copies should be sent to each mission.

CHAPTER TWO

TRIP REPORT: ASIAN COUNTRIES
OF BANGLADESH, BURMA, INDIA, THAILAND,
SRI LANKA, THE PHILIPPINES

CONVENTIONAL ENERGY TRAINING PROGRAM
PRIMARY CONTACT LIST -- ASIA

Bangladesh

USAID: Mr. Dean Alter -- Energy Officer
Mr. Michael Sullivan -- Training Officer
Mr. M. A. Ghafoor -- Training Officer

Bangladesh: Mr. Shahadatullah
Division Chief
Power & Natural Resources Division
Ministry of Planning
Block 13, Room 15
Sher-e-Bangla Nagar
Dacca

Burma

USAID: Mr. David Merrill -- Mission Head

Burma: U Thein Myint
Director General
Foreign Economic Relations Department
Ministry of Planning & Finance
Rangoon

India

USAID: Mr. Jeffrey Malick -- Program Officer
Mr. Sabharwal -- Training Officer

India: Mrs. Radha Singh
Deputy Secretary
Department of Economic Affairs
Ministry of Finance

Philippines

USAID: Mr. Lawrence Ervin -- Senior Energy Advisor
Mr. Sibley Kawi -- Training Officer

Philippines: Mr. Gary Makasiar
Chief, Planning Service
Ministry of Energy
Room 1111, PHOC Building
Makati Avenue
Makati, Metro Manila

Conventional Energy Training Program
Primary Contact List -- Asia
Page 2

Sri Lanka

USAID: Mr. Ralph Singleton -- Project Officer
Mr. Vitas Fernando
Mr. Sivarathinam -- Training Officer

Sri Lanka: Dr. Lanerolle
Secretary
Ministry of Power & Energy

Thailand

USAID: Mr. Robert Traister -- Director of
Human Resources & Training
Mr. Rod MacDonald

Thailand: Ms. Tipsoda
Chief, Training Section
Department of Technical & Economic Cooperation

GENERAL CONCLUSIONS AND IMPRESSIONS

1. All of the six countries visited were very positive about the program and seemed eager to participate. They generally all expressed the opinion that there was a clear need for such a training program.
2. All of the countries preferred short-term training (6-12 months) directed at providing skills for existing needs. Most of the technical offices could list the fields of desired training. The officials also preferred "hands-on" participatory experience as that provided by the internship program rather than pure academic work.
3. International travel expenses would be a major obstacle for both Burma and Bangladesh. (Bangladesh could finance air fare on National Bangladesh airlines to London.) India and the Philippines expressed some concern over air fare. Thailand and Sri Lanka did not express a major concern although they did believe that the process would be quicker if air fare were provided.
4. In each country there is an agency (generally in the Ministry of Finance) which deals with economic and technical assistance and is a critical link in the chain. In all of the countries, this agency's role is to coordinate and administer the applications and to act as a screen for candidates. With the exception of Thailand, I discussed the training program with both the technical and financial agencies in each country. In no country was there a major obstacle encountered with the finance ministry.
5. Greater documentation and a catalogue of programs, both academic and internship, was requested by all of the countries.
6. They wanted to know how many training positions were available to them annually so that they could do advance planning.
7. The issue of trainees failing to return home was not a major concern. Past experience has shown that the great majority of trainees return and fulfill their contractual obligation to the government. However, if they have received a degree then they often leave the country later for higher paying jobs in foreign countries.
8. It is expected that the great majority, if not all, applications will be from the public sector. All trainees will have jobs to return to. In general, the government continues to pay the trainee's salary during the training period.
9. With the exception of Thailand, the April 15 deadline did not pose a major problem. Most agencies gave this program a high priority so that the applications could be quickly moved through the system.

General Conclusions and Impressions

Page 2

10. In general, the USAID missions were well prepared for the visit and were very helpful in arranging meetings with the proper offices. It is anticipated that they can be counted on to administer the initial screening and to process the applications in a timely fashion.
11. Trainees from India, Sri Lanka and the Philippines are usually exempt from TOEFL requirements since the language of instruction is English. This issue should be settled for the Conventional Energy Training Program and the policy transmitted to the Missions.
12. The Philippines, Bangladesh and India expressed an interest in training in energy use in such areas as utility management, industrial energy conservation, pipeline planning, etc.

BURMA

General Country Data

Burma is the largest country on the Southeast Asian mainland with land area of 262,000 square miles, slightly smaller than Texas. It shares land borders with Thailand, Laos, China, India and Bangladesh. Burma's mountain ranges on the north, east and west, and its rivers and forests have contributed to its relative isolation from its neighbors. The Irrawaddy River is the country's "economic lifeline" and major transportation system connecting Rangoon with Mandalay in the central area. Located at about the same latitude as Mexico, Burma has a tropical monsoon climate.

Burma is ranked as the 12th poorest country in the world with a per capita income of about \$150. Only Nepal and Bangladesh rank poorer in Asia. Comparing Burma with its neighbors in Southeast Asia, Indonesia, Thailand and the Philippines, all have between double and triple Burma's per capita income.

Burma has a population of 34 million and a population density of 47 people per square kilometer. This is quite low compared to an average of 193 people per square kilometer for other low income countries in Asia and 376 people per square kilometer for middle income Asian countries.

Burma's predominantly rural population is concentrated in the lower valleys of the Irrawaddy, Chindwin and Sittang Rivers. About one-half the total arable land area is cultivated. About 12 percent of this land is irrigated. The economy is heavily dependent on rice as a source of foreign exchange earnings. Burma also produces cotton, timber and rubber, and has several important mineral resources including lead, zinc, tungsten and petroleum.

Energy Resources

While small by world standards, oil and gas production plays a significant role in Burma's economy. Since 1974, Burma has been a net exporter of petroleum, selling in 1979 1 million barrels of oil to Japan of a total 11 million barrel production. Production of natural gas amounted to about 13 billion cubic feet in 1979 used domestically for power and fertilizer. Myanma Oil Corporation (MOC), the national oil company, has significant experience with onshore exploration, drilling and production, and is actively exploring in various parts of the country. It has 18,000 employees including 80 geologists and 80 geophysicists. Offshore exploratory drilling had been undertaken by several foreign oil companies through 1976 along the western and southern coasts of Burma. Because of poor results, this exploration generally ceased by the end of that year. However, Total struck a potentially commercial natural gas deposit off the Arakan coast, but its offshore location will make exploitation presently impractical.

MOC recently purchased two deep drilling oil rigs in an effort to expand production. In addition the Japanese Government is providing loans to construct a new 24,000 barrel per day oil refinery to be completed by 1983. Upgrading of the transport system for crude petroleum and gas is underway to improve distribution and utilization.

Burma is also operating several coal mines at Kalewa and Nama. The quantity of production is small, approximately 25,000 tons annually. Planned increases in production could relieve the present need to import.

In summary, Burma looks to its oil and gas resources as areas for significant development. It is presently rather reluctant to rely on foreign participation for production. However, exploration and development on the part of the MOC is quite active in its attempt to identify new fields and increase production from existing ones.

The USAID Program

The United States and Burma maintain cordial relations. Up until the mid 1960's the United States provided substantial bilateral economic assistance to promote economics and industrial growth. A new AID program has been initiated within the past six months. The new program which in 1980 amounted to \$4 million is directed at improving health and for the agricultural sector. Among the first programs has been training in which a total of 16 people have been trained in the United States in agriculture, family health and energy since the new AID program began. Two trainees have participated in the A.D. Little course in petroleum. The principal Myanma Oil Corporation contact person U Tint Levin participated in the ADL Course.

David Merrill heads the 2-person AID mission and will be responsible for locally promoting and administering the Conventional Energy Training Program. He was instrumental in arranging meetings and participating in presentations. He anticipates significant growth in the AID presence in Burma.

Other Donor AID

External assistance to Burma amounts to about \$500 million per year. Japan is the largest donor contributing about \$175 million annually for industry, agriculture and energy development. The World Bank provides \$100 million generally for agriculture. Other major donors include the Asian Development Bank, Germany, France, the UNDP and Australia. China and Yugoslavia are providing long-term, low interest loans.

The Conventional Energy Training Program (CETP)

Representative of MOC, headed by U Tint Levin, expressed great interest in the CETP. A positive experience with the A. D. Little course may attribute to this interest for expanded participation in training. The MOC would prefer 6 month to 1 year programs, both academic and internship, for members of its staff in specific areas of immediate need. Two such areas include the latest techniques in reservoir analysis and oil production.

The MOC believed that it would submit a number of applications to the USAID mission well ahead of the April 15 deadline. Enclosed is a copy of the formal letter of introduction sent by the Mission to the Director-General, Foreign Economic Relations Department of the Ministry of Economic Planning and Finance. This ministry is the conduit for all external assistance programs including training. The Ministry of Mines will also be contacted for applicants in coal mining.

Other Comments

1. International travel costs will present a problem to the Government of Burma. Mr. Merrill discussed the possibility of providing these funds from the Mission's upcoming training budget (if and when approved). He also asked for AID/Washington to look into other financing mechanisms.
2. The MOC would like to send additional people to the A. D. Little course and would like to have it funded under the CETP.
3. The MOC preferred shorter, directed training opportunities, rather than MS degree programs, "so you don't have to wait too long." They have a clear idea of their present training needs and will submit applicants for training to satisfy these needs.



AGENCY FOR INTERNATIONAL DEVELOPMENT

OFFICE OF THE
REPRESENTATIVE TO BURMA

AMERICAN EMBASSY
RANGOON, BURMA

February 17, 1981

U Thein Myint
Director-General
Foreign Economic Relations Department
Ministry of Planning and Finance
Rangoon

Dear U Thein Myint:

A.I.D./Washington has recently begun a new four-year training program which is designed to assist countries improve their capabilities to explore for, develop and produce indigenous supplies of conventional energy resources. Such resources include oil, natural gas, coal, geothermal and hydro-power. "The Conventional Energy Training Program," which is described in Attachment 1, will provide up to 100 fellowships world-wide in the first year, 1981-82, to A.I.D.-assisted countries for training, primarily in science and engineering disciplines related to exploration, development and production of conventional fuels. The training may be at U.S. academic institutions, industries and/or research laboratories. Attachment 2 gives examples of fields which could be covered under this program.

The program will be managed by the Institute of International Education (IIE) and the American Society for Engineering Education (ASEE) under contract to AID. The IIE will have primary responsibility for screening applicants, identifying appropriate schools and academic or other programs and supporting the trainees during the training.

All program and maintenance costs in the United States will be covered by the AID/Washington grant. Attachment 3 shows the standard provisions and stipends funded under this program.

It is generally expected that international travel expenses be borne by the recipient Government. Any exceptions to this requirement would be rare and would be judged on the circumstances.

If the Government of the Socialist Republic of the Union of Burma would like to propose candidates for the 1981-1982 session which will begin in September 1981, please advise us by March 30, 1981. There is no specific allocation of positions for any country. However, since 20-25 countries are expected to participate during the first year of the program (100 fellowships), I would suggest that you nominate up to ¹⁰/₈ candidates (⁵/₄ primary and ⁵/₄ alternate) in the fields of your choice, indicating in each case whether you prefer an M.S. Degree Program or a non-Degree program. For non-Degree programs, please be very specific about proposed study needs.

The eligibility requirements for students are shown in Attachment 1. The forms to be completed and returned are shown in Attachment 4.

Thank you for this opportunity to be of assistance to Burma in the field of energy development.

Sincerely,

David N. Merrill
AID Representative

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INDIA

General Country Data

India's land area is 1.2 million square miles, approximately twice the size of Alaska. It has a population of 629 million people (1977 estimate) which results in a population density of 495 per square mile. Approximately 20 percent of the population live in urban areas. The per capita income is \$143 based on a total GNP of \$8.78 billion. Agriculture accounts for about three-fourths of the labor force.

Energy Resources

The most important source of commercial energy in India is coal. The quantity of coal resources available in the country is assessed on a continuous basis regionally by the Geological Survey of India through regional mapping and exploratory drilling. Further reserves are proven by detailed drilling done by the Mineral Exploration Corporation, the Central Mine Planning and Design Institute and by some state governments. Total resources were estimated in 1972 for coal available up to a depth of 600 meters and in seams of thickness of more than 1.2 meters. Total reserves are shown below.

Coal Resources (1972) (Million Tons)

Coal Type	Total Gross Reserves	Proved Reserves	Indicated Reserves	Inferred Reserves
Coking Coal	20,154	9,059	8,499	2,646
Non-Coking Coal	59,968	12,306	22,310	26,180
Lignite	2,025	1,795	202	28

Efforts are now underway to reappraise the resource base for deeper reserves and less thick seams reflecting the changed economics of energy.

The two principal oil exploring, drilling and producing organizations -- the Oil and Natural Gas Commission (ONGC) and Oil India Limited (OIL) -- carry out assessment of oil and gas reserves annually. Present estimates by an Indo-Soviet team of experts place the geological reserves of oil at 12,700 million tons of which 8,700 million tons (69 percent) are offshore and 4,000 million tons (31 percent) are onshore. The Bombay High offshore oil and gas fields are the most important indigenous source of liquid fuels.

During 1979-80 it accounted for 4.42 million tons of a total of 11.77 million tons produced. Additional oil was discovered in 1979 in four structures adjacent to the Bombay High fields. According to the Draft Five Year Plan 1978-83 in the next five years, exploration for oil will be intensified. Onshore, the exploration strategy of ONGC is to continue its effort in both its Eastern and Western regions. In the Eastern sector, i.e., Assam-Arakan basin, there is a good chance of finding substantial reserves from sizeable and discernable structures. The approach in offshore exploration is to carry out detailed seismic surveys and exploratory drilling of all the offshore regions. While most of the exploration will be done by the ONGC, some areas may be leased to other agencies. However, according to the Report of the Working Group on Energy Policy, the Government of India Planning Commission, 1979 "the experience of the last few years after the discovery of Bombay High fields indicates that the possibilities of major discoveries are somewhat remote."

The Institute of Petroleum Exploration has been set up at Dehradun to carry out basic and applied research to support the exploration program and in understanding the environment of the reservoirs. The Institute has been carrying out studies relating to sedimentary processes and delta formation, oil generation, migration and accumulation, production and reservoir problems. It has also been working on indigenous development of equipment required for oil exploration and development of sophisticated techniques for resolving geological, geophysical, and reservoir problems.

The first systematic survey of India's hydro-electric potential was undertaken in 1953-60 by the Central Water and Power Commission. The scope of the survey covered a systematic assessment of the economically feasible hydro-electric potential of the country, based on the data of topography, development techniques and hydrology. Potential sites were identified with reference to large scale topographical maps based on existing hydrological data. On the basis of technical and economic feasibility studies, 260 possible projects with a total annual energy generating capacity of 216 thousand watt hours were identified. A re-assessment of the data and potential is now underway in its initial stages. About 10 percent of the total available potential has been developed.

USAID

The AID staff is medium sized with 15 Americans and 45 Indians. Mr. Jeff Malick will coordinate this project in his new role which assumes responsibility for energy projects. Both Peter Bloom and John Westley have an interest in this project. Mr. Sabharwal is the AID training officer who will be responsible for the assisting with applications, visas, etc.

Organizations

Mr. Sabharwal was with AID prior to its closing and is thoroughly familiar with procedures. Since the January 31 reopening, a number of training activities have been undertaken including most recently a centrally funded water management and irrigation project at Kansas State University.

Mr. Subharwal made the following points:

1. The international travel may create a stumbling block to India's participation. This has been the problem with India's attendance at the Stony Brook program. The Mission has a memorandum (attached) to AID/Washington which requests a general waiver of the international travel requirement. In general, India finances the participant's salary plus internal travel costs.

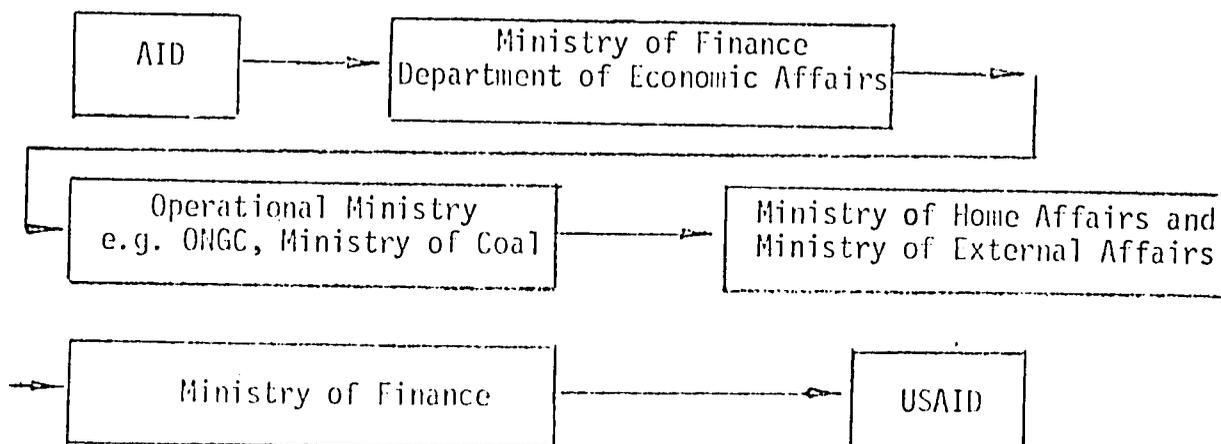
2. India has excellent undergraduate and graduate level training in many facets of fossil fuel development. These include the Neyveli Lignite Corporation in Madras which provides training in open pit mining, mineral exploration and ground water exploration; the Geology Consurvey of India which provides on-the-job training to M.S. and degree holders; Indian Bureau of Mines and a number of other institutions.

3. The TOEFL requirement is generally waived for Indian officials by the Office of International Training since English is the official language of instruction in the schools.

4. India has a very low rate of non-returnees after training. Of 1,900 trainees only 7 failed to return. They must submit a bond to work for the government for 3 to 5 years.

5. The processing time for applications can range between 30 and 90 days depending upon the interest of the sponsoring institution.

6. The sequence of approvals for training candidates is shown below:



While the process appears cumbersome, projects of significance to the government can be moved quickly.

Department of Economic Affairs

The primary meeting was arranged by Mrs. Rodha Singh, the Deputy Secretary, Department of Economic Affairs, within the Ministry of Finance. She will serve as principal contact person for this program. Represented was the Oil and Natural Gas Corporation (ONGC) by the managing director Mr. K. V. Balakrishna (311422), Mr. G. D. Sootha of the Department of Science and Technology (666074) and Mr. Ajaya Shanker of the Department of Power (389637). The following key points were made:

1. All agreed that they prefer practical training with a mix of academic and hands-on experience rather than a strict M.S. academic program. They felt that local institutions could train sufficiently in the academic areas and they needed practical experience and state-of-the-art knowledge.
2. They balked at the international travel costs. However, ONGC said that it could bear the cost. ONGC has 5,000 petroleum engineers and technicians.
3. ONGC listed a number of areas in which it needed training assistance and in which it would be submitting training nominees. They include: mud engineering, production of heavy oil, secondary recovery techniques, deep well drilling.
4. They also requested experts in specialty areas with state-of-the-art knowledge to be sent to India to instruct officials in a short lecture series and associated demonstrations.
5. They indicated that they were very interested in the program and would submit a number of primary and alternate candidates. They believed that the applications would be to the AID Mission by March 15 for its review and submission to ITE.

Department of Coal

The Department of Coal was represented by Mr. S. Chattopodhya, Officer on Special Duty Training and General Planning Sector Shasti Bhau Gate Number 3.

The Department of Coal has an approved list of desired areas of training. For each area it has also identified a country which it considers to have the most advanced technology or experience to provide the training. The Department is eager for training in practical areas targeted at specific jobs. Presently India graduates more mining engineers annually than any other country. Therefore, the United States-based training would have to be highly specific and at the leading edge of the field. Presently, there are eight universities which have programs in mining engineering and twenty universities in applied geology, at the graduate level. In addition there are eight mining

schools with 200 graduates per year. Students are also presently trained in the United Kingdom, Poland, Russia and specific areas.

The areas in which the Ministry desires United States-based training are the following:

1. Large open cost (pit) design with state-of-the-art conveyor systems. Training would include design and operation of such systems and practical experience.
2. Geophysical exploration of coal deposits - particularly in software design for seismic studies. They require field experience such as that provided by the United States Bureau of Mines rather than academic work.
3. Coal beneficiation of high ash content coal.
4. Shaft drilling and raise boxing.
5. Rapid analysis of coal samples by modern electronic methods.
6. Design of high speed load-out systems, e.g., unit trains.
7. Slurry Pipeline Transport.
8. Hydrogenation of coal and solvent extraction.

Comments

1. For India programs of no more than one year duration designed to meet very specific needs are most urgently sought. General programs leading to academic degrees will not be acceptable.

2. The programs will require high concentration on internships with a mix of academic/internship experience.

3. Because of the high level of specificity of training needs, it may be difficult to identify existing programs. Furthermore, the areas of study may prove to involve sensitive or confidential knowledge for certain companies.

4. Indian Ministries have a very clear idea of the kinds and length of training desired in each field. They also have opportunities to study in several countries including Poland, Russia, Japan, etc. They would like to be able to plan ahead. This would require a specific annual allocation in terms of slots or man-months of training.

Mr. William T. White, Jr.
Director, OET/USE, AID/Washington

August 27, 1980

John H. Cunniff
Chief, Program Office, USAID/New Delhi

Cost of Participant International Travel

REF : (A) AIDIG A-99, 4/18/79 (B) New Delhi 90823

On August 26, 1980, USAID/New Delhi Mission-Director approved full waiver of participant travel costs for Mission-funded activities, per Handbook 10, Chapter 17 A 1(a). Attached is a copy of the memorandum dated August 22, 1980 giving justification based on difficulties and delays encountered in past in arranging GOI funding of participant international travel and anticipation that similar problems would be encountered in future.

Attachments: n/s

cc: Dr. David Carns, Officer Incharge (India Desk), ASIA/BI,
AID/Washington - with a copy of memo dated August 22, 1980

Clearance: PRO - JWestley

CO - JWhite

PRO/T:IRSabharwal:glv 8.27.1980

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8/27/80

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UNITED STATES GOVERNMENT

Memorandum

TO : Mrs. Priscilla M. Boughton - Director

DATE: August 22, 1980

FROM : John N. Ganning - PRO

SUBJECT: Waiver of GOI Financing of Participant International Travel

Handbook 10, Chapter 17 specifies that the cost of international travel by participants shall be paid by the cooperating government unless waivers have been authorized. This memorandum recommends that you authorize a waiver of this requirement for Mission-funded programs.

Discussion

It has been AID policy for the past two decades to require host country financing of participant international travel as an element of project cost sharing. Handbook 10, Chapter 17 provides for waivers by the Mission Director (for Mission-funded programs) or by the Regional Assistant Administrator together with the Mission Director (for centrally-funded programs).

In the case of India, participant international travel was generally funded by U.S.-owned Section 402 rupees (FY 1959 - FY 1965) or by a Trust Fund established with PL-480 Title I "country use" rupees (FY 1966 - FY 1972). There were attempts by the GOI and USAID in the mid-1960s to require the sponsoring GOI agency to finance participant international travel, but this led to delays and often to cancellation of participant training programs. For further background information, see the attached memorandum of July 23, 1980.

Since several new projects include participant training as a component, USAID should decide now on an appropriate policy regarding funding of international travel. On the one hand, there are no clear advantages to singling out international travel as an element of the GOI's contribution to total project costs. Although sanctioned by AID tradition, this requirement is essentially arbitrary. On the other hand, the history of the program indicates that there are major disadvantages to GOI financing of international travel. Our recent experience with the participants who attended the World Bio-Energy Congress confirmed that the factors which led to delays and cancellations in GOI-funded participant travel in the past are still operative.



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

Taking these considerations into account, there appear to be good grounds for waiving the requirement that the GOI finance participant international travel. Participant international travel should be included as an eligible project cost item for AID financing.

Chapter 17B 1(a) of Handbook 10 confers authority on the Mission Director to authorize "full" or "partial" waiver, based on an appropriate justification in respect thereof. A full waiver, in terms of this regulation includes the cost of travel between the participant's home city and the points of departure and return in the participant's home country.

USAID's policy has been and will continue to be to expect the Indian sponsoring agency to bear the cost of travel within India. A "full" waiver will permit USAID to pay full costs in those few cases where we believe this to be justified, e.g. in the case of a PVO.

Recommendation

1. That, you, in terms of the authority vested in you, pursuant to AID Handbook 10, Chapter 17 B 1 (a), waive the requirement that the cooperating government pay for the costs of international travel including incidental costs enroute, as well as the cost of travel between the participant's home city and the points of departure and return in the participant's home country.

2. After this waiver has been approved by you, Mission will, as required in the above provisions of the handbook, notify SER/IT of this waiver.

(Approved/Disapproved

J. M. Boughton
Priscilla M. Boughton

Date: 8/16/80

Clearance: CO/MGT:LWight (draft)
CD:PjBloom (draft)
LEG:BM Rao (draft)

Attachment: Bablani/Sabharwal memorandum
of July 23, 1980

THAILAND

General Country Data

Thailand lies in the central part of Southeast Asia. It is a tropical country whose economy is predominantly based on agriculture which provides 70 percent of exports and employs three fourths of the labor force. The country has an area of 200,000 square miles and population of 44 million (1977). Per capita income is estimated to be \$426.

Energy Resources

Energy imports are Thailand's most pressing economic weakness, last year comprising 29 percent of all imports or the equivalent of 42 percent of total exports. High oil prices pushed the 1980 energy bill to over \$2.7 billion.

Thailand will land its own natural gas later this year. A 595 kilometer pipeline will bring the gas from wells in the Gulf of Thailand to power generating stations in the Bangkok region. The first field should produce about 200 million cubic feet per day, equivalent to about 10 percent of Thailand's oil imports. The government plans to increase production to more than 1 billion cubic feet by 1990.

While no one large gas field has been discovered in the Gulf, a number of small gas fields with a combined proven reserve of approximately 4 trillion cubic feet has been identified. There has been little success with oil exploration thus far. Both Esso and Shell are currently exploring in north-central and north-east Thailand.

Rising oil prices make more economic the exploitation of the country's oil shale deposits. Lignite reserves are substantial as well and production more than doubled between 1975 and 1979. New lignite mines, financed with a World Bank loan, are to be opened in 1983. In addition, hydroelectric facilities are being developed.

USAID Energy and Training Programs in Thailand

USAID has a very active energy program in Thailand. The Renewable Nonconventional Energy Project (#493-0304) is designed to assist the government to develop the institutional capacity to perform and accomplish energy policy planning, and in introducing and testing renewable energy technologies as well as in developing and testing techniques for disseminating such technologies. This \$5 million project also provides assistance in planning for conventional energy resources including petroleum, gas, lignite and hydroelectric. The Conventional Energy Training Program complements this project since it provides additional assistance in these areas.

AID provides training to about 100 Thailand trainees annually. The most important fields are agriculture, health, and economics. Courses are generally relatively short although there are a number of M.S. and Ph.D. level trainees now studying in the United States. There were two participants this year in the Energy Management Training Program and two or three more have submitted applications for the next session.

Organizations

The Department for Technical and Economic Cooperation (DTEC) is the agency officially designated by the Government to receive foreign grant assistance and to make arrangements for participant training. For international travel of participants, DTEC will provide Government funds from a special account available for this purpose. The liaison for this training project is Ms. Tipsoda, Chief of the Training Section. She reports to the Committee for scholarship allocation which is comprised of members from the Manpower Planning Division of the National Economic and Social Development Board (NESDB), the Civil Service Commission, the Bureau of the Budget and Chaired by the Director General of DTEC, Mr. Apilas Osatanonda. The Committee sends the information to the functional agencies (e.g., the Ministry of Science, Technology and Energy (MSTC) and the National Energy Administration (NEA). Selection of participants and responsibility for processing applicants lies with DTEC.

Mr. Robert M. Traister, Director of Human Resources and Training, USAID, will be responsible for assisting DTEC with processing applicants. Mr. Rod MacDonald, Mission Engineer, will be responsible for liaison with the technical offices and reviewing trainee candidates.

Comments

1. DTEC would prefer non-degree training with relatively short training periods (8 months - 1 year).

2. Ms. Tipsoda was concerned about DTEC's ability to process applicants quickly enough to meet the April 15 deadline.

3. International travel expenses would be provided for either by the benefiting agency or a central fund available for that purpose. The agencies would finance the trainee's salary during the training period.

4. DTEC requests a written explanation for those candidates not accepted.

BANGLADESH

General Country Data

Bangladesh has more than 80 million people living on 144,000 square kilometers, the highest population density in any agrarian nation. The 1977 per capita income was \$90. The GDP is in the neighborhood of \$5 billion. Industry presently accounts for 10 percent of the GDP and most activities are related to the processing and manufacture of jute products.

Conventional Energy Background Information

Natural gas is the most important indigenous energy resource in Bangladesh. Annual production for power and fertilizer exceeds 1 billion cubic meters. Four primary gas fields are producing with efforts to increase production combined with improved pipeline delivery systems underway.

The Government owned, Petrobangla Oil Company, in conjunction with foreign oil companies participation, has been actively exploring for oil both onshore and offshore. In the last two years the Russians, Romanians and Germans have been providing assistance to Petrobangla with exploration including seismic work and exploratory drilling. Recently BP drilled one well. Currently TOTAL, Shell and BP are discussing production sharing arrangements with the Government.

Some high grade coal has been discovered. However, the coal is too deep to be mined economically at present. The Belgians are currently doing a feasibility study of both deep mining and in-situ gasification.

The German A.D organization (GTZ) is providing to Bangladesh DM 100 Million for oil exploration. While the Germans are supervising the effort in conjunction with Petrobangla they have contracted with a United States firm, Sunmark, a subsidiary of Sun Oil Company, to drill wells on a consulting basis. Five wells are to be drilled under this program in the north east corner of the country, near the Indian border and within 8 miles of the Indian oil fields in Assam. The first well, to be drilled to a depth of 16,500 feet, has reach about 12,500 feet and will be completed in 2 months. Evidence of gas and some oil shows have recently been reported.

Sunmark and the Germans are working closely with Petrobangla and have strong views on where to target technical and training assistance. Extensive discussions with the Sunmark Manager, Mr. Grady Bell, and the Program Geologist, Mr. Hans Schneider, indicate that the main drawback to Petrobangla is the lack of management skills at the mid-management level. They suggest that instructors and management consultants be brought to Bangladesh to assist with management instruction and to help reorganize the management structure of

Petrobangla. They see as necessary thorough job descriptions with responsibilities and authority well defined. In addition they specified the need for 3 long-term experts for petroleum exploration who would be assigned to Petrobangla for a minimum of 2 years each. The fields of assistance include:

1. Drilling experience
2. Mud engineer (chemist)
3. Log analyst - petroleum physicist

These people would serve the needs of Petrobangla's independent drilling effort which has not been very effective in its operations.

Government Organizations

External Resources Division of the Ministry of Finance deals with all donors and foreign assistance including foreign training. Although they are involved in the process of approving trainees, the responsibility for selection will be left to the functional ministry. Approval within this division is generally perfunctory for this kind of program.

Ministry of Planning - responsible for overall national planning and resource management. Within this ministry is the Power and Natural Resources Division, headed by Dr. Shahadatullah, Division Chief. He is the contact point for this project. His address follows:

Dr. Shahadatullah
Division Chief
Power and Natural Resources Division
Ministry of Planning
Block 13, Room 15
Sher-e-Bangla Nagar
Dacca

In addition, Mr. S. M. al-Hossainy, Member of the Planning Commission, which is a governing body of the Ministry, has taken great interest in this project. The Planning Commission is comprised of 4 members and reports directly to the Minister who is politically appointed or elected. The Planning Commission has an effect on developing ministry policy and in turn government planning policy.

Petrobangla - Within the Ministry of Petroleum Resources is the Government Petroleum Agency, Petrobangla. It is responsible for exploration, development and refining of oil and gas with a total staff of about 8,000.

USAID/Bangladesh - Training Programs

Bangladesh participates in a number of training programs presently. They include:

1. Population Program - 30 local level planners are trained in Indonesia in a 3 week program, every other month. In addition, a new program is planned for 20 people at United States institutions. (Boston College, University of Chicago, Louisiana State, Michigan) for M.S. degrees. An unresolved issue is whether the government would be willing to release people for 2 years.
2. Technical Resource Project -
 - Agriculture in rural development - short-term courses in the Philippines for project development and design. About 20 people will be trained.
 - A few M.S. degrees scheduled in the United States and the Philippines in Development Economics and Rural Development Planning (4 students).
3. Agricultural Research Project to train 7 or 8 Ph.D. students.
4. Fertilizer project - short USDA courses in fertilizer plant operation and fertilizer use.

Mr. Dean Alter, the Energy Advisor, arranged the meetings and will continue to assist with the program and screen applicants. Mr. Michael Sullivan, Training Officer, will assist with the administration aspects for applicants.

Conventional Energy Training Needs

Training in conventional energy according to Petrobangla's Director of Exploration and Production, Mr. M. A. Maroof Khan, would be most useful in the following ways:

1. Stop gap training for immediate needs and "trouble spots" in the first year with heavy emphasis on field participation. Duration of training no more than one year.
2. Long-term, ongoing courses in such areas as:
 - geophysics: seismic interpretation,
 - reservoir engineering - 2 specialists
 1. log analyst
 2. petroleum engineer
 - data processing
 - quality control

3. Would like to know precisely how many trainees can annually be accommodated from Bangladesh in each field so that they can plan for training in advance.
4. Wants more information about the nature of courses which are available.

Other Training Activities

The UNDP is in the process of starting a Petroleum Institute in Bangladesh in response to a request from the government several years ago. According to Mr. Jehan Raheem, UNDP Resident Representative the institute was originally conceived to perform five functions: coordinate policy, research, legislative, training, inter-agency coordination.

Norwegian specialists have sent a mission to plan the structure of such an institute. Their recommendation was to concentrate solely on training for the next several years. The kind of training recommended would be of three kinds:

1. In-country training in oil exploration and development for first line supervisors.
2. Mid to senior level training:
 - quick 3 to 4 day lectures and seminars on the latest techniques in the art in various areas for senior level people.
 - management training for mid-management personnel on a longer term basis.
3. Overseas training - in a variety of technical, economics and management areas.

This project is now undergoing review for approval by the GB Congress. The UNDP has currently approved \$2 million over 3 years for the institute. It is hoped that training will begin in June or July.

While the Institute sounds very promising, in practice it has been disappointing to the government. According to Mr. Shahadatullah, Division Chief of the Power and Natural Resources Division, Ministry of Planning, "The government is somewhat disillusioned about the institute. We are not clear about its goals or the UNDP intent." It is not yet clear where the institute would fit within the structure of the Ministry of Petroleum and Mineral Resources nor its relationship to Petrobangla. Presently, it appears that the institute will not have a serious impact for several years on the training needs of Bangladesh. In the meantime, the USAID program can be effectively used to bridge the gap until the institute is smoothly and effectively functioning.

Discussions with Mr. S. M. al-Hossainy, a member of the Planning Commission, the agency responsible for national development planning revealed a number of areas of concern in energy. While these are outside the scope of this project, they are worth mentioning as potential areas for assistance:

1. Energy conservation and management - technical assistance and training for utilities and industry.
2. Information dissemination including seminars and continuing education in the latest in the state-of-the-art in various fields and a library of books and periodicals.
3. Research in energy policy in support of the newly created Energy Cell within the Planning Commission.

Comments

1. Bangladesh has a bilateral agreement with USAID with respect to international travel costs, by which Bangladesh pays the cost on Bangladesh Bishan Airlines to London, the closest point to the United States. AID pays the cost of the flight from London to the training site.

2. The Planning Commission is interested in training in the utilization of hydrocarbons in such fields as gas transmission management and utility management.

SRI LANKA

General Country Data

The Democratic Socialist Republic of Sri Lanka lies 18 miles southeast of India, separated by the Palk Strait. It has an area of 65,610 Kilometers square (25,332 square miles) about the size of West Virginia. The south-central part of the country is hilly and mountainous, ranging from 914 to 2,133 meters above sea level in the Central and Uva Provinces where Sri Lanka's best quality tea is produced. Sri Lanka's population is about 14.5 million, with Colombo, the capital, having almost 1 million inhabitants. The present rate of population increase is about 1.9 percent including an adjustment for emigration. The country enjoys an 80 percent literacy rate.

In 1978 the GNP amounted to \$2.3 billion. The per capita income is less than \$200. The annual economic growth rate has fluctuated depending on annual rainfall but the median growth is about 6 percent. The economy is highly agricultural (87 percent GNP) dominated by tea, coconuts, rubber, rice and spices; the balance consists of industry in consumer goods, textiles, chemicals, milling and paper products. Sri Lanka's primary trading partners are the United Kingdom, United States, Japan, India and Communist countries.

Fossil and Hydro Energy Resources

Sri Lanka presently has no known petroleum, gas or coal resources. The World Bank has placed it on the low end of potential oil prospects. However, recent exploration activities seem to hold some promise. There are sedimentary basins in the North West of the country in the area of Palk Strait. Cities Service has recently signed a production sharing agreement with the Petroleum Corporation to do seismic studies and to drill at least one well. The seismic surveys have been complete and interpretation is now underway. Sri Lanka's history of exploration has not been very active, although scattered seismic studies, and gravity and well drilling have been undertaken by the French and Russians. Furthermore, neither gas nor coal resources has been discovered.

The most important indigenous energy resource is hydro power. Present capacity is about 330 MW from hydro and 70 MW thermal. The accelerated Mahaweli River and its tributaries. The water catchment basin encompasses about 1/3 of the country's total area. The first section, the Victoria Scheme, is expected to go on-line in 1984 with a capacity of 210 MW, providing a maximum of 686 Gwh per year. Other dams will be completed sequentially to provide 700-900 MW capacity.

In the short term the Ministry of Power and Energy is faced with a very rapid growth in electricity growth rate averaging 11 1/2 percent per annum. This is expected to result in capacity shortage and chronic "blackouts" this year. It plans to add a 120 MW gas turbine by 1982. The rapid growth rate combined with ambitious grid-connected rural electrification plans is expected to exceed the Mahaweli capacity early in the 1990's. The MPE is beginning to plan to exploit the countries balance of hydro resources which is estimated to amount to 1,000 MW. Interest in small and microhydro is not keen at the MPE. The Mahaweli project is not within the MPE but is managed by a separate ministerial level Accelerated Mahaweli Board.

Household consumption accounts for 70 percent of total energy consumption; of this, 85-90 percent is from firewood. Between 1956 to 1979 forest cover had declined from 44 percent to 20 percent of the total land. The Mahaweli project will further reduce this by 20%. Only 8 percent of the nation's 25,000 villages are now electrified.

Oil imports have increased from 10 percent (1973) to 19% (1978) of total export earnings. They now run close to 30 percent.

Government Organization

A number of government organizations are involved in one way or another with this project:

- Ministry of Finance and Planning - within this ministry is the Department of External Resources which is responsible for approving all foreign training programs. The AID mission has an agreement with them that this project would be handled by the appropriate functional agency for their "rubber stamp" approval.
- Ministry of Power and Energy - this is the key organization which will coordinate the GSI side of the program. Mr. Lanerolle, the Secretary Minister, will be the main contact person. Operational responsibility will be handled by Mr. B. P. Sepalage, Engineer in charge of Energy Division, and a graduate of the Stony Brook Energy Management Training Program. The MPE is the agency in charge of the Ceylon Electricity Board and is very interested in training Civil and Hydrological Engineers. (See later section.)
- Ministry of Industry and Scientific Research - Ceylon Petroleum Corporation - responsible for the import, refining and distribution of petroleum and products. Within this is the Petroleum Exploration Division headed by Mr. Bulaphsinghala. His staff includes just one geologist, clerks, and an accountant. He draws on the staff of the Geological Service also within MI&SR when required. Four geologists are now working with Cities Service in the exploration effort. Since work is on a production sharing basis with minimal local participation, the agency will remain small.

- Geological Survey Department - headed by Mr. D.J.A.C. Hapuarachchi, is responsible for all geological survey activity outside the sphere of petroleum and gas. However, it provides 4-5 geologists to Petroleum Exploration Division. It has a total of 20 professionals. They have been exploring for uranium.
- University of Peridenya - has a School of Geology with studies only to the Baccalaureate Degree.
- USAID Mission - Mission Head Sarah Littlefield; divided into the following offices:

rural development	-	4 people
capital development	-	3 people
program office	-	3 people
human resource	-	1 person
Mahaweli	-	

Mr. Ralph Singleton is the primary contact on this project since his office includes energy projects. The operational officer is Mr. Vitas Fernando for this project. In addition, a by participant is Mr. K. Sivarathinam who is the training officer. Mr. Fernando is responsible for contact with the energy agencies (because of his keen interest in energy) and Mr. Sivarathinam for the administration of the project.

- National Gas Company - headed by Mr. Kumai Soysa with 200 employees. Responsible for the sales and distribution of gas to households and industry. This is a quasi-government agency. They receive LPG, butane from the Ceylon Petroleum Corporation and either bottle it or in Colombo deliver by pipeline to households and industry. About 200 miles of pipeline now exist and there are plans to increase the length of the system. This agency is very interested in training for improving their procedures and modernizing processes. (See later section.)

AID/Country Experience in Training and Energy

Attached are lists of USAID and Sri Lanka training programs and on-going AID/GSI projects. No major problems were encountered.

Educational Institutions

The primary educational institution in Sri Lanka related to this program is the Engineering College at the University at Peridenya. Disciplines include Civil, Mechanical and Electrical Engineering. In addition there is a program in Geology. The highest degree is B.S.

Sources of Candidates

Two primary sources of candidates were identified. They are:

Ministry of Power and Energy - The Mahaweli Project has absorbed the most qualified Civil and Hydrological engineers and geologists and will keep them busy for years. The MP&E needs additional trained engineers in large scale hydro to assist with the balance of hydro resources development plans. They are eager to have several people so trained and can assure jobs. They are also interested in internship with Hydro Power Authorities. Since Mr. Lanerolle is the key contact person it can be expected that they will produce a number of applicants.

Natural Gas Company - Mr. Soysa sees a great need to improve and modernize the NGL which is experiencing a period of growth as gas has recently become competitive with kerosene (subsidies have been dropped as national policy) and firewood is rapidly increasing in price. He is prepared to send several key engineers for medium length training (one year), and is especially interested in internships.

Comments

1. The Petroleum Exploration Divisions will have 4-5 geologists trained by Cities Service as part of the exploration agreement. Until oil is discovered they believe additional training is premature. They foresee a need in two years, if oil is discovered.

2. None of the agencies foresee any problem with providing the air fare for trainees.

3. Academic courses combined with on-the-job training for 12 - 18 months most appealing to Natural Gas Company and Ministry of Power & Energy.

PHILIPPINES

General Country Data

The Republic of the Philippines has a land area of 115,707 square miles, approximately the size of Arizona. The population was 47 million in the late 1970s. This results in a population density of about 360 per square mile. Per capita income is \$370 per annum based on a \$15.4 billion GNP.

Energy Resources

The Philippines is pursuing an active oil exploration and development program, relying heavily on outside oil company participation. Exploration and production are generally under production sharing agreements with separate geophysical and seismic contracts. The National Oil Company is the Philippines National Oil Corporation (PNOC). Both Cities Service and AMOCO are active in the Philippines. Cities Service is producing about 20,000 barrels per day in the MDO I oil field but recent problems with water infiltration may result in a decline in production in this field.

During 1979 32 exploratory wells were drilled with 2 discoveries and five or six oil and gas shows. PNOC recently discovered commercially exploitable deposits of gas in the northern part of the country. Total oil production is expected to increase to 60,000 barrels per day by 1982.

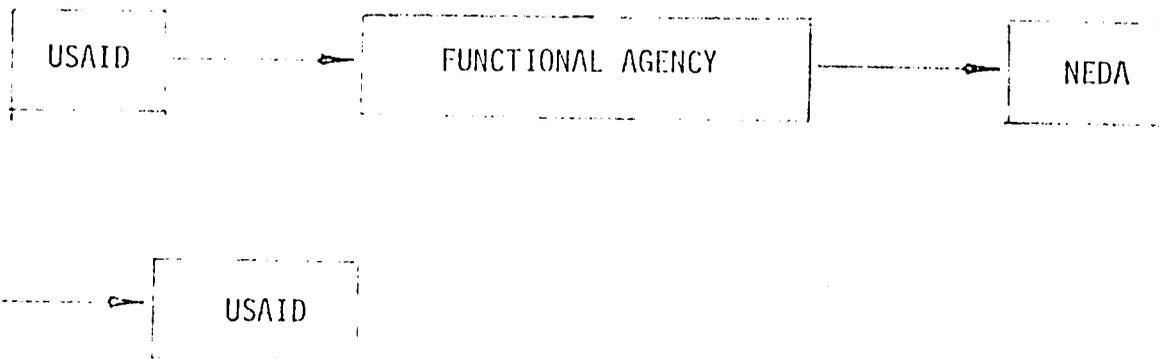
The Philippines has reasonably sized deposits of high grade coal in the Naga Uling - Cebu section of the country. Known reserves are estimated at 3.6 million tons. In 1976 annual production was about 111,000 tons. Very optimistic plans and programs are underway to increase production by eight fold by 1985 in harmony with efforts to shift power production from diesel to coal fired thermal. This will require heavy investment in infrastructure development in delivery, storage, beneficiation, ash removal and environmental technology. A number of coal fired thermal plants is planned to be commissioned between now and 1985. A goal is to replace the 20,000 tons of coal annually imported.

About 1/3 of the Philippines' electricity is supplied by hydropower. New hydro construction is presently underway and will add 1888 MW by 1985. In addition, geothermal power, while a small fraction of the countries 3,200 MW capacity represents a growing area of interest for national energy planners. The Philippines has harnessed more geothermal resources than any other country except the United States. They are presently receiving technical assistance from New Zealand.

Finally, the Philippines has a contract for a 620 MW nuclear power plant to be commissioned in 1985 for the Manila area.

Organizations

The National Economic Development Authority (NEDA) is responsible for coordinating the nomination of trainees and screening government officials nominated for training. It also provides the funds for international travel. For centrally funded training the process is as shown below:



If international travel expenses are not required (e.g. AID or the functional agency finances them) then NEDA need not be involved. The key liaison for this project is the Ministry of Energy which includes within its organizational structure the PNOC and the National Power Corporation. Gary Makasiar, Director of Planning, with the MOE is the AID contact point for this training program. However, the Minister will make the final decision on the selection of all applicants. There are approximately 200 people on the staff of the Ministry of Energy.

USAID Training in the Philippines

(Mr. Sibley Kawi - AID Training Officer)

Since 1952 approximately 5,000 Philippines participants have been trained in the United States and Third World countries in both long and short term programs sponsored by AID. In the 1950s and 1960s training emphasis was on public administration. Recently the emphasis has been on such areas as population, health, agriculture and rural electrification. Present programs train 50 - 100 participants annually.

The AID Philippines program has three kinds of training programs:

1. Bilateral academic programs to United States and Third World Countries
The bulk of training is in the United States, although short training courses in such fields as population are held in Indonesia.

2. Combined academic and participatory (observation) training in very specific areas. Such areas include agriculture, nutrition, population and rural electrification. These programs are arranged directly with United States training institutions and government agencies.

3. In-country training where training is built into larger programs. This includes seminars and workshops conducted by technical experts on short term assignments.

Ten to fifteen government and private institutions train students in mining engineering to the B.S. level. The College of Engineering, University of the Philippines has a Department of Mining Engineering. However, no Ph.D. degrees are awarded in any engineering discipline.

Candidates

A general meeting was convened by Mr. Makasiar to describe the Conventional Energy Training Program to representatives of the key government ministries. Representatives from the following agencies were present:

Ministry of Energy - Planning Services
Bureau of Energy Development
Philippines National Oil Company
Bureau of Energy Utilization

The Ministry of Energy's Organizational Chart is shown in the attachment. The significant point is that the major resource development and power organizations are within this ministry. Candidates can be expected from all of the pertinent areas: oil, gas, coal, hydro and geothermal. Attachment 2 contains lists of desired training areas which were assembled by the Ministry of Energy from its department. The MOE will screen the applications before they submit them to USAID.

CHAPTER THREE

TRIP REPORT: NEAR EAST AND AFRICAN COUNTRIES
OF BOTSWANA, KENYA, MALI, NIGER,
TANZANIA, EGYPT

TRIP REPORT
EGYPT, TANZANIA, KENYA, BOTSWANA, NIGER, AND MALI

CONCLUSIONS

General Program Comments

1. There was great interest in the program and a strong desire to participate expressed by all the governments.
2. Each of the countries believed that the United States' educational and commercial opportunities in conventional energy technology were superior and felt that the U.S. was the best place for masters level training in conventional energy technology.
3. The missions were pleased with this opportunity to meet energy ministers (many of them newly appointed), and the embassies were interested in encouraging the training program as a preliminary introduction to American business contacts for the participants.
4. The necessity for management training at the masters level including financial and legal courses was considered to be as important or more important than technical training.

Anticipated Results

1. Each of the countries will make a serious effort to identify candidates for this year's program. Approximately 20-25 applications should be expected from Egypt, Tanzania and Kenya, combined; and less than five from Botswana, Niger and Mali, combined. Botswana has a small number of ministry personnel and Niger and Mali will require additional English training.
2. All or most of the candidates will be from public and parastatal groups as there is little private enterprise in the energy field.
3. The program's success in 1981 will require additional communications with DS/EY to provide answers for specific issues which could slow down applications.

Further Issues

1. Other program interests in conventional energy training were identified as follows:
 - a. Lower level institutional courses for older members of ministries.
 - b. Lower level technical courses for younger members of ministries.

Further Issues - Continued

2. The issue of families and possible travel arrangements should be addressed, as many potential candidates are older and prefer to bring families. Several countries have potential funding for spouses under specified conditions.
3. A compromise which includes intensive English locally at the start combined with second semester entrance into training program could be considered for French speaking countries.

RECOMMENDATIONS

1. Send cables immediately to mission representatives with additional information on:
 - IIE individual who will serve as contact man in New York.
 - Visa and travel requirements.
 - TOEFL level requirements and other previous academic levels as limiting factors for selection.
 - Opportunities for organization and payment of advance English language programs.
 - Specific university programs with courses and degrees offered.
 - Limit on number of scholarships by country or region.
 - Mission role in selection of candidates.
2. Provide additional information on T.A. program opportunities.
3. Suggest possible numbers of candidates for short-term training programs.
4. Send cables within two weeks which bring missions up to date on specific countries visited and other related facts to stress continuity of project.

TRIP REPORT; COUNTRY BACKGROUND DATA SHEET EGYPT

GENERAL COUNTRY DATA

Population: 40×10^6 in 1978 and growing at 2.3% per year
Language: Arabic, English and French
Area: 386,000 square miles
Terrain: Mostly desert with about 10,000 square miles cultivated

FUSSIL ENERGY RESOURCES

General Description and Use

Oil Production (1978): 150×10^6 barrels/year
Natural Gas Production (1978): 675×10^6 feet³
Coal: 35.6×10^6 tons in Sinai
Geothermal: 20 MW
Hydro: Aswan High Dam -- 2100 MW
Aswan Low Dam -- 220 MW

Future Plans

Continue oil and gas exploration
Investigate coal potential
Continue renewable energy projects

Government Organization

Ministries of Petroleum, Electric Power and Energy, and Atomic
Energy and Scientific Research
Three Energy Research Councils: Petroleum, Nuclear Energy,
Renewable Energy Technology.

MEETINGS

1. Mr. Ossama Amr, Training Officer, Ministry of Petroleum.
2. Mr. Yehia Abou Hussein, General Manager for Organization, Training, and Manpower Planning for Egyptian General Petroleum Corporation (EGPC).
3. Mr. Ahmed Amr, Director of Training, EGPC.
4. Mission--Ms. Keyes MacManus.
5. Mission--Dr. Hisham El Shishiny, Office of Education.

CONTACTS

Mission: Marvin Hurley
GOE: Brothers Amr

EDUCATIONAL INSTITUTIONS

Major: University of Cairo including geology and petroleum engineering PhDs.

Minor: Petroleum Institute in Suez and Helwan Institute of Technology.

CANDIDATES

Anticipate about 10.

GENERAL CONCLUSIONS

Egypt should greatly benefit and is very interested.

OTHER COMMENTS

Egyptian General Petroleum Corporation (EGPC), organization of 10 to 11 companies, will probably bring in most candidates (Problem with Mission funding of EGPC).

English language may be problem--use of American University is possible.

REFERENCES

1. Mitre Report on "Renewable Energy in Egypt," July 1980.
2. Proposal from American University on Desert Development, 1981

M E M O R A N D U M

TO: Keys MacManus
FROM: Marsha Gorden (DSI)
DATE: January 26, 1981
SUBJECT: Energy Fellowship Meetings

Saturday, 1/24/81 at Cairo Center

Keys MacManus and Marsha Gorden met for 1 1/2 hours to review the AID Energy Fellowship Program and the Egyptian energy situation in general. Ms. MacManus described the renewable energy analysis recently completed by Mitre and the A. U. C. proposal as well. Ms. Gorden borrowed the reports for review.

They agreed to meet the following morning to set up an appointment at the Ministry of Petroleum (with Janice Weber).

Sunday, 1/25/81 at Ministry of Petroleum (#511):

Keys MacManus, Dr. Hisham El Shishiny, and Marsha Gorden met with Mr. Ossaina Amr a training officer in the Ministry. The fellowship program was described (with Dr. Shishiny's able assistance) and about 1/2 hour of discussion followed. The need for a contact person in the Egyptian Government was reviewed and Mr. Amr agreed to assist. He did not feel that the Ministry could supply more than a few candidates and suggested that we speak with his brother, Mr. Ahmed Amr of E. G. P. C.

We left a brochure describing the program.

Sunday, 1/25/81 at Egyptian General Petroleum Corporation (EGPC), Nasr City:

Dr. Hisham El Shishiny and Marsha Gorden met first with Mr. Mohamed L. A. Hussein, General Manager, Organization, Training and Manpower Planning. Later the group was joined by Mr. Ahmed Amr, who works for Mr. Hussein. Approximately 1 1/2 hours were spent reviewing the fellowship program, describing the appropriate candidates, and explaining the need for a contact person to assist in finding candidates. The gentlemen were most kind and extremely interested in the program. Key discussion points included the following:

- a. Mr. Ahmed Amr, Director of Training for EGPC will serve as contact person.
- b. The proposed stipend is low for the candidates whom they will enroll. They plan and expect that EGPC will augment the stipend as required. This is their usual policy.

c. They believe that they will find 10-15 candidates.

d. The issue of English proficiency may be a problem. Dr. Shishiny suggested that AUC could provide intensive language courses over the summer (as in other programs).

e. Mr. Amr (and Mr. Hussein, also) would like a letter from AID introducing the program officially to EGCP asking for candidates and with sufficient detail to enable Mr. Hussein to include required financing in budget.

Recommendations for further actions with the Ministry and EGPC are as follows:

a. Send letter to Mr. Ahmed Amr with copy to Mr. Hussein (EGPC) (example enclosed).

b. Send similar letter to Mr. Amr at Ministry (example enclosed).

Sunday, 1/25/81 at U. S. Embassy (3:30 p.m.):

Marsha Gorden met with Mr. Marvin Hurley for 1/2 hour to review program. He explained concern about the inconsistency between AID-Washington policy of fellowship program paying all costs except travel, and AID-Cairo policy to take effect on July 1st of not paying program costs for EGPC personnel.

He also had other questions on the program but was unable to stay later for more discussion. I agreed to return on 1/26/81 to clarify issues where possible.

He telephoned Mr. Bisset to explain that he was speaking with me. (Mr. Ahmed Tawfik was present for a few minutes.)

Monday, 1/26/81 at U. S. Embassy (2nd meeting):

Marsha Gorden met with Mr. Marvin Hurley to review background of program in Washington and to explain further details. The meeting lasted about an hour and I left additional copies of the brochure, an application, and also a copy of a draft cable which Pam Baldwin prepared on 10/6/80 to send to the Missions, which describes the Training Program. He has agreed to serve as liaison officer to coordinate the receipt of applications and the needs for further information.

Mr. Hurley reiterated the need to coordinate the two policies on funding and will need assistance on issues such as "how to screen" applications, etc.

Recommendations - AID

a. Mr. Marvin Hurley (or someone on his staff) writes followup letters to the Brothers Amr

b. Issue of stipend needs attention.

Mr. Ossama Amr
Director of Training and Missions
Ministry of Petroleum

Dear Mr. Amr:

Re: U. S. AID Conventional Energy Training Program as discussed at meeting with Ms. Marsha Gorden, Dr. Hisham El Shishiny (AID), and myself at your office on January 25, 1981.

Thank you very much for your kindness in meeting with us to discuss this new Energy Training Program.

We believe that a program of this type which will provide further study in the United States for Egyptians in the field of oil and gas development will prove very beneficial to your country.

We appreciate your interest in the program and your offer to assist us as a contact person in the Ministry of Petroleum. Enclosed, please find three more descriptions of the program and also three applications. As you mentioned, we understand that there will not be a large number of applicants through the Ministry, but we are pleased to send more program descriptions and applications as necessary.

Your suggestion to meet with Mr. Ahmed Amr is appreciated and we were able to meet with Mr. Mohamed Hussein and Mr. Amr at E. G. P. C. also on January 25. Ms. Gorden and Dr. Shishiny described the program and Mr. Ahmed Amr will also act as contact person for E. G. P. C.

We will be providing additional information as appropriate. Again, let me thank you for your kindness and assistance in bringing this new educational opportunity to Egypt.

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Mr. Ahmed Amr (copy to Mr. Hussein, same address)
Director of Training
E. G. P. C.
Nasr City, Cairo
P. O. Box 2130

Dear Mr. Amr:

Re: U. S. AID Conventional Energy Training Program as discussed at meeting with Ms. Marsha Gorden and Dr. Hisham El Shishiny (AID) at Mr. Hussein's office on January 25, 1981.

Thank you very much for the kindness and hospitality shown to Ms. Gorden and Dr. Shishiny.

We believe that a training program of this type which will provide further study in the United States for Egyptians in the field of oil and gas development will prove very beneficial to your country.

We appreciate your interest in the program and your offer to assist us as contact person in E. G. C. P. As contact person, we anticipate that you will coordinate the distribution and receipt of applications. We are enclosing more program descriptions and ten (10) applications, and would be pleased to send more if needed.

We are enclosing a copy of the Institute of International Education provisions for stipends to the United States which will assist you in your planning.

As required, we will be providing additional information shortly. Again, let me thank you for your kindness and assistance in bringing this new educational opportunity to Egypt.

ENC

Oil exploration expanded

EGYPT, its economy revived by oil revenues, is stepping up a search for new fields, from the Mediterranean coast of Sinai to desert areas near the Libyan border.

A total of 36 exploration contracts have been signed with foreign oil companies since last May, almost twice as many as were previously agreed.

For a share in the oil found, foreign companies are committed to spending well over a \$1,000 million in the next few years to try to achieve Egypt's longcherished goal of producing one million barrels per day (BPD).

The industry's failure to fulfill ambitious early predictions has been more than compensated for, however, by the rise in oil prices and earnings.

Although Egypt, which does not belong to (OPEC) exports less than one-third of its oil, oil

income now matches remittances from Egyptian workers abroad, which have for years been the biggest exchange earner.

Oil income has jumped from \$311.8 million in 1976, when Egypt first became a net exporter, to an estimated \$2,350 million last year.

Egypt is expected to record a 1980 balance of payments surplus of \$ 1,200 million while oil has become an economic lifeline for a government whose popularity rests on its ability to subsidise prices of imported food for a population growing by one million every 10 months.

About three-quarters of Egyptian oil comes from offshore wells in the Gulf of Suez. There are smaller fields in Sinai, the Sahara and the Eastern Desert.

Last month the oil search broke new ground when mobil

corporation subsidiaries struck oil for the first time in Egyptian waters in the Red Sea. Tests still have to confirm whether it is a commercial field but Egyptian officials predicted it would encourage others to drill in the region.

Egypt started giving concessions to foreign companies in 1973 and the search has intensified in recent years, but with the signing of recent contracts, exploration is set to increase dramatically.

Last year it was the seismologists who were coming in, now it is the drillers, one company official said.

Foreign companies have now bought up every exploration block in the Gulf. Where Egypt's three biggest fields, Morgan, Ramadan and July, are located. — Reuter

Gas for Helwan

Natural gas pipes had been installed in 160,000 homes in Helwan as part of a project to convert Cairo suburbs from bottled to natural gas.

The project is under the guidance of Petrogas, the national company responsible for natural gas, using a design from British Gas International Consultancy Service which was awarded the design contract.

British engineers are also assisting in the project.

CONVERSION

The system will supply four Cairo suburbs, Maadi, Nasr City, Heliopolis and Helwan and involves the conversion of over 200,000 gas appliances. There will be around 40,000 conversions a year and the establishment of a system capable of supplying 640,000 customers over the next 20 years.

Egyptians are being trained in every aspect of the new industry year.

from maintenance and operation to customer service, accounting and the settling of tariffs.

TRAINING

Some 20 Egyptians from Petrogas, including the engineering, technical and financial managers of the new industry, have already gone to Britain for training and more are expected to follow.

The British Gas project manager in Cairo, Mr Jack Bates, said: "Egyptian engineers are known for their skills all over the Middle East, Petrogas engineers are rapidly absorbing our technology so that they can manage their gas industry independently. They are enthusiastic, willing and a pleasure to work with."

This comes as part of the move to utilise natural gas resources in the country for domestic use, to save millions of dollars spent in

importing gas from Europe every year. — GSS.

Seminar on alternative energy

AN Egyptian-German workshop on solar energy is to be held in Cairo, starting January 31. The Seminar will be jointly sponsored by the Supreme Council on New and Renewable Energy Sources and The West German Ministry of Research and Technology.

The three day workshop will be chaired by the Minister of Power, Mr Maher Abaza, and Dr. H.J. Hillie, The Ambassador of West Germany.

Topics to be discussed at this workshop include solar energy strategy and status in the two countries as well as its present and future application. The workshop is also to consider the possible utilisation of wind energy.

In a speech in Aswan last

week on the great prospects of the non-conventional energy resources in Egypt, Deputy Prime Minister, Mr. Ezz Eddin Hilal, said that the move to expand the use of solar energy is aimed at rationalising the use of petroleum.

OIL CONSUMPTION

In this context, the Deputy Prime Minister predicted that the current rate of petroleum consumption, of 15 million tons per year, will reach 65 million tons per year by the year 2000.

Mr. Hilal pointed out that Egypt was keen to extract petroleum according to scientific methods that would keep a balance between reserves and the production rate.

«The recent increase in the production of petroleum will not seriously affect the reserves since the amount of reserve petroleum discovered last year approaches 1,000 million tons, worth \$ 40,000 million at current world prices», he added.

As for the oil-prospecting agreements signed already this year, Mr. Hilal said they amounted in number to nearly 20, against 6 in 1979 and 1980.

Explaining what he means by the rationalisation of energy, Mr. Hilal said that he meant a shift from the use of petroleum to the use of other non-conventional energy sources to meet the requirements of economic and social developments. — OSS

POWER STATIONS

SHARKIA Governorate will set up power stations in some industrial cities such as Belbeis, Abu Kabir and Zagazik to supply factories with the necessary power to increase their production of textiles, linen and carpets.

Talks on national power grid

IMPLEMENTATION of the first stage of the nationwide electrification scheme, which includes a plan to extend the power network to Sinai and the Canal area will be the major topic at tomorrow's session of the Higher Committee for Planning.

The committee, headed by the Deputy Prime Minister, Dr Fuad Mohieddin, will also discuss the necessary budget allocations for

improving the Heliopolis power network and the expansion of sand brick output.

In another development, it was announced that the Ministerial Committee for Food Sufficiency will meet tomorrow to follow up the implementation of projects to develop livestock resources and increasing the output of eggs and fish. — MEN.

TRIP REPORT; COUNTRY BACKGROUND DATA SHEET TANZANIA

GENERAL COUNTRY DATA

Population: 16×10^6
Language: Swahili and English
Area: 365,000 sq. miles
Terrain: Varied: highlands and coastline

FOSSIL ENERGY RESOURCES

General Description

Approximately 85% of commercial energy comes from petroleum fuels
(refinery produces 2100 tons/day)
Electricity from hydropower: 250 MW
 diesel: 30 MW
 gas turbine: 15 MW

Future Plans

Continue oil and gas exploration
Gas has been found at Sonyo Sonyo
There are nine known coal fields, one in production
Continue future development of hydropower

Government Organization

Ministry of Water and Energy, Ministry of Minerals,
Tanzania Petroleum Development Corporation (under
Water and Energy)

MEETINGS

1. Mr. D. S. Bushaijabwe, Deputy Principal Secretary, Ministry of Water and Energy
2. Mr. S. P. Baraka, Acting Director of Manpower Development in Ministry of Water and Energy
3. Mr. Charles Lupembe, Director of Operations and Marketing, Tanzania Petroleum Development Corporation
4. Mr. Y. T. Mbwilo, Director of Manpower Development and Administration, Ministry of Minerals (going to new capital at Dodoma)

MEETINGS (Continued)

5. Mr. Stuart R. Lynn, Econ./Comm. Officer at Embassy
6. Mr. David J. Fischer, Charge d'Affaires, Embassy
7. Mr. James Williams, Mission Director

CONTACTS

Mission: Mr. Ronald Harvey
GOT: Mr. Baraka
Mr. Lupembe
Mr. Mbwilo

EDUCATIONAL INSTITUTIONS

University of Tanzania - B.A. level in engineering

CANDIDATES

Met 7 candidates at meeting, all design engineers from two Ministries and TPDC

GENERAL CONCLUSIONS

Expect about 5 candidates

OTHER COMMENTS

Anticipate problem in Tanzania government funding of transportation. Embassy charge d'Affaires asked for conventional energy training last year.

REFERENCES

1. "Dodoma Rural Energy Development Cooperation Project" by J. A. Bever, August, 1980.
2. "Proposal for a Tanzania Energy Development Assistance Strategy for the Mission" by J. A. Bever, July, 1980.

Candidates Meeting - Jan. 31, 1981 (Ms. Gordon)

Ministry of Water and Energy: Mr. D.S. Bushaijabwe, Deputy Principal Secretary or
Mr. S. P. Baraka, Acting Director of Manpower Development

P. O. Box 9153, Dar Es Salaam, Tel. 29203 or 31433/10; or to

Ministry of Minerals: Mr. Y. T. Mbwilo, Director of Manpower Development

P. O. Box 2000, Dar Es Salaam, (P. O. Box 903, Dodoma)

<u>Name</u>	<u>Title</u>
K.G. Königsson	Technical Personnel Coordinator
Y.T. Mbwilo	Director of Manpower Development and Administration (Minerals)
M.A. VORGHESE	PLANNING ENGINEER - MINISTRY OF WATER AND ENERGY
MIKI MASHI	USAID
ROSE MASHI	USAID
M.R. Ngude	CHEMICAL ENGINEER - TPDC
K.J. KIGGUNDU	DEVELOPMENT OFFICER - TPDC - BA in Chem 5 y. experience
M.A. BARAGWHA	DESIGN ENGINEER - MAJI HQ
S. MGHANA	DESIGN ENGINEER - MAJI HQ
B. MRINDOKO	DESIGN ENGINEER - " "
C.E.Z. KIMAMBO	DESIGN ENGINEER - MAJI HQ
STOMUH. N. SAWE	DESIGN ENGINEER - MAJI-HQ

MINISTRY OF WATER, ENERGY AND MINERALS

Telegrams: "MAJI", DAR ES SALAAM.

Telephone: 31433-5.

In reply please quote:

Ref. No. A/E.60/33/

CITY DRIVE/MKWEPU,
P.O. Box 9153,
DAR ES SALAAM.

Mr. James E. Williams,
The Director,
P. O. Box 9130,
Dar es Salaam.

23rd January, 1981

ACTION COPY
NO ACTION NECESSARY
REPLIED BY: _____

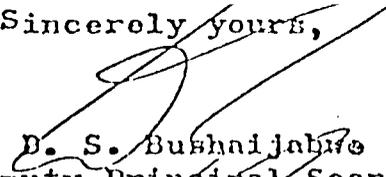
Dear Sir,

Thank you for your letter dated 10/12/80 concerning the new AID Conventional Energy Training Project. The delay in sending back a reply is very much regretted.

As you may know, my country is now bent, more than ever before, on exploration/exploitation of her energy resources. Very recently an exciting seminar was held here in Dar es Salaam to discuss the country's energy policy.

We are therefore welcoming any efforts taken to accelerate the rate of exploration/exploitation of our energy resource. In this light the proposed training programme will definitely be of assistance to us. We would like therefore to confirm that this Ministry will appreciate if Tanzania is included in the AID conventional energy training programme.

Sincerely yours,


D. S. Bushajjaho
Deputy Principal Secretary

DSB/Bethy

DIST	ACT	INF
DIR		X
AD		X
PRM		
PRM		
FYP		
NICH		
EMP		
EXO		
CON		
AGR		
TRG		X
GSO		
COR		
RF		X
CHR		X
RDDEA		

Survey vessel arrives in Dar

Daily News
1/21/81

By Staff Reporter

A survey ship with 12 technicians aboard has arrived in Tanzania to undertake geophysical survey aimed at locating hydrocarbon deposits along the country's coastline.

The 79-ton *Ingrid*, owned by the Prakla-Seismos Company of Hannover, West Germany, is now at work at the Nyoni Island area between Mafia and Songo Songo Islands in the Indian Ocean, slightly south of Dar es Salaam.

Prakla-Seismos have been contracted by Agip (Africa) Tanzania Branch which is undertaking an exploratory work along Tanzania's coastline on behalf of the Tanzania Petroleum Development Corporation (TPDC), an official of the latter said in Dar es Salaam yesterday.

An agreement between Agip (Africa) Tanzania Branch and the Government was signed in 1969.

Agip (Africa) Tanzania Branch Local Manager Mr. E. Bofondi said in the city yesterday that since they started operations in the country they had drilled five wells — two on shore and three offshore. All the five total 17,000 metres.

The last well was drilled at Kizimbani at the Kilwa area in 1979.

"But we have not found much (gas or oil) to go into production", he added.

Prakla-Seismos Base Manager for the project, Mr. Klaus Wilke, said their vessel, which started work in the middle of this month, would carry out the geophysical survey work and deliver the data to Agip, who would then undertake drilling according to results of the survey.

He said that after operations at Nyoni Island the *Ingrid* would move southwards to Kilwa areas and on to Lindi and Mtwara.

Their work would take a minimum of eight months, he added.

Ingrid, loaded with electronic survey equipment, is accompanied by a 499-ton support vessel *Gisela*, carrying provisions.

The two ships are expected to call into the Dar es Salaam Port tonight and tomorrow select invitees would be shown around the survey vessel.

Prakla-Seimos has three other survey vessels now working in Egypt, Holland and the Sudan. Before arriving in Tanzania, *Ingrid* was surveying in Egypt, Mr. Wilke said.

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Tanzania team for mineral talks

By Isaac Mruma

TANZANIA will be represented by a 37-man delegation to the five-day meeting on development and utilisation of mineral resources in Africa which opens at Arusha on Monday, it was disclosed in Dar es Salaam yesterday.

The Arusha meeting, to be opened by Prime Minister Cleopa Msuya, would bring together about 200 representatives of the UN Economic Commission for Africa (ECA), the Organisation of African Unity (OAU) UN agencies,

regional and subregional inter-governmental bodies in Africa and observer groups and governments.

An official of the Ministry of Minerals said yesterday Tanzania's team would comprise Minister John Malecela, the Principal Secretary, Ndugu Samuel Lwakatare, and senior geologists and mining engineers from the Ministry and parastatals under it.

According to the UN Information Centre in Dar es Salaam, the conference would have a 12-item agenda. Delegates would study

documents dealing with objectives and roles of minerals in economic and social development of Africa, assessing the main minerals of the continent, and giving an account of the present status and development trends of minerals extractive industry in Africa.

It is expected also that the conference technical committee would examine ECA documents on geological activities in search of new resources, distribution and evaluation of newly discovered mineral deposits, and on techniques for ex-

ploration, mining and processing activities.

The documents would also deal with research and development of new mining techniques and processing related to the African region, conservation of resources and environmental protection and technical requirements for mineral resources activities.

A policy committee of the conference is expected to examine the importance of African multinational corporations and priority areas for the present and future activities in geology and mineral resources development and

the experience of multinational mineral resources development centres and of the geological society of Africa.

It is also expected that during the meeting, delegates would also review and consider the ECA work programme on mineral resources development in Africa for this year, for 1982-83 and proposals for 1984-89.

The conference ends on February 6 after adopting report on resolutions and recommendations.

Comment

ASSURED power supply to Zanzibar has meant increased productivity in factories and industries. The struggle now is to utilise every production line to full capacity.

This is a direct result of the 105m/- Zanzibar Government investment in a project linking the Isles to Mainland's Kidatu Hydro-electric Power Plant in Morogoro Region.

Supply of constant electricity to the Isles, is considered one of the single most important projects undertaken since the 1934 revolution that brought down the feudal Sultanate regime.

Prior to the revolution, there was virtually no industrial activity on the Isles. Therefore, whatever power supply available then was intended for the minority ruling clique.

The revolution brought in the people's commitment to developing themselves and benefiting from the fruits of their struggle as equitably as possible.

This necessitated introduction of new production lines in agro-based industries which went along with expansion in agricultural production.

Factories and industrial units began to surface and the need for increased power for the Isles reached its peak in 1976 when blackouts were especially felt.

1/29/81
By 1979, the people's efforts to raise production was severely interfered with stoppages in certain lines as electricity was directed only to the most important installations.

The Government has all along done everything to raise the Isles power generating capacity by acquiring fuel run electric plants at exorbitant costs.

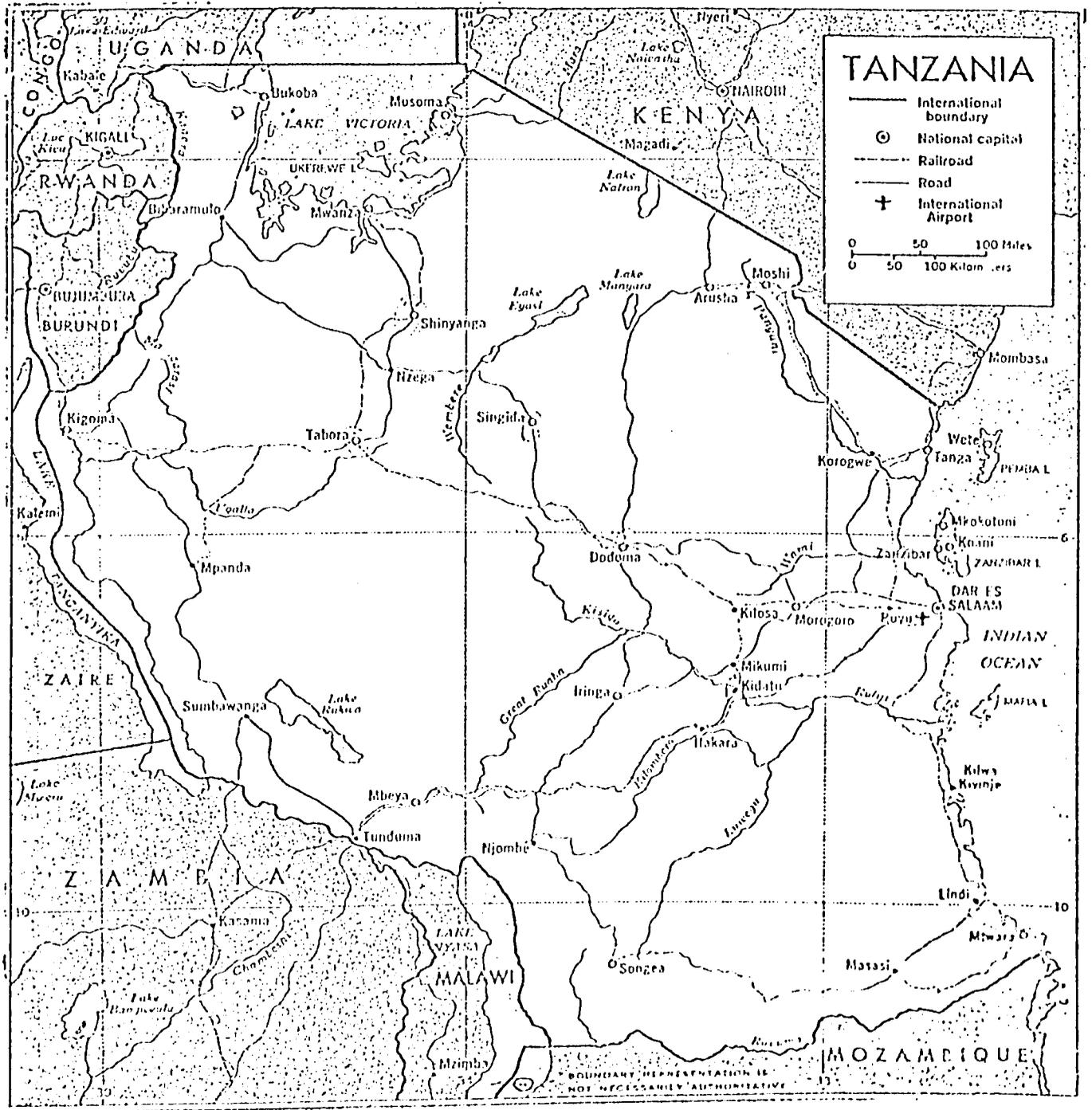
In addition to this, diesel generators required regular maintenance and replacement of spare parts which are not too easy to come by.

That is why there was no choice but to turn to a more reliable power supply source, the Kidatu Power Plant. Preliminary work of linking Zanzibar with the Mainland power line started back in 1974.

And the consistency of the Zanzibar Revolutionary Government made the dream come true last June when power started flowing through the 38.5 kilometres marine cable.

Productivity has since been back in full swing and today the people of Zanzibar are recording success in industrial productivity in practically every field.

The Government is hopeful that the 1980/81 production targets should be met with least problems. The people of the Isles have invested so much money to get reliable power supply and they must take full advantage of it to produce even more.



TRIP REPORT; COUNTRY BACKGROUND DATA SHEET KENYA

GENERAL COUNTRY DATA

Population: 15.8×10^6 , growing at 4% per year
Language: Swahili and English
Area: 225,000 square miles
Terrain: Varied

FOSSIL ENERGY RESOURCES

General Description and Use

Hydropower for electricity 60%
Petroleum is imported

Future Plans

Continue exploration for oil and coal (IRBD)
Investigate geothermal potential (under Japanese funding)
Expand hydropower
New renewable energy project includes institution building (AID)

Government Organization

New Department of Energy (see diagram)

MEETINGS

1. Mr. David Mwiraria, Permanent Secretary, Ministry of Energy.
2. Mr. J. W. Wairegi, Technical Division, Ministry of Energy.
3. Professor Gacii, National Council for Science and Technology
4. Mr. Wilson Ndeti, Office of President, Under Secretary for Training and Administration.
5. Mr. Duane Butcher, Counselor of Embassy for Economics Affairs.
6. Mr. Lee Schipper, Research Professor at Lawrence Berkeley/Beiger Institute (Energy Conservation Program)
7. Mr. Kevin O'Donnell, Assistant Director, Multisector and Engineering, Mission.
8. Ms. Allison Herrick, Mission Director.

CONTACTS

Mission: Mr. Joseph Pastic
GOK: Mr. Wairegi

EDUCATIONAL INSTITUTIONS

University of Nairobi

CANDIDATES

Expect 5 to 10; have identified 3 potential candidates.

GENERAL CONCLUSIONS

Good spirit of cooperation.

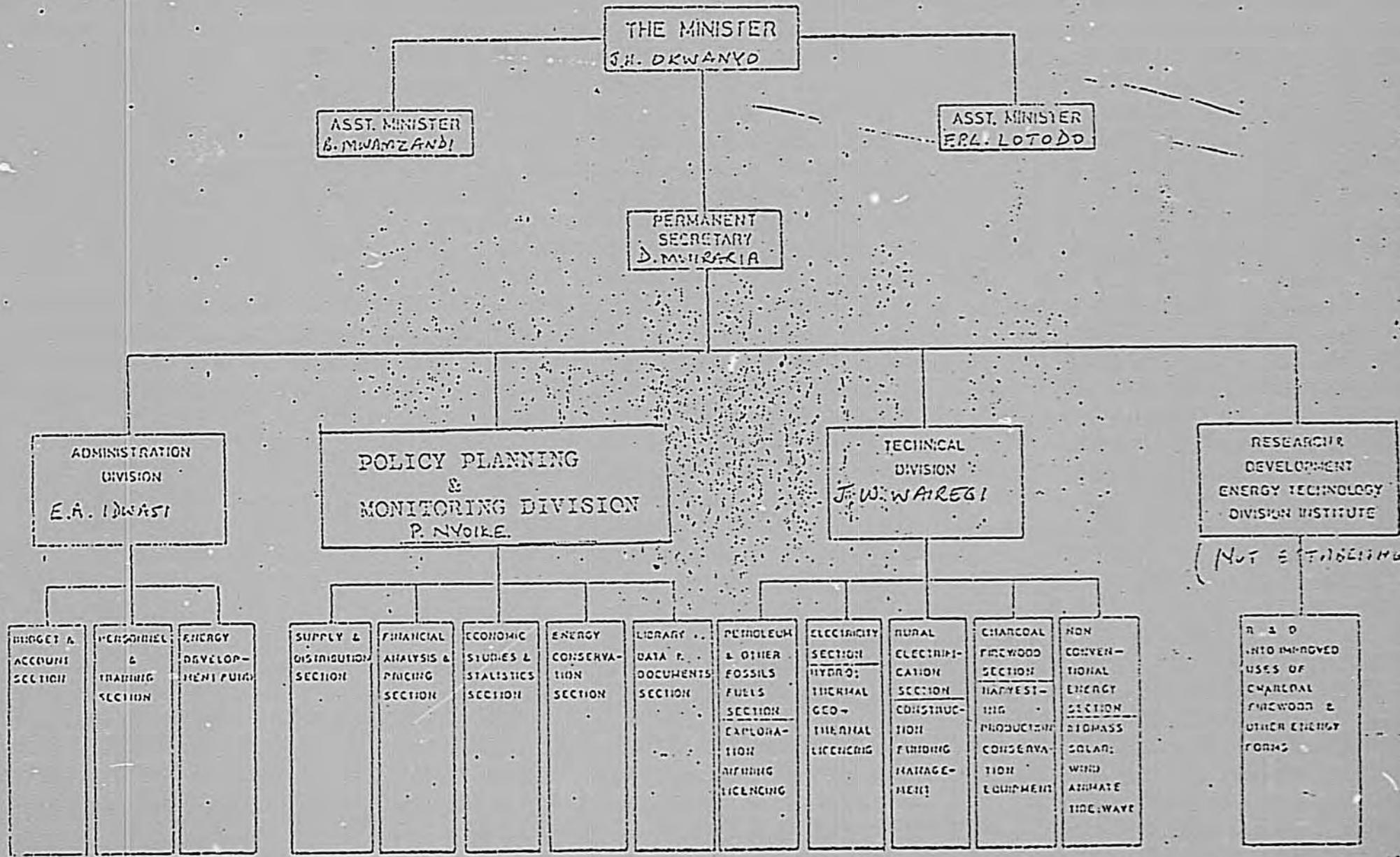
OTHER COMMENTS

Must recognize that all candidates go through President's office.
New Ministry is thinly staffed, concern about taking too many
candidates from 1 Ministry.
Other Ministries to be contacted by AID: Ministry of Water (Hydro
Projects), Ministry of Environment and Natural Resources,
Regional Development Authorities.
Some concern over funding for transportation.

REFERENCES

1. "Energy Demand and Conservation in Kenya: Initial Appraisal,"
L. Schipper, March 1980 (for DOE).
2. "Energy Use and Conservation in Kenya," Progress Report to RFF,
by L. Schipper, September 1980.
3. "Kenya--Renewable Energy Development Project," AID, August 1980.

KENYA



PROPOSED STRUCTURE OF THE MINISTRY OF ENERGY

MINISTRY OF ENERGY

Log in

Telegrams: "MINIPOWER", Nairobi

Telephone: Nairobi 27453/33818

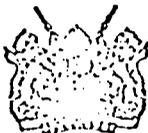
Ref. No. ME/1/3/21(VL.III)

USAID DISTR(1/15/81)JM

ACTION: M&E

(DUE:1/26)

INFO: O/DIR; PROG; CONT; CHRON; RF



Proj. 615-0205)
OFFICE OF THE PERMANENT SECRETARY
HARAMBEE AVENUE
P.O. Box 30582
NAIROBI

7th January, 1981

Mr. Kevin F. O'Donnell
Assistant Director, M&E,
USAID Mission to Kenya,
P.O. Box 30261,
N A I R O B I.

Dear Mr O'Donnell,

ASSISTANCE IN CONVENTIONAL ENERGY

During the discussions I had with you over lunch on 3rd December, we discussed briefly two areas in which the Ministry of Energy could benefit from USAID assistance in the conventional energy sector. These are technical assistance in conventional energy resource identification, and conventional energy training.

Regarding the latter, and in response to your letter of December 30, 1980, I have to-day sent you Ministry of Energy's training programme for the period 1981/83. I trust that the proposed visit by representatives of Development Sciences, Inc., will give us an opportunity to define our requirements more precisely and, where possible, to identify candidates for training later this year. Incidentally, we would prefer the proposed visit to take place early in February, 1981.

Concerning resource identification, the Ministry of Energy has just initiated two projects on oil and geothermal exploration with assistance from the IBRD and Japan respectively. However, these projects are rather small and limited in their scope. There is therefore room for technical assistance from AID.

As I informed you during the luncheon, the Ministry of Energy is suffering from a very acute shortage of adequately trained and experienced manpower knowledgeable in energy resource identification and related sciences. We would therefore welcome assistance from AID in identifying suitable projects.

In this connection, I would propose that USAID sends a reconnaissance mission of three people to Nairobi for a period of two weeks for consultations with us. Such a mission should comprise a petroleum geologist, a geothermal geologist and a drilling engineer.

While in Nairobi the mission will specifically examine the IBRD Petroleum Exploration Promotion Projects, the ongoing and proposed geothermal projects and the problems facing Ministry of Energy in conventional energy resource identification and propose projects for AID funding.

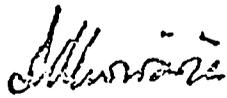
Kevin —

- would this be
DS Bureau or
TDP ?

- pls. cc. to SCAN

I will be happy to give you more information on this proposal should this be necessary.

Yours *sincerely*



D. Mwiraria
PERMANENT SECRETARY

MINISTRY OF ENERGY

GENERAL FILE

Project 615-0205

Telegrams: "MINPOWER", Nairobi
Telephone: Nairobi 27553/333818
Ref. No. ME/1/3/21(VOL. II)



OFFICE OF THE PERMANENT SECRETARY
HARAMBEE AVENUE
P.O. Box 30582
NAIROBI

USAID DISTR(1/15/81)JM

ACTION: M&E

(DUE: 1/26)

INFO: O/DIR; PROG; CONT; CHRON; RF

.....7th January,....., 1981.....

Mr. Kevin F. O'Donnell,
Assistant Director, M & E,
USAID Mission to Kenya,
P.O. Box 30261,
NAIROBI

ACTION COPY

Action taken: _____
No action necessary: _____
(Initials) (Date)

Dear Mr. O'Donnell,

CONVENTIONAL ENERGY TRAINING

I am pleased to learn from your letter of December 30, 1980 that Kenya has been tentatively identified as one of the countries to be visited by representatives of Development Sciences, Inc., under contract to AID/Washington, to discuss various aspects of conventional energy training. The MOE welcomes the proposed visit as we believe it will speed up the process of identifying candidates for training under AID funding in the conventional energy sector.

Attached hereto for your information is MOE's proposed training programme for the period 1981/83. We would appreciate it if USAID gives consideration to the possibility of funding some of this training.

We look forward to discussing this proposed programme with representatives of Development Sciences, Inc., when they visit Nairobi.

Yours sincerely,

Mwiraria
(D. M. MWIRARIA)
PERMANENT SECRETARY

Enc.

MOE'S TRAINING PROGRAMME 1981 - 83

1981-2 year Fellowships

- (1) 1 - Petroleum geologist - MSc.
- (2) 1 - Petroleum Geophysicist - MSc.
- (3) 1 - Geothermal Geologist - MSc.
- (4) 1 - Geothermal Geophysicist - MSc.
- (5) 1 - Geothermal Geochemist - MSc.
- (6) 1 - Engineer - Renewable Energy - Diploma or MSc.
- (7) 1 - Engineer - Power Alcohol Industry - Diploma or MSc
- (8) 1 - Engineer - Petroleum Processing and Marketing-
Diploma or MSc.
- (9) 1 - Economist - Energy Economics - Diploma or MSc.
- (10) 1 - Engineer - Electricity pricing - Diploma or MSc.

1982 - 2 years Fellowships

- (1) 1 - Petroleum Geologist - MSc.
- (2) 1 - Petroleum Geophysicist - MSc
- (3) 1 - Geothermal Geologist - MSc.
- (4) 1 - Geothermal Geochemist - MSc.
- (5) 1 - Geothermal Drilling Engineer - MSc. or Diploma
- (6) 1 - Geothermal Acquirer Engineer - MSc. or Diploma
- (7) 1 - Engineer - Renewable Energy - MSc or Diploma
- (8) 1 - Engineer - Petroleum Industry - MSc or Diploma
- (9) 1 - Agriculturist - Energy Crops Research - MSc or Diploma
- (10) 1 - Economist - Renewable Energy Economics - MSc or Diploma

1983 - 2 years Fellowships

- (1) 1 - Petroleum Production Engineer - MSc or Diploma
- (2) 1 - Geothermal acquirer Engineer - MSc or Diploma
- (3) 1 - Geothermal Drilling Engineer - MSc. or Diploma
- (4) 1 - Geothermal Geochemist - MSc or Diploma
- (5) 1 - Electricity Economist (Pricing) - MSc or Diploma
- (6) 1 Agriculturist - Energy Crops Research - MSc or Diploma
- (7) 1 - Engineer - Geothermal Process Heat Research- MSc. Or Di
- (8) 1 - Geothermal Geophysicist - Deep acquirer Exploration
Research - MSc or Diploma
- (9) 1 - Economist - Non-Commercial Energy Economics MSc. or Dip

2/2/81

Report on river given

By NATION Staff

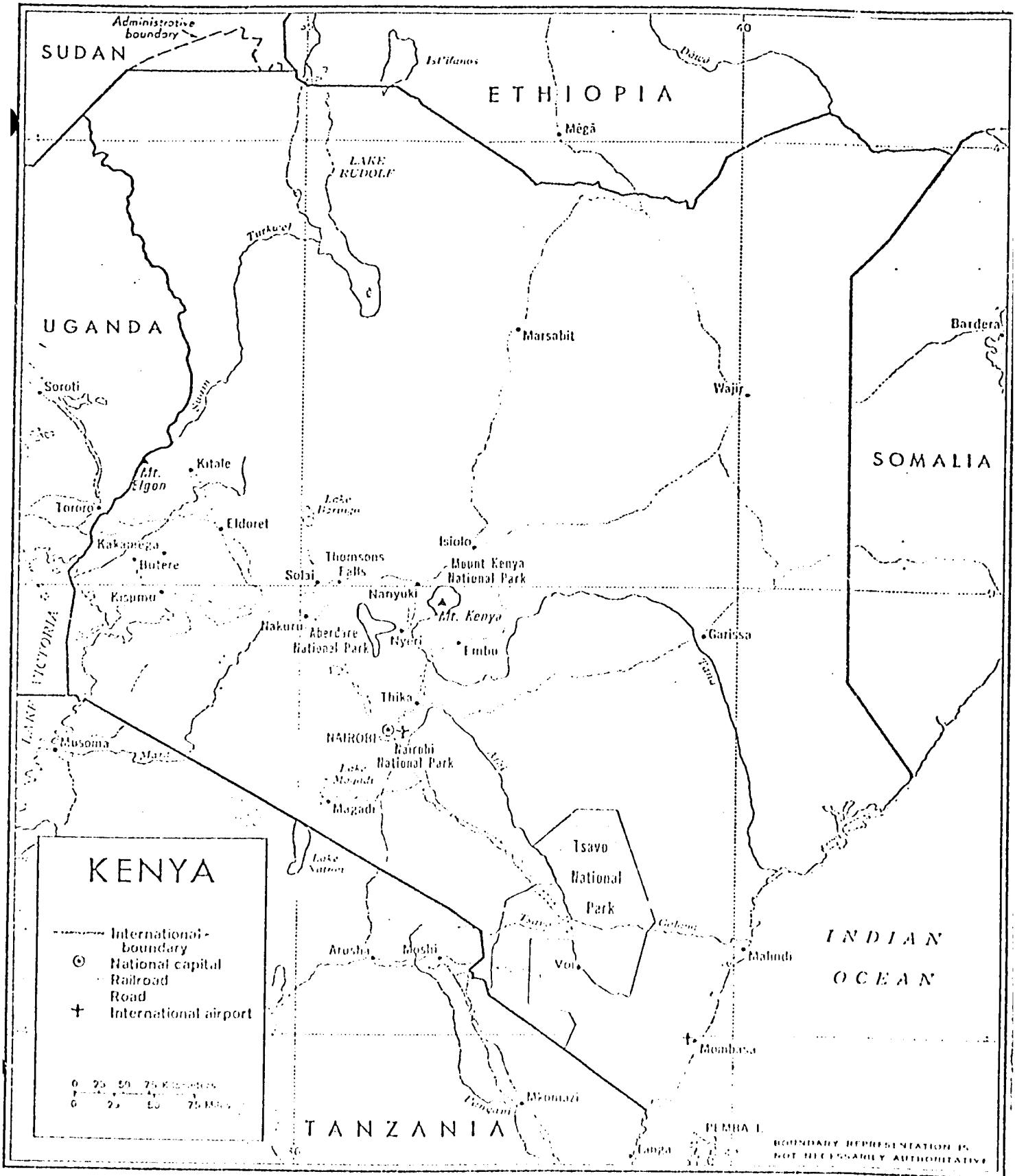
Correspondent in Kisumu

NORWEGIAN experts have presented to the Lake Basin Development Authority their report on the possibility of harnessing electricity from the River Nzoia in Western Province.

The report, by Norconsult of Oslo, was presented to the authority's managing director Prof. David Wasawo at Kisumu at the weekend.

Entitled "a Hydro-electricity reconnaissance on Webuye Falls," the report was described as confidential by Prof. Wasawo. He said it had been carried out free of charge by the Norwegian firm of engineers, architects and economists.

He said the authority was also studying other rivers in the area including Sio, Nyanjo, Miriu and Yala.



TRIP REPORT; COUNTRY BACKGROUND DATA SHEET

BOTSWANA

GENERAL COUNTRY DATA

Population: 780,000, growing at 2.6% per year
Language: English and Setswana
Area: 220,000 square miles
Terrain: Desert and savannah

FOSSIL ENERGY RESOURCES

General Description and Use

Coal is major focus with two power plants
Internal use about 350,000 tonnes
Petroleum fuels come from South Africa
Wood is used in both urban and rural areas

Future Plans

Expansion in coal (IRBD) to provide all of electric power
Interested in export potential
Some exploration in deep basins for oil
Interest in developing town gas and chemicals from coal
New renewable energy project (AID)

Government Organization

Ministry of Mineral Resources and Water Affairs

MEETINGS

1. Mr. M. Charles Tibone, Permanent Secretary, Ministry of Mineral Resources and Water.
2. Mr. K. Felix Mokobi, Under Secretary for Ministry
3. Mr. Augustin Pone, Personnel Directorate, President's Office
4. Mr. Derek Medford, Managing Director, Botswana Technology Centre (funded by EEC).
5. Mr. Fink, Geology Professor at University College of Botswana
6. Mr. Louis A. Cohen, Mission Director

CONTACTS

Mission: Mr. Louis Cohen, Technical Aspects
Mr. John Gant, Training Aspects
GOB: Probable contact person from Ministry of Mineral
Resources and Water Affairs to be named (maybe Mr. Mokobi)

EDUCATIONAL INSTITUTIONS

University College of Botswana: no engineering; two-year course
in Geology

CANDIDATES

Possibility of one this year, more for following year

GENERAL CONCLUSIONS

High in interest

OTHER COMMENTS

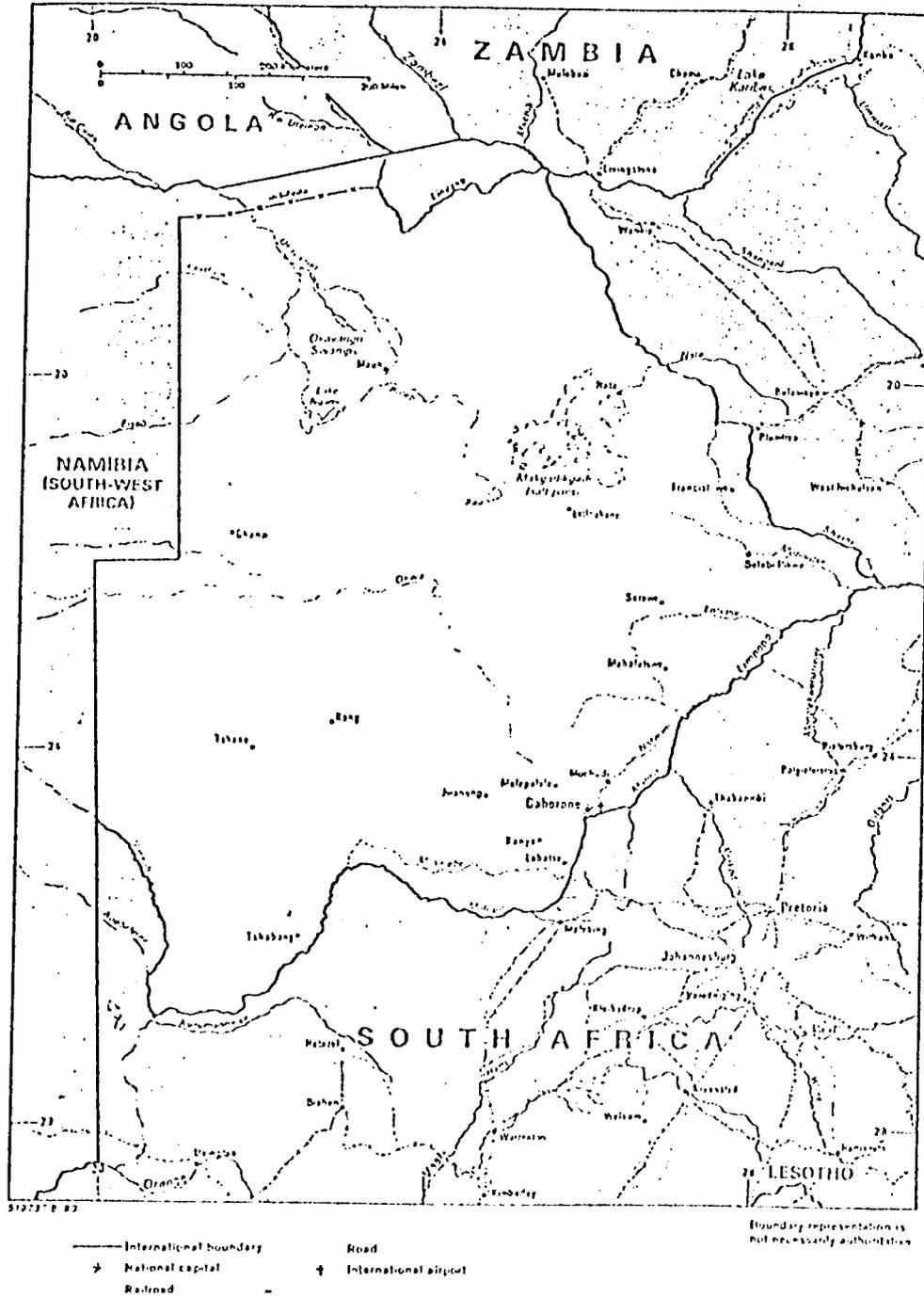
Problem of small number of eligible graduates who could leave and
not disrupt the ministries

Interest in lower level institutional courses for older bureaucrats,
also more technical courses for younger members at lower level.

REFERENCE

"Botswana Renewable Energy Technology Project," Sept. 80, AID.

Botswana



TRIP REPORT; COUNTRY BACKGROUND DATA SHEET NIGER

GENERAL COUNTRY DATA

Population: 5.2×10^6 in 1978, anticipate 10×10^6 in 2000
Language: French (official)
Area: 490,000 square miles
Terrain: 4/5 arid desert, 1/5 savanna

FOSSIL ENERGY RESOURCES

General Description and Use

Electricity by coal, gas and hydropower
Coal: proven reserves of 6.3×10^6 tonnes
Importation of HP from Nigeria (Kaindji)
Importation of coal and petroleum fuels

Future Plans

Continued petroleum exploration (see map)
Development of additional HP
New diesel generators
Greater emphasis on solar energy
Issue of uranium use

Government Organization

All ministries reorganized day of my arrival.

MEETINGS

1. M. Sory Boubakar, Secetaire General, Ministere des Mines et de l'Industrie.
2. M. Sani Koutoubi, Directeur General, O.N.A.R.E.M. (Recherche Minieres).
3. M. Abdourhamane Keita, Secetaire General, Ministere de l'Enseignement Superieur et de la Recherche.
4. Mme. Djibo Hamani, Department de Bourse, Ministere de l'Enseignement
5. M. A. Ba, Charge de Recherches at ONERSOL.
6. Ambassador James Bishop and members of Embassy staff.
7. Mission Director Jay Johnson and staff.

CONTACTS

Mission: Mr. Sid Bliss
GON: Mme. Hamani

EDUCATIONAL INSTITUTIONS

University of Niamey: no engineering faculty, limited science program, some M.S. level courses.

CANDIDATES

There are potentially 2 to 3 candidates.

GENERAL CONCLUSIONS

English level is serious problem. Also bureaucracy may not be ready in time for this year's applications.

OTHER COMMENTS

There is need for English training locally; an estimate of 6-month requirement for most students was made.

There is interest in technical training which corresponds to 3rd and 4th year of undergraduate college.

They would like information on possibility of second semester applications for 1981-82.

REFERENCES

1. "Plan Quinquennal de Developpement Economique et Social 79-83," par Republique du Niger.
2. "Final Report of the Natural Resource Planning Project for the Province of Zinder, Niger," April, 1979. Arid Lands Natural Resources Committee; University of Arizona, Tucson.

12/1

Note N°. 018

L'Ambassade des Etats-Unis d'Amérique présente ses compliments au Ministère des Affaires Etrangères et de la Coopération de la République du Niger et a l'honneur d'informer le Gouvernement Nigérien de la prochaine visite au Niger de Mme Marsha Gordon, Chargée de la Programmation de Science Development Incorporated, sous contrat avec le Bureau de l'Energie de l'AID à Washington, dans le but d'étendre l'assistance de l'AID au pays du Tiers Monde dans le domaine de l'énergie conventionnelle. Mme Gordon arrivera à Niamey le 9 février et compte poursuivre sa tournée en Afrique à partir du 11 février 1981.

L'USAID a demandé à Mme Gordon d'expliquer le programme de formation en énergie de l'AID aux parties intéressées du Gouvernement du Niger et de discuter d'éventuels domaines d'une future coopération en vue d'un programme de formation académique d'étudiants nigériens dans l'exploration, le développement et la production de carburants conventionnels. Mme Gordon souhaiterait aussi se renseigner sur la possibilité de recruter d'éventuels candidats nigériens pour une telle formation aux Etats-Unis.

La Mission de l'USAID au Niger prie le Gouvernement du Niger de bien vouloir faciliter les différents rencontres de Mme Gordon aux Ministères des Mines, et celui de l'Enseignement Supérieur et de la Recherche, à l'OMERSOL, l'ONAREN et l'Université de Niamey. Mme Gordon sera accompagnée d'un membre de la Mission de l'USAID lors de ses visites.

L'Ambassade des Etats-Unis d'Amérique saisit cette occasion pour renouveler au Ministère des Affaires Etrangères et de la Coopération de la République du Niger, l'assurance de sa très haute considération.

Ambassade des Etats-Unis d'Amérique

//Niamey, le 30 Janvier 1981.

Draft: SBliss: zf: 30/1/81

Niamy, le

JAN 10 1980

A10 - 43

AMB ORIGINAL for info
USICA COM for info

N°...../MAE/G/DAPCI /5

N° 0023

~~AMB~~

~~DCM~~

~~ECOM~~

Le Ministère des Affaires Etrangères et de la
Coopération de la République du Niger présente ses compliments
à l'Ambassade des Etats-Unis d'Amérique et se référant à sa
note n° 974 du 18 octobre 1979 relative au programme de for-
mation SMDP 1980 a l'honneur de l'informer de ce qui suit :

Le Ministre de l'Enseignement Supérieur et de la
Recherche désirerait, dans le domaine de la Recherche Agro-
nomique les bourses suivantes :

- 1 bourse en Phytogénétique, niveau P.H.D.,
- 1 bourse en Bactériologie, niveau MS,
- 1 bourse en Pédologie, niveau B.S.,
- 1 bourse en Phytogénétique, niveau D.S.,
- 1 bourse en Agronomie Générale, niveau D.S.,
- 1 bourse en Pathologie Végétale, niveau D.S.,
- 1 bourse en Physiologie Végétale, niveau B.S.,
- 2 bourses en Zootechnie, niveau H.S. et B.S.

Le Ministère des Mines et de l'Hydraulique s'in-
téresse à l'obtention des bourses suivantes :

- 1) Haute priorité : Cours post Universitaires ou Séminaires
 - a) Géologie Pétrolière ; production des gisements
de pétrole et de gaz.
American Institute of Petroleum.

AMBASSADE DES ETATS-UNIS
D'AMERIQUE
NIAMEY

.../...

31

b) Recherche et Exploitation Ministère toute Ecole des Mines ;
Ecole des Mines du Colorado de préférence.

- 2) Priorité moyenne : Formation, long cycle 4 à 5 ans de
deux (2) ingénieurs des Mines et deux
(2) ingénieurs Géologues.

Toute Ecole des Mines ; Tucson en Arizona ou donner
Colorado de préférence.

Les besoins du Ministère du Développement sont les
suivantes :

I - Agriculture

- 1°) Formation Universitaire Etats-Unis
- 5 bourses niveau B.S. Vulgarisation agricole
- 1 bourse niveau B.S. Technologie semences
- 2°) Formation spéciale Afrique
- 10 bourses technologie semences (stage)

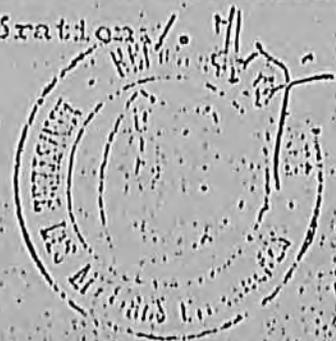
II - Elevage

- 1°) Formation Universitaire aux Etats-Unis
- 5 bourses niveau D.S. Zootechnie
- 2°) Formation Spéciale en Afrique
- 1 bourse 9 mois stage gestion pâturage - Zootechnie

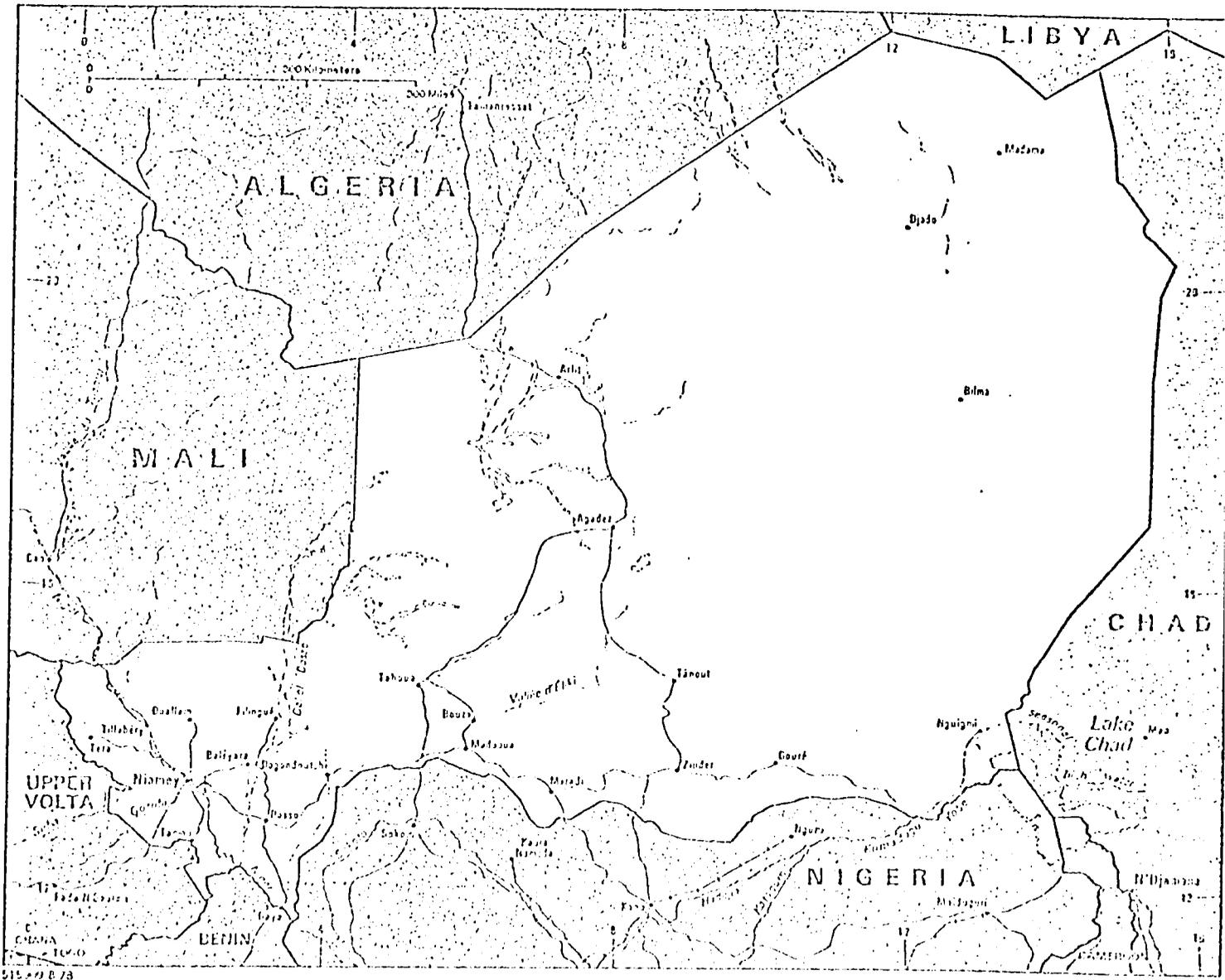
III - Eaux et Forêts

- 4 bourses niveau Ingénieur Institut Agricole Douako C.I.

Le Ministère des Affaires Etrangères et de la
Coopération saisit cette occasion pour renouveler à l'Ambassade
de France, les assurances de sa haute considération.



Niger



515-79 B-78

- International boundary
- ⊙ National capital
- Railroad
- Road
- ✈ International airport

Boundary representation is not necessarily authoritative

TRIP REPORT; COUNTRY BACKGROUND DATA SHEET

MALI

GENERAL COUNTRY DATA

Population: 6×10^6 in 1977, growing at 2.5% per year
Language: French (official)
Area: 470,000 square miles
Terrain: Desert and savannah

FOSSIL ENERGY RESOURCES

General Description and Use

Electricity from 3 HP projects of 14,425 KVA
Importation of petroleum fuels, about 210,000 m³ in 1979
Great use of wood

Future Plans

Exploration for oil and gas continuing at 2 sites.
Oil shale has been found in east with estimate of 10×10^6 tonnes.(IRBD).
Expansion of HP at existing sites and new sites.
Use of solar energy, wind power, and biomass.

Government Organization

Ministry of Industrial Development and Tourism is major controlling group in energy.

MEETINGS

1. Ministry of Industrial Development and Tourism, Mr. Mama Tapo, Conseiller Technique.
2. Direction Nationale de Geologie et des Mines (Under Ministry), Director Diallo, Directeur Adj. Traoré, Mr. Simpara, and Mr. Touré.
3. Direction Nationale de Hydraulique et de l'Energie (Under Ministry), Ex Directeur Aly Dembélé, Directeur Sitapha Traoré.
4. Energie du Mali, Directeur Diallo, Mr. Sidibe.
5. Ecole Nationale D'Ingenieurs, Mr. Guindo, Directeur de Etudes.
6. Mr. M. Furst of IRBD.
7. Mr. David Wilson, Mission Director.
8. Mr. Dan M. Loftin, Commercial Officer--American Embassy.

CONTACTS

Mission: Mr. Jon Anderson, Ms. Jean DuRette
GOM: Mr. M. Tapo

EDUCATIONAL INSTITUTIONS

Ecole Nationale d'Ingenieurs provides courses in geology, civil engineering, mechanical engineering, and cartography.

CANDIDATES

Will be difficult for this year with English and lack of time.

GENERAL CONCLUSIONS

Great interest in program, at present students go to France and USSR.

OTHER COMMENTS

Major concern is problem with English; usually requires six months for training.

REFERENCES

1. Renewable Energy Project -- Mali, August 1978.
2. Les Projets d'Energie Renouvelable, Republique du Mali, Ministere du Developpement Industriel, Plan 1981-1985.

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TELEGRAM

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INDICATE
 COLLECT
 CHARGE TO
0599

FROM
AMEMBASSY BAMAKO

CLASSIFICATION
UNCLASSIFIED

E.O. 11652:
TAGS:
SUBJECT:
ACTION:

ACTION: SECSTATE WASHDC

UNCLASSIFIED BAMAKO 0599

AIDAC

AID For DS/EY

E.O. 12065 N/A

SUBJECT: Conventional Energy Training 936-9997- Gorden Visit.

REF.: A) State 014916 B) Bamako 0536

USAID 10
AMB
DCM
CHRON
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In preparing for subject visit Ms. Gorden should contact Jean Francois Bauer at the World Bank, telephone 202-477-2649. Bauer is project officer for the World Bank Petroleum Exploration Promotion Project which will be implemented in Mali and includes training similar to that proposed in subject project.

JCH
HOLLOWAY

JCH

DRAFTED BY:
GDO/E: JAnderson:ds

DRAFTING DATE:
1/27/81

TEL. EXT.

CONTENTS AND CLASSIFICATION APPROVED BY:
A/DIR: GTEaton

CLEARANCES:

GDO: JNFoxd

UNCLASSIFIED
CLASSIFICATION

WJO

L'ESSOR quotidien du 12-2-1981

Bamako, Mali

M. Robert Tiéblé N'Daw à Mali - Actualités

QUATRE VOILETS PRINCIPAUX POUR LE
DEVELOPPEMENT INDUSTRIEL

Situer les conditions objectives de base d'une véritable politique d'industrialisation, de prospection et d'exploitation minière, de promotion touristique, tel était le thème développé le week-end dernier, au cours d'une émission radiodiffusée par le Ministre Robert Tiéblé N'Daw.

Rappelant tout d'abord les retombées de la crise économique mondiale sur l'économie malienne, M. N'Daw a souligné avec force que des actions en profondeur sont nécessaires cette année pour créer un véritable tissu industriel dans les trois pôles de développement que sont l'Est, le Centre et l'Ouest.

On se souvient que l'année 1979 a été marquée par un coût de plus en plus élevé des énergies importées et des ruptures de stocks pour les usines existantes. Cette situation liée à notre enclavement, aux mauvaises récoltes qui n'ont pas permis l'approvisionnement correct de ces usines, la situation de sécheresse ayant amenuisé le pouvoir d'achat des masses rurales et enfin la réduction du marché intérieur ont conduit à une mévente de nos produits locaux.

Au niveau du Ministère du Développement Industriel et du Commerce, on prévoit que le nouveau montant de l'assistance technique à la région et- leindra 19,4 millions de dollars.

Un financement ré- et l'importance accordée par l'ONDI à l'attribution de l'aide fournie

le sera approvisionnée en eau, en énergie et que des structures de transport existent.

C'est ainsi que suivant les orientations de la nouvelle politique d'industrialisation et qui a été renforcée par le Conseil National, organe suprême du Parti, vingt-deux projets d'une valeur de 9 milliards 900 millions ont été agréés en 1979-80. Il s'agit principalement de trois industries chimiques, trois industries mécaniques et de garages, de deux industries textiles et de cuir dont l'extension de la COMATEX, d'une industrie

de chaux (la SOCIMA) et de huit boulangeries.

Au cours de l'année 1980, 18 investissements industriels totalisant 10 milliards 900 millions de francs maliens ont été enregistrés. Ils se répartissent en Brasseries, Savonneries, Boissons Gazeuses, la SOCAM et un projet de production d'hyper-phosphate de Bourem. Ce dernier investissement est d'une valeur d'un milliard de nos francs.

Par ailleurs, le démarrage des travaux de la deuxième

cimenterie est prévu pour janvier 1982.

La promotion de ces industries passe nécessairement par une redynamisation, voire une restructuration de la Direction Nationale des Industries (D.N.I.) et un renforcement du Centre d'Etude et de Promotion Industrielle (C.E.P.I.).

Sur le plan des recherches minières, le Mali, pays pauvre, dispose de ressources en or ; ce qui est très important. Et, avec Kalana qui est une mine de taille moyenne, la collaboration étroite avec nos amis de l'URSS a permis de découvrir la base scientifique de cet or. Il nous faut développer cette production à partir de l'exploitation de la première réserve d'or cubé et généraliser la recherche dans l'ensemble du pays car la zone aurifère couvre les régions de Kéniéba, Bougouni et Sikasso.

Les recherches pétrolières viennent de connaître un re-

gain d'activité avec la récente signature de convention de production et d'exploitation de pétrole entre le Mali et une Société Américaine : Esso Exploration And Production Mali INC. Elle concerne une superficie de 140.000 kilomètres carrés dans le Nord du bassin sédimentaire de Taoudénit, tandis que le Sud est occupé par la Compagnie Française Elf-Aquitaine. Quant à l'uranium, les recherches sont en cours à l'Est et à l'Ouest. L'horizon de la mise en exploitation est pour 5 ans.

Malgré ces énormes potentialités, il nous faut d'abord nous nourrir, valoriser nos ressources énergétiques locales en prenant les moyens pour la fin. M. Robert Tiéblé N'Daw s'est penché ensuite sur le volet maîtrise de l'eau, « une priorité des priorités » comme l'a souligné le Chef de l'Etat aux Assises du Conseil National. Comment atteindre cette maîtrise de l'eau ? En créant un Fonds National de l'eau avec la participation effective des

populations, en aménageant les cours d'eau et en construisant des barrages avec un triple objectif (irrigation, navigation et production d'énergie électrique). Le Ministre a cité les cas des barrages de Sélingué, de Manantali, de Tossaye et le choix d'un site sur le Bani ou le Bagoué.

Avec les eaux souterraines l'Opération Puits qui connaît des problèmes de fonds sera dynamisée. Ce sont les populations qui réaliseront les puits et l'intervention de l'Etat se situera dans la fabrication des Buses et la perforation des rochers etc, etc...

Dans le domaine du tourisme, nous devons pratiquer un tourisme culturel reposant sur deux grandes étapes. La concentration des efforts de l'Etat au niveau des structures et le développement de sites et circuits touristiques. Les initiatives privées seront associées à cette promotion touristique, l'objectif étant l'immersion totale des touristes dans un milieu socio-culturel malien.

EXHIBIT A
CONVENTIONAL ENERGY TRAINING PROGRAM BROCHURES

Conventional Energy Training Program

Agency for International Development
Institute of International Education
American Society for Engineering Education

Introduction

AID is seeking qualified candidates to participate in a new training program which will provide fellowships in conventional energy studies at US academic institutions. The training program will concentrate on programs of study in science and engineering relating to fossil fuel, hydro and geothermal energy resource development. The program may also provide a limited number of fellowships in natural resources law, economics and management.

The Institute of International Education (IIE) will manage the Conventional Energy Training Program under a contract with AID. Placement of participants in appropriate US institutions will be arranged by IIE with the assistance of the American Society for Engineering Education. Nominations for the program will be submitted by the government to the local US AID mission and the mission will transmit applications to IIE in the United States.

Only graduate-level training will be offered in this program, often leading to a master's of science degree. However, non-degree graduate-level programs in technical areas may be tailored to meet individual participant needs. Internships at US industries and research labs will also be offered to provide practical experience in engineering and management.

Program Purpose

The Conventional Energy Training Program is one of two complementary programs AID is sponsoring to help AID-assisted countries enhance their ability to utilize their own energy resources (oil, natural gas, coal, lignite, geothermal, etc.). The second component of this effort will provide technical assistance to government agency staff to assess available energy resources and to develop plans for the exploration, production and management of these resources. The training program will emphasize practical academic experience for individuals who will play an active role in their countries' energy resource development and management programs.

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Program Initiation

No more than 100 applicants from all countries will be accepted in the first year of the training program which will begin in September 1981 for the 1981-82 academic year. Candidates will be selected from those nominated by AID-assisted countries through AID mission staff. It is expected that the training program will be conducted for a total of three years and that the training period for participants will generally not exceed two years.

Applications for admission to the 1981-82 training program should be submitted to the government agency contact person noted on the back of this pamphlet. The IIE will make the selection of participants on the basis of information provided by the applications in the US no later than 15 April 1981. Applications received later will be considered for the next year's programs.

Eligibility Requirements

Applicant screening will include examination of the following factors:

1. Present or Future Employment: The candidate should currently have a job or job commitment that will utilize the training experience upon his/her return home. The area of training should also be consistent with the country's energy resource development plans.
2. Educational Background: All candidates should have at least a first university degree in a field appropriate to the program of study they wish to pursue in the program.
3. English Language Proficiency: All candidates should be able to speak and read English sufficiently well to complete graduate level study and all applicants will be required to take the TOEFL examination. In certain cases remedial English training may be provided to otherwise qualified candidates.
4. Graduate Record Exam: Certain universities may require acceptable scores on the Graduate Record Exam for MS degree candidates.

AID will pay all training costs and living expenses for the training period except travel costs to and from the US. The country will be required to provide travel funds for participants. Funds will not be available to provide support to participant dependents.

Information Request Form

CONVENTIONAL ENERGY TRAINING PROGRAM, Academic Year 1981-82

Name: _____

Address: _____ Telephone: _____

Present or Anticipated Employer: _____ Position: _____

Program of Study Requested: _____

Educational Background:
College/University: _____ Degree: _____ Graduation Date: _____

Major Area of Study: _____ Minor: _____

Future Career Plans: _____

For further information about the Conventional Energy Training Program send the above request form to:

Contact Person: _____

Government Agency: _____

Address: _____

Telephone: _____

or contact your local US Aid mission.

US AID sponsors other energy related training programs in the following areas:

Alternative Energy Technologies

Solar Energy and Energy Conversion Laboratory
University of Florida

Energy Management

Institute for Energy Research
State University of New York/Stony Brook

For information about these programs, contact your local US AID mission.

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Programme de la Formation en Énergies Conventionnelles

Agency for International Development
Institute of International Education
American Society for Engineering Education

Presentation

L'AID recherche des candidats qualifiés à participer à un nouveau programme de la formation qui fournira des bourses de recherche en études des énergies conventionnelles dans des institutions académiques aux Etats-Unis. Ce programme de la formation concentrera son attention sur les programmes d'étude en science et en ingénierie relatives au développement des ressources d'énergie de combustible fossile, d'énergie hydro et géothermique. Ce programme peut aussi pourvoir en quantité limitée, certaines bourses de recherche en ressources naturelles aux domaines de la loi, l'économie politique et l'administration.

Sous un contrat avec l'AID, The Institute of International Education (IIE) dirigera le Programme de la Formation en Énergie Conventionnelles. Les participants seront placés aux institutions appropriées aux E-U par le IIE avec l'assistance de l'American Society for Engineering Education. Les nominations à ce programme seront soumises par le gouvernement à la mission locale US AID et celle-là transmettra les demandes au IIE aux E-U.

La formation offert par ce programme est strictement au niveau d'enseignement supérieur et peut souvent mener au Master's of Science degree. Cependant, pour satisfaire les besoins individuels des participants, on peut façonner des programmes au niveau supérieur dans les domaines techniques. En vue de la formation en ingénierie et en administration, des stages dans des industries et dans des laboratoires de recherche scientifique seront disponibles.

But du Programme

Le Programme de la Formation en Énergies Conventionnelles est un de deux programmes complémentaires pris en charge par l'AID pour aider les pays assistés par l'AID à enrichir leur pouvoir à utiliser leurs propres ressources d'énergie (pétrole, gaz naturel, charbon, lignite, géothermique, etc.). Un deuxième programme prévoit l'assistance technique au personnel des agences gouvernementales à évaluer les ressources d'énergie disponibles et à développer des projets pour l'exploration, l'exploitation et l'administration de ces ressources. Le programme de la formation mettra l'accent sur une connaissance académique et pratique pour ceux qui joueront un rôle actif dans le développement et dans l'administration des ressources d'énergie dans leurs propres pays.

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Commencement du Programme

Pas plus de 100 candidats de tous les pays seront admis cette première année du programme de la formation qui commencera en septembre 1981, pour l'année académique 1981-82. Le personnel de la mission AID aidera à choisir les candidats parmi ceux nommés par les pays assistés par l'AID. On s'attend à ce que ce programme ait lieu trois ans et à ce que, en général, le stage d'entraînement des participants ne dure pas plus de deux ans.

Pour participer au programme de la formation 1981-82, il faut soumettre les demandes à la personne de contact de l'agence gouvernementale indiquée au verso de ce bulletin. Le IIE choisira les participants selon l'information fournie par: le demandeur, le pays et la mission AID. Le IIE devra recevoir aux E-U les demandes, remplies complètement, pas plus tard que le 15 avril, 1981. Les demandes reçues après cette date seront tenues en considération des programmes de l'année suivante.

Exigences d'Éligibilité

Le choix des candidats sera effectué selon les facteurs suivants:

1. Emploi actuel ou prévu: Le candidat doit avoir en emploi actuel ou être compromis à un emploi qui utilisera la formation de son retour dans son pays. Le domaine d'entraînement doit aussi être compatible avec les projets de développement des ressources d'énergie du pays.
2. Expérience pédagogique: Le minime qualification est un premier university degree convenable au programme d'études que le candidat désire poursuivre dans ce programme.
3. Compétence en anglais: Chaque candidat devra parler et lire l'anglais suffisamment bien pour compléter les études au niveau supérieur et devra passer l'examen TOEFL. En certains cas, des cours de perfectionne d'anglais seront offerts aux candidats autrement qualifiés.
4. Examen <<Graduate Record>>: Pour les candidats du Master's of Science degree, certaines universités pourront requérir de notes acceptables sur l'examen <<Graduate Record>>.

L'AID payera toutes dépenses d'entraînement et de coût de la vie pendant le stage d'entraînement exclura du coût de voyage aller/retour aux E-U. Le pays doit pourvoir le coût de voyage à ses participants. L'AID ne prendra pas en charge des frais relatifs aux familles des candidats.

Formule de Demande de Renseignements

PROGRAMME DE LA FORMATION EN ENERGIES CONVENTIONNELLES, Année Académique 1981-82

Nom: _____

Adresse: _____ Téléphone: _____

Employeur actuel
C. évu: _____ Poste: _____

Programme d'étude
qui vous intéresse: _____

Expérience pédagogique
Collège/Université: _____ Degree _____ Date de
Matriculation _____

Domaine des études: Majeur: _____ Mineur: _____

Projets de carrière
de l'avenir: _____

Pour d'autres renseignements du Programme de la Formation en Énergies Conventionnelles
envoyer cette formule à:

Personne à contacter: _____

Agence gouvernementale: _____

Adresse: _____

Téléphone: _____

ou, contacter la mission locale du US AID

L'US AID dirige d'autres programmes d'entraînement relatifs à l'énergie dans les domaines
suivants:

Alternative Energy Training Program

Solar Energy and Energy Conversion Laboratory
University of Florida

Energy Management Training Program

Institute for Energy Research
State University of New York/Stony Brook

Pour recevoir des renseignements sur ces programmes, contacter la mission locale US AID.

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Programa de Capacitación en Energía Convencional

Agency for International Development
Institute of International Education
American Society for Engineering Education

Introducción

La AID busca candidatos calificados para participar de un nuevo programa de capacitación que ofrecerá becas para realizar estudios en el campo de la energía convencional en instituciones educativas estadounidenses. El programa se concentrará especialmente en estudios en áreas científicas y de ingeniería relacionadas con la explotación de los recursos de combustible fósil, hidroenergía y energía geotérmica. El programa podría ofrecer un número limitado de becas en los campos de derecho de recursos naturales, economía y administración.

El Instituto de Educación Internacional (IIE) organizará el Programa de Capacitación en Energía Convencional bajo contrato con la AID. La colocación de los participantes en las instituciones estadounidenses apropiadas estará a cargo del IIE con la asistencia de la Asociación Americana de Educación en Ingeniería. Los nombramientos para el programa deberán ser presentados por el gobierno a la oficina local de la AID la cual transmitirá las solicitudes al IIE en los Estados Unidos.

En este programa solo se ofrecerán cursos de postgrado resultando en la mayoría de los casos en la obtención del título de Maestro en Ciencias (MS). Sin embargo, existe la posibilidad de que se ofrezcan programas en áreas técnicas para satisfacer las necesidades de aquellos que no desean obtener un título. También se ofrecerá la oportunidad de realizar prácticas dentro del marco de la industria estadounidense y en laboratorios de investigación a fin de brindar experiencia en ingeniería y administración.

Propósito

El Programa de Capacitación en Ingeniería Convencional es uno de dos programas complementarios que patrocina la AID a fin de mejorar el aprovechamiento de recursos energéticos (petróleo, gas natural, carbón, lignito, energía geotérmica, etc.) por parte de los países que reciben su asistencia. El segundo componente de este esfuerzo brindará asistencia técnica a los empleados del gobierno de cada país para evaluar los recursos energéticos disponibles y para desarrollar planes de exploración, explotación y administración de dichos recursos. El programa proporcionará capacitación académica acorde con las necesidades de los individuos que han de participar activamente en los programas de desarrollo y administración de energía en sus respectivos países.

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Iniciación

No se aceptarán más de 100 solicitantes de todos los países para el primer año de programa de capacitación que comenzará en septiembre de 1981 para el año lectivo 1981-82. Los candidatos se seleccionarán entre los nombramientos de los países que reciben asistencia de la AID, realizados por medio de dicha organización. Se espera llevar a cabo el programa por el término de tres años y por lo general el período de capacitación para cada participante no excederá de dos años.

Las solicitudes de ingreso para el programa de capacitación de 1981-82 deberán presentarse a la persona que se indica al dorso. El IIE hará la selección de los participantes basándose en la información proporcionada por el solicitante, el país y la oficina de la AID. Las solicitudes completas deberán llegar al IIE en los Estados Unidos el 15 de abril de 1981 a más tardar. Las solicitudes recibidas con posterioridad se tomarán en cuenta para los programas del año siguiente.

Requisitos

La evaluación de los candidatos incluirá un análisis de los siguientes factores:

1. Empleo actual o futuro: El candidato o la candidata deben estar trabajando o tener la seguridad de un empleo a su regreso. El área de capacitación debe coincidir con los planes de desarrollo energético de sus respectivos países.
2. Antecedentes educativos: Todos los candidatos deben poseer por los menos un título universitario relacionado con el campo en que desean realizar sus estudios.
3. Requisitos de idioma: Todos los candidatos deben tener conocimientos de inglés suficientes como para completar estudios de postgrado en forma satisfactoria y rendir el examen TOEFL. En algunos casos se ofrecerán clases para reforzar el inglés de aquellos candidatos que satisfagan el resto de los requisitos.
4. Exámen para graduados: Algunas universidades exigen que los aspirantes al título de Maestro en Ciencias (MS) obtengan resultados aceptables en el exámen para graduados.

La AID cubrirá todos los gastos de estudios, comida y vivienda durante el período de capacitación excepto los viáticos hacia y desde los Estados Unidos. Cada país deberá proporcionar los fondos necesarios para cubrir dichos viáticos. No habrán fondos disponibles para mantener a los dependientes de los participantes.

Formulario para Solicitar Información

PROGRAMA DE CAPACITACION EN ENERGIA CONVENCIONAL, Año lectivo 1981-82

Nombre: _____

Dirección: _____ Teléfono: _____

Empleador actual
Cargo: _____

Area de interés: _____

Antecedentes
educativos: _____

Facultad/universidad: _____ Título: _____ Fecha de
Graduación: _____

Campo de
especialización: Principal: _____ Secundaria: _____

Planes para el futuro: _____

Para obtener información adicional acerca del Programa de Capacitación en Energía Convencional envíe esta solicitud a:

Nombre: _____

Entidad: _____

Dirección: _____

Teléfono: _____

O diríjase a la oficina local de la AID.

La AID estadounidense también patrocina programas de capacitación en las siguientes áreas:

Tecnología de Energía Alternativa

Laboratorio de Conversión Energética y Energía Solar
Universidad de Florida

Administración de Energía

Instituto de Investigación Energética
Universidad del estado de New York/Stony-Brook

Si desea información acerca de los mismos diríjase a la oficina local de la AID.

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EXHIBIT B

ADDITIONAL ACTIVITIES: CABLES AND COURSE DATA

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M E M O R A N D U M

TO: Pamela Baldwin, AID
FROM: James D. Westfield, DSI
DATE: March 25, 1981
RE: Conventional Energy Training Project (No. 936-9997)
Post-Graduate Program Descriptions for Several Universities
& Draft Cables

Attached you will find two sets of post-graduate program descriptions for schools offering conventional energy training. The emphasis is on oil, natural gas and coal; however, geothermal, oil shale and hydroelectricity programs are also included. We did not look for post-graduate programs in management, economics or natural resources law.

The first set of descriptions is taken directly from university catalogues and identifies the school, a contact, courses, etc. The second set was prepared from the first and omits the school and contact information. I have also written program descriptions for those schools which did not have them in the catalogue. This second set can be used to mail to Missions for their use as prototypical program descriptions to candidates. In many countries we were questioned about the type of post-graduate programs which existed and I think that these descriptions will serve this purpose.

I am also enclosing copies of draft cables from Robert and Marsha. These can serve as a basis for your response to questions from the Missions which we could not answer when we were in the countries. I'll be talking with you later this week.

JDW/bg

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UNIVERSITY - Colorado School of Mines

DEPARTMENT - Chemical and Petroleum - Refining Engineering

HEAD - P.F. Dickson

TELEPHONE - (303) 279-0300

PROGRAM DESCRIPTION -

The curriculum is essentially chemical engineering, but includes the technologies of petroleum refining and manufacture of petroleum - derived substances. Application of principles of engineering science to the design and analysis of process control systems is also incorporated. Special individual laboratories are provided for graduate students. In addition, there are laboratories for coal research, low temperature phase equilibria, shale oil, mass spectrometer and electron microscope.

COURSES -

- CR - 610 Advanced Refining Problems
- CR - 517 Petroleum Refinery Processing
- CR - 519 Synthetic Fuel Processes

ADMISSION REQUIREMENTS -

- BS Degree in Engineering or Science
- Adequate preparation - courses
- Show promise - grades
- GREAT - Graduate Records Exam Aptitude Test
- TOEFL - Test of English as a Foreign Language

GRADUATION REQUIREMENTS -

- 24 Semester hours. Total full-time student carries 15 credits.
- \$1,333 - non resident/semester.
- Engineering report in place of thesis.
- Seminar
- A committee appointed by dean determines courses and report content.
- Grades of B or better.

REMARKS -

UNIVERSITY - Colorado School of Mines

DEPARTMENT - Petroleum Engineering

HEAD -

TELEPHONE - (303) 279-0300

PROGRAM DESCRIPTION -

The petroleum engineering studies include drilling techniques, subsurface evaluation, oil and gas production, methods, hydrocarbon fluid properties, rock properties, underground fluid behavior, industry economics and management options, and application of math to the phases of drilling production and fluid flow. Graduate program leans toward professional, theoretical and research aspects of the profession with emphasis on development of research engineering application. There are laboratories available for graduate use with potentiometric models, large chromatograph, special PVT equipment and special small models.

COURSES -

- A Petroleum Engineering Field Camp

ADMISSION REQUIREMENTS -

BS Degree in Engineering or Science

Adequate preparation - courses

Show promise - grades

GREAT - Graduate Records Exam Aptitude Test

TOEFL - Test of English as a Foreign Language

GRADUATION REQUIREMENTS -

- 24 semester hours plus Engineering report in place of thesis.

REMARKS -

UNIVERSITY - Colorado School of Mines

DEPARTMENT - Geophysics

HEAD - G.V. Keller

TELEPHONE - (303) 279-0300

PROGRAM DESCRIPTION -

Specialized in exploration geophysics. Emphasizes the practical use of exploration approaches such as seismic, gravity, magnetic and electrical surveys. Special facilities include: Green Center, a facility for the study of equipment and techniques, field mobile facilities and the Geophysical Observatory.

COURSES -

- 550 - Seismic Waves
- 532 - Exploration Well Logging II
- 522 - Advanced Electrical Prospecting Methods
- 505 - Inversion Theory
- 581 - Foundation of Geophysical Theory
- 556 - Seismecity
- 574 - Engineering Seismology
- 653 - Elastic Waves

ADMISSION REQUIREMENTS -

- BS Degree in Engineering or Science
- Adequate preparation - courses
- Show promise - grades
- GREAT - Graduate Records Exam Aptitude Test
- TOEFL - Test of English as a Foreign Language

GRADUATION REQUIREMENTS -

- 24 semester hours plus Engineering report.

REMARKS -

UNIVERSITY - Colorado School of Mines

DEPARTMENT - Mineral Economics

HEAD - Jean Paul Mather

TELEPHONE - (303) 279-0300

PROGRAM DESCRIPTION -

Offers advanced studies in economic theory and business principles applied to the mineral industry.

COURSES -

530 - Economics of Energy Resources

504 - Advanced Process Engineering Economics

512 - Applied Macroeconomics

521 - Quantitative Techniques

560 - Market Analysis: Minerals and Fuels

575 - Cost Estimation in the Evaluation of Mineral Projects

ADMISSION REQUIREMENTS -

BS Degree in Engineering or Science

Adequate preparation - courses

Show promise - grades

GREAT - Graduate Records Exam Aptitude Test

TOEFL - Test of English as a Foreign Language

GRADUATION REQUIREMENTS -

- 24 semester hours plus Engineering report

REMARKS -

UNIVERSITY - Colorado School of Mines

DEPARTMENT - Mining Engineering

HEAD - T.B. Johnson

TELEPHONE - (303) 279-0300

PROGRAM DESCRIPTION -

This program is directed to mining methods and technologies and developing an understanding of mining principles and operations.

COURSES -

- 506 - Underground Excavations
- 507 - Advanced Drilling and Blasting
- 621 - Advanced Rock Mechanics

ADMISSION REQUIREMENTS -

- BS Degree in Engineering and Science
- Adequate preparation - courses
- Show promise - grades
- GREAT - Graduate Records Exam Aptitude Test
- TOEFL - Test of English as a Foreign Language

GRADUATION REQUIREMENTS -

- 24 semester hours plus Engineering report

REMARKS -

UNIVERSITY - Illinois Institute of Technology
Chicago, Ill. 60616

DEPARTMENT - Gas Engineering

HEAD - Dr. Stuart Leipziger

TELEPHONE - (312) 567-3000 Extension 3882

PROGRAM DESCRIPTION -

Masters Program - Increases students' understanding of fundamental principles and applications.

Doctors Program - No department major so student picks course work and develops plan.

A broad range of topics on gas and its uses are covered at the MS level. The emphasis is on new and developing methods of exploitation and use.

COURSES -

- GT - 540 Topics in Energy Supply
- GT - 523 Energy and Society
- GT - 524 Application of Cryogenic Engineering
- GT - 528 Problems in Gas Engineering
- GT - 540 Topics of Energy Supply
- GT - 508 Unconventional Energy Extraction and Conversion
- GT - 535 Coal Conversion Kinetics
- GT - 536 Fluidized Bed Engineering
- GT - 413 Coal Gasification
- GT - 414 LHG Fundamentals

ADMISSION REQUIREMENTS -

- BS degree in petroleum, natural gas, chemical or mechanical engineering.
- Application must be received by June 1 or November 15.
- Foreign students must complete preliminary application with foreign student advisor.
- Admission documents in English.
- TOEFL
- Financial affidavit of responsibility
- For all non-U.S. citizens, credentials must be received 8 weeks before entrance date
- Fee - Full time study (12-18 credit hours) is \$2,145. per semester.

GRADUATION REQUIREMENTS -

- Masters Degree -
 - A) Submit program of study.
 - B) One year (32 credit hours) of grade point average 3.0/4.0 or better.
 - C) Comprehensive exam.
- Ph.D. -
 - A) Three years full time study beyond Bachelor's Degree.
 - B) One Foreign Language
 - C) Comprehensive exam.
 - D) Thesis

REMARKS -

150

UNIVERSITY - University of Kentucky

DEPARTMENT - Civil Engineering

HEAD - John Deacon, Chairman
Edward Force, Director of Graduate Studies

TELEPHONE -

PROGRAM DESCRIPTION -

Degree offered in Mining Engineering
Master of Science in Mining Engineering I - This program unites courses from other departments. School of Civil Engineering has many well equipped laboratories. This program is to provide advanced level applied science in the mining industry.

COURSES -

- 428 - Advanced Geothermal Engineering
- 450G - Stratigraphy and Sedimentation
- 511 - Petroleum Geology
- 515 - Coal Geology
- 615 - Coal Geology
- 655 - Hydrogeology
- 653 - Mesozoic and Cenozoic Stratigraphy
- 551 - Rock Mechanics
- 572 - Advanced Coal Preparation

ADMISSION REQUIREMENTS -

- June 15 and January 12 - deadline for admission - respective terms.
- GRE (Graduate Record Exam Scores) Advanced Engineering Test.
- There is a Provisional Admission Plan.
- BS Degree with overall undergraduate grade average of 2.5 all translated and certified in English.
- TOEFL - passed with a score of 550 or better.
- Proof of sufficient funds for tuition, fees, books, room and board (\$6,500 available for each 12 month period).
- \$956/semester - non resident

GRADUATION REQUIREMENTS -

- A) Option of thesis or additional six credit hours of work.
- B) 26 credit hours with 3.0 or better grade average.

REMARKS -

UNIVERSITY - University of Missouri, Columbia

DEPARTMENT - Geology

HEAD - James Sfitt

TELEPHONE -

PROGRAM DESCRIPTION -

The Department of Geology offers specialization in the areas of Carbonate petrology, clay mineralogy, geophysics, groundwater geology, sedimentation, and structural geology. Much modern and sophisticated equipment is available.

COURSES -

Geochemistry
Geophysics
Igneous Petrology
Ore Deposits
Sedimentation
Stratigraphy

ADMISSION REQUIREMENTS -

- Registration - August 25, 1980.
- Must have Bachelors, GRE required.
- GPA of 3.0 or better.
- Thesis or Departmental exam.

GRADUATION REQUIREMENTS -

- 30 hours with at least 15 number 400 or above.
- 24 of upper level Geology courses.

REMARKS -

Out of state tuition - \$1,584.
Personal expenses - \$1,000.
Books - \$400.
Room and Board - \$14,600.
Other - \$50.

UNIVERSITY - University of Nevada

DEPARTMENT - Graduate School

HEAD -

TELEPHONE - (702) 784-6869

PROGRAM DESCRIPTION -

Master of Science in Engineering

This program emphasizes mineral exploitation. Metals and non-fossil fuel resources are dealt with. Course work in metalurgy, crystallography and geology is also encouraged. The course of study includes course work, laboratories and field programs.

COURSES -

- 241 - Underground Mining
- 701 - Advanced Mining Engineering
- 745 - Rock Mechanics
- 501 - Operations Research Method

ADMISSION REQUIREMENTS -

- Undergraduate GPA of 2.5 or better on Admission Examination.
- Apply by July 15 or January 2.

GRADUATION REQUIREMENTS -

- GPA (Grade Point Average) of 3.0 or better.
- Comprehensive exam or final oral examination.
- 24 graduate credits and 6 credits of graduate research.

REMARKS -

UNIVERSITY - Pennsylvania State University
University Park, PA 16802

DEPARTMENT - Petroleum and Natural Gas Engineering

HEAD - C.D. Stahl

TELEPHONE - (814) 865-6082

PROGRAM DESCRIPTION -

Experimental and technological studies of water flooding and new methods of displacing oil from porous media.

COURSES -

- 410 - Applied Reservoir Engineering
- 420 - Applied Reservoir Analysis
- 421 - Reservoir Engineering
- 486 - Tertiary Oil Recovery Methods

ADMISSION REQUIREMENTS -

- \$1,166 per semester
- BS Degree
- GREAT
- International students apply 6 months in advance of term desired
- TOEFL
- Admission to degree program

GRADUATION REQUIREMENTS -

- 3.0 grade point average or better
- 30 graduate credits

REMARKS -

UNIVERSITY - University of Southern California

DEPARTMENT - Petroleum Engineering

HEAD - Lyman Handy, PhD, Chairman

TELEPHONE -

PROGRAM DESCRIPTION -

Offers a Engineering degree in Petroleum Engineering.

Basic science and technology are being applied to studies of fossil fuels with emphasis on developing methods of economic exploration. Sources such as oil shales, tar sands, coal, petroleum residue and natural bitumens are being investigated -- especially oil shale.

COURSES -

- 541 - Oil and Gas Production from Carbon Reservoirs
- 532 - Thermal Recovery Methods
- 525 - Natural Gas and Natural Gasoline
- 512 - Well Completion and Stimulation
- 580 - Chemical Problems in Petroleum Production

ADMISSION REQUIREMENTS -

- GREAT
- Financial Support Statement
- Must receive application for admission 90 days before semester starts
- Base fee \$2,210.00

GRADUATION REQUIREMENTS -

- Thesis
- Admission to candidacy

REMARKS -

UNIVERSITY - University of Tulsa

DEPARTMENT - Engineering and Physical Sciences

HEAD - N.D. Sylvester

TELEPHONE -

PROGRAM DESCRIPTION -

Master of Science in Geo Science

Emphasizes energy resources, particularly petroleum exploration.

COURSES -

7013 - Advanced Sedimentation

7037 - Organic Geochemistry

7073 - Basin Geology

7113 - Isotope Geochemistry

7053 - Seismic Stratigraphy

7073 - Advanced Exploration Geophysics

ADMISSION REQUIREMENTS -

- BS in Physical Science, Math or Engineering

- Undergraduate GPA of 3.0

- TOEFL

GRADUATION REQUIREMENTS -

- Thesis program and non-thesis program

- 3.0 grade average

- Thesis program 30 hours - non-thesis program 36 hou

REMARKS -

UNIVERSITY - University of Utah

DEPARTMENT - Geology and Geophysics

HEAD - Stanley H. Ward

TELEPHONE -

PROGRAM DESCRIPTION -

Areas of specialization: applied gravity and magnetics, applied EM, seismology, economic geology, low and medium temperature geochemistry, hydrology.

COURSES -

- 660 - Sandstone and Mudstone Petrology
- 651 - Geochemical and Hydrothermal Systems
- 551 - Energy Resources
- 522 - Exploration Seismology
- 630 - Geochemical Exploration
- 638 - Geostatistics
- 656 - Geophysical Applications of Electromagnetic Theory
- 668 - Advanced Groundwater

ADMISSION REQUIREMENTS -

- Certification of BS degree
- TOEFL
- Financial Statement
- Student Visa for international students

GRADUATION REQUIREMENTS -

- 45 quarter hours to graduate credits and thesis
- Application for candidacy during second quarter of graduate work
- Comprehensive oral and/or written exam
- Thesis or accepted alternative

REMARKS -

UNIVERSITY - University of Utah

DEPARTMENT - Mining and Fuels Engineering

HEAD - David Bodily, Ph.D.

TELEPHONE -

PROGRAM DESCRIPTION -

This program specializes in operation research, rock mechanics, slope stability, mining economics, mine ventilation, solution mining, fossil fuels, fuel conversion processes, catalysis, and solid and liquid gaseous fuels.

COURSES -

- 656 - Oil Shale and Bituminous Sands
- 653 - Fundamentals of Coal Liquefaction and Gasification Processes
- 550 - Mineral Fuel Testing
- 582 - Surface Mining Methods
- 547 - Chemistry of Fossil Fuels
- 552 - Conversion of Coal to Other Energy Forms
- 553 - Alternate Energy Sources

ADMISSION REQUIREMENTS -

- Certificate of BS Degree
- TOEFL
- Financial Statement
- Student Visa for International Students

GRADUATION REQUIREMENTS -

- 45 quarter hours to graduate credits and thesis
- Application for candidacy during second quarter of graduate work
- Comprehensive oral and/or written exam
- Thesis or accepted alternative

REMARKS -

UNIVERSITY - Iowa State

DEPARTMENT - Inter-departmental

HEAD - Merwin D. Dougal

TELEPHONE -

PROGRAM DESCRIPTION -

Water resources (inter-departmental major)
Facilities exist for research and study in source distribution,
hydraulics of water control and aspects of water resource development.

COURSES -

- 577 - Water Resource - includes hydrology, water control facilities
- 575 - Water Resource Engineering
- 671 - Advanced Topics in Water Resource Engineering

ADMISSION REQUIREMENTS -

- Special English competency exam given by university
- BS Degree - Certified English translation

GRADUATION REQUIREMENTS -

- 45 credit hours for the non-thesis MS Degree
- Thesis or six credit hours

REMARKS -

UNIVERSITY - Iowa State

DEPARTMENT - (Inter-departmental Minor)
Agriculture, Chemical Engineering, Civil and Electrical
Engineering, Mechanical and Nuclear.

HEAD - William J. Cook

TELEPHONE -

PROGRAM DESCRIPTION -

A program for the engineer with interest in bulk power or energy systems to pursue advanced academic training or research. The departments mentioned above all are involved with energy systems. -- These include fossil and nuclear power plants, transmission systems, power system analysis and control, energy supply and transport, processing energy resources, conversion and utilization.

COURSES -

- 575 - Water Resource System - Engineering
- 571 - Surface Water Hydrology
- 671 - Advance Topics in Water Resource Engineering
- 518 - Coal Science and Technology
- 528 - Solar Energy Thermal Systems
- 548 - Energy Systems Engineering
- 455 - Gas Turbines
- 444 - Elements and Performance of Power Plants, Turbines,
Steam Generators

ADMISSION REQUIREMENTS -

- Special English competency exam given by university
- BS Degree - Certified English translation

GRADUATION REQUIREMENTS -

- 12 credit hours are required as a minor for the Masters Degree

REMARKS -

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UNIVERSITY - University of Wyoming

DEPARTMENT - Department of Mineral Engineering
Masters Program in Petroleum Engineering

HEAD - Mr. Stinson

TELEPHONE -

PROGRAM DESCRIPTION -

The program includes physical properties of oil shale, oil and gas production in low temperature environments, application of systems theory to petroleum exploration and recovery. The graduate student has access to the Rocky Mountain Institute of Energy and Environment.

COURSES -

- 610 - Development and Production
- 612 - Reservoir Mechanics
- 620 - Natural Gas
- 625 - Drilling Practice
- 630 - Reservoir Mechanics
- 615 - Secondary Recovery

ADMISSION REQUIREMENTS -

- TOEFL
- B average in major area of study
- BS Degree with certified translation
- \$4,000 and transportation would be necessary to finance one year

GRADUATION REQUIREMENTS -

- Admission to candidacy
- Plan A - 26 hours of course work plus thesis and final exam
- Plan B - 30 hours of course work plus final exam

REMARKS -

UNIVERSITY - Texas A & I University

DEPARTMENT - Natural Gas Engineering

HEAD - C.V. Mooney

TELEPHONE -

PROGRAM DESCRIPTION -

The program focuses on the discovery, development and transportation of natural gas. Course work in other discipline can reinforce the basic course work in the school. The main emphasis is on understanding and describing the natural gas resource.

COURSES -

- 481 - Primary Energy Conversion
- 483 - Natural Gas Processing
- 485 - Reservoir Engineering
- 495 - Natural Gas Distribution and Transmission
- 503 - Advanced Topics in Natural Gas Engineering
- 487 - Well Logging and Correlation
- 496 - Natural Gas Production and Management

ADMISSION REQUIREMENTS -

- Complete official international student application
- BS or equivalent - (Certified English translation)
- TOEFL - satisfactory score
- Proof of financial responsibility (\$5,200/year)

GRADUATION REQUIREMENTS -

- 36 semester hours of approved graduate work
- Thesis
- Research or design project
- 4 year full-time professional activity
- Application for candidacy

REMARKS -

Texas A & M University

Department of Petroleum Engineering

Head: W.D. Von Gonten (713) 845-2241

Graduate level work is offered at both the Doctor's and Master's level. At the Master's level, courses are offered with the primary aim of giving the student a fundamental understanding of the performance of petroleum reservoirs and their behavior under conditions imposed by pressure depletion, pressure maintenance, enhanced recovery operations and cycling. Courses are also offered which deal with the problems encountered in drilling and producing wells.

A strong area of specialization is offered dealing with the development and use of numerical models simulating field and/or well performance for a wide range of operating conditions.

Courses

601, 602 Drilling and Completing Wells
603, 604 Advanced Reservoir Engineering
605 Phase Behavior of Petroleum Reservoir Fluids
607 Recovery Methods
608 Well Logging Methods
610 Numerical Simulation of Heat and Fluid Flow in Porous Media
648 Pressure Transient Testing

Admission Requirements for Graduate College

1. Baccalaureate degree
2. Show promise - grades
3. Adequate preparation - courses
4. GRE
5. Formal application by:
 - June 15 for fall semester
 - November 1 for spring semester
 - March 15 for summer session
6. TOEFL required - 550 plus rigorous oral and written examination after arrival

"No student from another country may be admitted to Texas A & M University as a non-degree student nor register in non-degree status."

36 credit hours for Master of Engineering Degree

\$40/semester credit hour

PHILIPPINES

Subject: Conventional Energy Training (936-9997)

1. The purpose of this cable is to respond to questions addressed to Mr. Robert Gordon by the Government of the Philippines and USAID/PHILIPPINES regarding the subject program.
2. DS/EY is willing to waive TOEFL requirement for qualified candidates since English is the language of instruction and a waiver corresponds with USAID/P policy.
3. Details about university programs and courses are presently being compiled and will be ready for distribution to Missions by . Copies will be pouched immediately upon completion. Since industry internships will be designed to meet individual needs no catalog of available placements is presently being developed. Further details about internships will be compiled from the experience with placement of the first group of applicants. A catalog of illustrative placements will then be made available.
4. We appreciate your interest in the program and look forward to working with USAID/P and the Government of the Philippines.

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SRI LANKA

Subject: Conventional Energy Training (936-9997)

1. The purpose of this cable is to respond to questions addressed to Mr. Robert Gordon by the Government of Sri Lanka and . USAID/SL regarding the subject program.
2. DS/EY is willing to accept TOEFL waiver for qualified candidates since English is the language of instruction and a waiver corresponds with USAID/SL policy.
3. Details about university programs and courses are presently being compiled and will be ready for distribution to Missions by . Copies will be pouched immediately upon completion. Since industry internships will be designed to meet individual needs no catalog of available placements is presently being developed. Further details about internships will be compiled from the experience with placement of the first group of applicants. A catalog of illustrative placements will then be made available.
4. We appreciate your interest in the program and look forward to working with USAID/SL and the Government of Sri Lanka.

INDIA

Subject: Conventional Energy Training (936-9997)

1. The purpose of this cable is to respond to questions addressed to Mr. Robert Gordon by the Government of India and USAID/INDIA regarding the subject program.
2. DS/EY is willing to follow usual USAID/INDIA Policy regarding international travel, reference letter from Mr. John Gunning USAID/NEW DELHI to Mr. William White OIT/DSB AID/W dated August 27, 1980. However, Discussions between Mr. Gordon and ONGC indicate that it can finance international travel costs and we would appreciate ONGC doing this.
3. DS/EY is also willing to accept TOEFL waiver for qualified candidates since English is the language of instruction and a waiver corresponds with USAID/I policy.
4. Details about university programs and courses are presently being compiled and will be ready for distribution to Missions by . Copies will be pouched immediately upon completion. Since industry internships will be designed to meet individual needs no catalog of available placements is presently being developed. Further details about internships will be compiled from the experience with placement of the first group of applicants. A catalog of illustrative placements in industry will then be available.
5. In response to an inquiry by the Department of Coal: a program to conduct in-country seminars in state of the art technologies and techniques in conventional energy disciplines is now being developed by DS/EY. Further information will be forthcoming.
6. We appreciate your interest expressed in the program and look forward to working with USAID/INDIA and the Government of India.

BANGLADESH

Subject: Conventional Energy Training (936-9997)

Refs: A. Dacca 1148, B. E.O. 12065

1. DS/EY appreciates your passing information to GOB regarding internships, airfare and number of nominations, Ref. E.O. 12065 Paragraphs 2, 3, and 4.
2. Ref. Dacca 1148, Paragraph 3, Details about university programs and courses are presently being compiled and will be ready for distribution to Missions by . Copies will be pouched immediately upon completion. Since industry interships will be designed to meet individual needs no catalog of available positions is presently being developed. Further details about internships will be compiled from the experience with placement of the first group of applicants. A catalog of illustrative placements in industry will then be available.
3. DS/EY is unable to give firm indication of number of candidates who, if qualified, will be accepted from Bangladesh. This number will depend on the total number of qualified applicants received from other countries and the nature of the training programs requested.
4. We appreciate the information regarding participants salary and the copy of the formal invitation to GOB, Ref. Paragraph 4.

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CABLE TO CAIRO

SUBJECT: CONVENTIONAL ENERGY TRAINING
PROGRAM (93G-9997)

Regret misinformation on IIE follow-up visit. Mission should plan additional meetings with Ministries of Industry and of Electricity/Energy and others as appropriate to continue program momentum. No need for EGPC to wait in starting to process candidates.

GENERAL CABLE TO MISSIONS VISITED
(EGYPT AND AFRICA)

CONVENTIONAL ENERGY TRAINING PROGRAM
(936-9997)

1. All applications for Program should be sent to DS/EY, attention Pamela Baldwin.
2. Visa and travel arrangements are to be handled by Mission as in previous training programs. Additional information will be forthcoming after date of receipt for applications.
3. In general, TOEFL averages of 500-550 are prerequisite for success. Averages of 400-425 will require three month intensive English program which can be accommodated as first semester for highly qualified applicants.
4. Additional information will be forthcoming on specific university programs and courses.
5. There is no limit on number of applications by country or by region.
6. Missions should process all applications which are received. Any comments on applicant's background, capability, etc. that can assist in evaluation will help. Prioritization can also be considered.

CABLE TO NIAMEY, NIGER

SUBJECT: CONVENTIONAL ENERGY TRAINING
PROGRAM (936-9997)

Candidates with other high qualifications regarding employment and educational background will be considered with TOEFL scores in range of 400-425. They will be provided three months of intensive English in first semester of program.

Enrollment for second semester 1981/1982 is possible with same criteria as first semester.

CABLE TO CAIRO

SUBJECT: CONVENTIONAL ENERGY TRAINING
PROGRAM (936-9997)

Regret misinformation on IIE follow-up visit. Mission should plan additional meetings with Ministries of Industry and of Electricity/Energy and others as appropriate to continue program momentum. No need for EGPC to wait in starting to process candidates.

M E M O R A N D U M

TO: Pamela Baldwin, AID
FROM: James D. Westfield, DSI
DATE: March 25, 1981
RE: Conventional Energy Training Project (No. 936-9997)
Post-Graduate Program Descriptions for Several Universities
& Draft Cables

Attached you will find two sets of post-graduate program descriptions for schools offering conventional energy training. The emphasis is on oil, natural gas and coal; however, geothermal, oil shale and hydroelectricity programs are also included. We did not look for post-graduate programs in management, economics or natural resources law.

The first set of descriptions is taken directly from university catalogues and identifies the school, a contact, courses, etc. The second set was prepared from the first and omits the school and contact information. I have also written program descriptions for those schools which did not have them in the catalogue. This second set can be used to mail to Missions for their use as prototypical program descriptions to candidates. In many countries we were questioned about the type of post-graduate programs which existed and I think that these descriptions will serve this purpose.

I am also enclosing copies of draft cables from Robert and Marsha. These can serve as a basis for your response to questions from the Missions which we could not answer when we were in the countries. I'll be talking with you later this week.

JDM/bg

EXHIBIT C
MEMORANDA

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M E M O R A N D U M

TO: Pamela Baldwin
FROM: James D. Westfield *Jim W*
DATE: March 18, 1981
SUBJECT: Conventional Energy Training Project (No. 936-9997)

I understand that AID may be required to go to competitive procurement in order to select a contractor to manage the project. If this is the case, there will be problems meeting the announced schedule, especially with the long-term post-graduate training for the 1981-82 academic year. I do not believe that you can select a contractor in time to be helpful in evaluating applications and placing those selected. I am especially concerned because in the almost 20 countries which DSI personnel visited in January and February of this year, we made promises and set in progress actions which will result in the nomination of a large number of candidates for training this academic year.

AID Mission personnel as well as high level government officials in these countries believe that if they expedite nominations and propose people who meet the published program criteria; they will be accepted for post-graduate training in September. The visits by DSI personnel were specifically designed to encourage the nomination of candidates for post-graduate training in September 1981. Because of this, we emphasized this part of the program and spent most of our time describing and "selling" this. I know that many people are going to go out of their way to get nominations into AID by the deadline. Project nomination deadlines of 15 April 1981 were announced and in many countries we were introduced to people who would be proposed as candidates. This was possible because the program was announced and described in several cables from DS/EY in late 1980 and early 1981. Thus, AID has an obligation to follow through and has set in motion a process which requires a substantial amount of specialized work in a short period of time (15 April - 1 September).

I believe that AID has two alternative courses in the interim between now and when a contractor will be selected through the competitive bidding process. The first alternative is to notify the Missions and governments to suspend activities related to nominating candidates for 1981-82 post-graduate education in conventional energy areas. The second alternative is to use available resources to accomplish the work necessary to evaluate applications and place those who are found to qualify. While neither alternative is ideal, the second is the only one which should be considered.

If AID at this point, less than one month before the deadline for nominations, notifies their Missions and they in turn announce a suspension of the process, there could be severe ramifications at the Mission and country government level.

Pamela Baldwin
March 18, 1981
Page 2

Most of the candidates who will be nominated have already been selected and have agreed to take the training if they are found to qualify. In order for their completed applications to be processed by the local AID Missions and in Washington, D.C., by 15 April, they have had to arrange to take language competency tests, acquire undergraduate transcripts and pass physical examinations. This does not include the large amount of time and paperwork which government agencies have done to select and arrange for leave for those who are being nominated. Although there was no guarantee that all who were nominated would be granted training, there were clear statements that the program was funded and would take qualified applicants for the 1981-82 year.

If AID, because of in-house contracting or other problems, cannot accept candidates for September 1981, I believe that:

- o The Mission personnel who are enthusiastically seeking candidates will lose face with the people in the government (many Mission and embassy people went to a lot of trouble to set up appointments and inform people of this opportunity).
- o The Mission personnel may be unwilling to actively support the program when it does get going (it does not take more than one false cry of wolf to severely curtail future responses to calls for help).
- o The government personnel who have worked hard to get candidates will feel that they have been misled and it will be difficult to get them to nominate people in the future.

I do not think that the above problems are over-stated and think that the damage that a delay could cause would be substantial. It could also adversely affect other AID training programs.

Because of the above, I believe that AID DS/EY should do everything in its power to accept and process nominations for the 1981 academic year. I have some specific suggestions on how this can be accomplished in the interim without a major contractor and I will be writing to you next week about this.

I have one last comment about the AID decision to go to competitive bidding after having worked with IIE and ASEE, assuming that they would be awarded a non-competitive contract. If you now go out for competitive bidding, I feel that you should inform others of this past working relationship. I believe the IIE and ASEE team can write the best proposal and are "probably" the most qualified; thus, it may not really be a completely open competition. If others know about the previous involvement and of the fact that you have announced in cables and our literature that IIE and ASEE are going to manage the contract, they may not want to bid. If you do announce the history of your association, others may not want to bid because they will feel that the contract is "wired" to IIE and ASEE. Even if you have a completely non-biased selection, I believe

Pamela Baldwin
March 18, 1981
Page 3

that they still have an edge because of their past work on the project and their knowledge of what is needed. If a bidder did not know this and you awarded the contract to IIE and ASEE and the other bidders found out about the previous involvement, they might file an official complaint. This, at best, could hold up the selection of a contractor and, at worst, could require a re-bid with the disqualification of IIE and ASEE. I do not know how you avoid this, but I do recommend that you be very careful in how you advertise and treat the past work with IIE and ASEE.

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M E M O R A N D U M

TO: Pamela Baldwin, DS/EY-306

FROM: Marsha Gorden

DATE: March 13, 1981

RE: Conventional Energy Training Program: Indications of Enthusiasm
Shown in Countries Visited

AFRICA

EGYPT

GOE: The consortium of 10 petroleum companies engaged in oil exploration and exploitation, the Egyptian General Petroleum Corporation (under the Ministry of Petroleum) plans to advertise this training program and anticipates over 10 candidates.

TANZANIA

GOT: The Ministries of Water/Energy and Minerals along with the Tanzanian Petroleum Development Corporation (under the Ministry of Water/Energy) organized a meeting for seven potential candidates on January 31 to hear further program explanation by Ms. Gorden.

Am. Emb.: The Chargé d'Affaires asked for a training program of this type last year and has described the program personally to the GOF Energy Minister.

KENYA

GOK: The President's Office plans to advertise this program in order to attract candidates. The Ministries were actively soliciting applications and had identified several potential candidates by the first week of February.

Am. Emb.: The Counselor for Economic Affairs is playing an active role in discussing this program with the newly formed Ministry of Energy.

BOTSWANA

GOB: This program was announced nationally on radio in a 30-minute program made with Ms. Gorden.

Mission: The Director is personally organizing the program.

NIGER

Am. Emb.: The Ambassador wrote the introductory letter for the Program and Ms. Gorden's visit.

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MALI

GOM: The Conseil Technique to the Minister of Industrial Development (includes Energy) believed the program to be so important that he accompanied Ms. Gordon on all GOM ministry visits to further encourage their participation.

LATIN AMERICA

COSTA RICA AND PANAMA

The long-term post graduate training fellowships have been announced in an official government training program publication. The 1981 Training Plan was issued in March and the AID Conventional Energy Project is described.

GUATEMALA

A letter was written by the AID Mission Director to various government agencies announcing the availability of stipends for post graduate training starting in 1981.

BARBADOS, ECUADOR, COSTA RICA & HONDURAS

Candidates for the 1981 academic year have been interviewed.

ASIA

BIJRMA

Mission: After long duration to establish mission, the Director has given high priority to this program.

BANGLADESH

GOB: The director of Petro Bangla is personally involved in the program.

PHILIPPINES

GOP: The Energy Minister expects to personally assist in selection of candidates.

SRI LANKA

Mission: The Director is leading efforts to find candidates.