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**ORNL****FOREIGN TRIP REPORT**

ORNL/FTR-3777

**DATE:** October 8, 1990

**SUBJECT:** Report of Foreign Travel of Daniel B. Waddle, Research Staff  
Member, Energy Division

**TO:** Alvin W. Trivelpiece

**FROM:** Daniel B. Waddle

**PURPOSE:** To present findings of the Costa Rica Power Sector Efficiency Study to the Instituto Costarricense de Electricidad, and to the Ministry of Energy, Natural Resources and Mining. To discuss the progress and plans for the Central American Rural Electrification Project with USAID/ROCAP.

**SITES VISITED:** 9/24-9/26/90 San Jose, Costa Rica  
9/27/90 Guatemala City, Guatemala

**ABSTRACT:** I travelled to San Jose, Costa Rica to present the findings of the Costa Rica Power Sector Efficiency Study to our counterparts in the utility and the Ministry of Energy. Discussions were held with line level managers at ICE and MIRENEM, as well as senior policy makers. Findings were discussed, as well as a plan of action set for the final stage of the project. Discussions were held for a one day period with both the bilateral A.I.D. and the regional A.I.D. mission regarding the need for a similar study in Guatemala and matters directly pertaining to the CARES project.

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## Background

The Costa Rica Power Sector Efficiency Improvement project was initiated in November 1989, when principals from the project team visited Costa Rica to begin discussions with the Instituto Costarricense de Electricidad (ICE) and the Ministry of Energy Mines and Natural Resources (MIRENEM). The data collection and analysis phase of the project began two months later, and has been brought to the point of near completion in recent months. The purpose of this trip to Costa Rica was to hold working discussions with ICE and MIRENEM to identify issues in the analysis that may require additional study, and to present the key assumptions used in the analysis from which the results are sensitive.

The purpose of the short visit to Guatemala was to discuss ORNL's continuing support to ROCAP through the Central America Rural Electrification Program, and to discuss the interest in a power sector efficiency study in Guatemala with the A.I.D. mission. I travelled to Costa Rica with Ross Pumfrey of the A.I.D. Office of Energy (S&T/EY), and Ignacio Rodriguez of RCG/Hagler Bailly. Ross Pumfrey, representing S&T/EY, continued on to Guatemala to monitor activities sponsored by S&T/EY and to discuss continued S&T/EY support to USAID/ROCAP and USAID/Guatemala.

## Costa Rica

I left for Costa Rica on Sunday, September 23. The first day of our visit, we met with Hernan Robles, our key counterpart at ICE, to discuss the schedule of meetings for the week and to provide an overview of the substance of our findings. In addition, we scheduled a meeting with Mario Hidalgo, the Managing Director of ICE, to brief him on our findings and discuss the next steps of the process.

The meeting with Hidalgo went extremely well, with Hidalgo expressing a heightened concern in the need to lower demand growth through a demand management program. He showed a keen interest in the findings of the efficiency study and promised ICE's continued support and collaboration with the program through completion.

On Tuesday, September 25, 1990, we held a meeting with the line managers within ICE who had participated in the data collection and analysis tasks. These included department managers from Generation, Engineering, Planning, Finance, Transmission, Distribution and Control (dispatch). Findings on both the supply-side and demand-side management assessment were presented, and although the participants appeared actively interested in the results, there were very few comments during and after the presentations. The discussion following the two presentations focused on a recently completed marginal cost analysis and the effects of the revised figures on marginal cost of generation on savings estimates. Discussion regarding the generation and T&D analysis focused on the process of selecting new equipment.

In the afternoon, I went to BEL Engineering to discuss the progress of the feasibility study for the San Lorenzo project with Federico Baltodano, President of BEL. BEL's work on the engineering design and cost analysis is nearing completion, and there is a need for ORNL to complete the economic analysis so that the report can be delivered to A.I.D. in complete form.

Baltodano also informed me that BEL has conducted a separate environmental assessment that will be appended to the report. The CONELECTRICAS environmental assessment should be finished next week. The combination of these two independent reports should more than satisfy the requirements of Servicio Nacional de Energia (SNE), quantifying potential project impacts on the environment.

Wednesday, September 26, 1990, we met with the Direccion Sectoral de Energia (DSE) and MIRENEM to present the findings of the assessment. DSE has been the principal counterpart institution collaborating on the demand-side management portion of the assessment. The presentation was structured such that emphasis was placed on both the methodology used in the assessment and its findings. The interaction with DSE and MIREMEN staff was very active. The presentation and discussion on the DSM portion of the assessment lasted more than two hours. It was very clear from the interest and enthusiasm of our counterparts at DSE that they intend to play a proactive role in promoting efficiency measures now and in the future.

I met again with Baltodano Wednesday afternoon to collect some additional information on cost and scheduling for the San Lorenzo project. We discussed timing of the report completion process and the need to search for additional financing sources for the project, in the event that the Inter-American Development Bank does not come through with funding. After having my flight to Guatemala canceled Wednesday night, I left for Guatemala early Thursday morning, September 27.

### Guatemala

Due to the fact that I arrived later than expected, I went directly to the NRECA project office in Guatemala City upon arrival. I met first with Jim Lay and Ross Turner to discuss the progress of the San Lorenzo project, the results of the August CARES annual planning session and its affect on the CARES project, and the need for any monitoring activities for the CARES project during FY91. I stated that due to the recently completed mid-project evaluation, there does not appear to be a need for monitoring activities during the upcoming year. Both Lay and Turner agreed with this perspective.

I later met with Ron Orozco to discuss the progress of Belize activities. NRECA's work in Belize is directly relevant to ORNL activities in renewable energy technology transfer and project development sponsored by S&T/EY and DOE/CORECT.

Recent CARES developments in Belize suggest that the timing is particularly attractive to conduct an isolated diesel power plant assessment similar to the assessment performed last year in Guatemala as part of the Electric Utility Efficiency Improvement Study (EPUES). The strategy developed for the Belize EPUES mission included the addition of a renewable energy specialist to identify the potential for renewable energy applications for decentralized power generation in isolated (non-electrified) areas of Belize. Orozco suggested that if the EPUES mission could be conducted in three to four months, the timing would be ideal for CARES rural electrification activities. Although the CARES activities are functionally separate from the EPUES program, the results of a Belize EPUES mission would be very useful to the CARES project. We agreed to communicate in coming months regarding the probability of the mission occurring during the time period Orozco felt was most appropriate.

Later in the day, Ross Pumfrey, Mario Funes (USAID/ROCAP Energy Officer), and I met with Roberto Figueroa (USAID/Guatemala Energy Officer) to discuss Guatemala's growing crisis in the power sector and the role USAID/Guatemala could play to mitigate the effects of this crisis. Ross Pumfrey and I provided Funes and Figueroa with an overview of the S&T/EY perspectives on the severity of the problems in Central America and, in particular, Guatemala; focusing at the end of the presentation on the process and results of the Costa Rica assessment. Both Funes and Figueroa were very supportive of performing an assessment in Guatemala, starting perhaps as soon as two months from now. We discussed funding options and the level of effort required for the activity. Funes and Figueroa, soliciting the support of their respective missions, will discuss a plan of action. If both ROCAP and USAID/Guatemala support this proposal, S&T/EY will be requested to put together a technical assistance team to perform the study.

After this discussion, I met with Mario Funes separately to discuss his perspective on the ORNL role supporting ROCAP on CARES activities in the future. I suggested to Mario that I was very hopeful that ORNL could provide support services to ROCAP for its newly defined mandate to promote regional activities in efficiency and private power. As an example, I reviewed our interest to perform the EPUES study in Belize, citing the fact that additional monies would be needed for the mission, and that a letter would be forthcoming from S&T/EY to Belize and ROCAP missions soliciting interest and financial support for the study. Mario stated that in principle, he would support such a request, but that this would of course have to be approved first by USAID/Belize, and then by the ROCAP mission director. He went on to say he would fully support ORNL's participation in conservation and efficiency technical assistance to ROCAP, although all activities would have to be specifically identified by ROCAP prior to implementation, and that a number of institutions, including ORNL, would be considered by ROCAP to perform the work required for each specific task. We ended by discussing the timing of the post project evaluation. The CARES project has recently been extended by one and one-half years. I suggested that we formally specify that the post project evaluation should take place within six months of the project completion date, rather than specify a specific date for this activity. It is possible that the project will be extended again to allow for an additional increase in project funding, so an evaluation date tied to the relative project timetable would be much more useful than a schedule tied to a specific date.

I left Guatemala Friday morning, September 28, 1990 for Oak Ridge. I arrived in Oak Ridge late Friday evening.

Itinerary

Date

September 23, 1990	Depart Oak Ridge, TN Arrive San Jose, Costa Rica
September 24-27, 1990	San Jose, Costa Rica
September 27, 1990	Depart San Jose, Costa Rica Arrive Guatemala City, Guatemala
September 27-28, 1990	Guatemala City, Guatemala
September 28, 1990	Depart Guatemala City, Guatemala Arrive Oak Ridge, TN

List of Persons Met

Hernan Robles, Senior Advisor

Mario Hidalgo, General Manage, ICE

Heriberto Rodriguez, Energy Officer, USAID/San Jose

Teofilo de la Torre, ICE

Felipe Corriole Morales, ICE

José M. Fernandez, ICE

Guillermo E. Alvarado V., ICE

José Feo Carballo A., ICE

Arnold Arias Chavarria, ICE

José Edo. Rojas, A., ICE

Milton, Esquivel H., ICE

Luis A. Barquero, ICE

Luis E. Pacheco M., ICE

Luis Alberto Soto R., ICE

Jorge Zamosa Soto, ICE

William Solano, ICE

Fernando Montoya J., ICE

Gloria Villa, Deputy Director, DSE

Ana Lorena León, Coordinator, DSE

Arturo Molina, DSE

Giovani Castillo, DSE

Federico Baltodano, President, BEL Engineering

Jim Lay, NRECA/Guatemala

Ross Turner, NRECA/Guatemala

Ron Orozco, NRECA/Guatemala

Mario Funes, Energy Officer, USAID/ROCAP

Roberto Figueroa, Energy Officer, USAID/ROCAP

**END**

**DATE FILMED**

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