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**ENERGY CONSERVATION SERVICES PROGRAM:
Fourth Quarterly Report, FY 1985
(7/1/85-9/30/85)**

Contract No. DAN-5728-C-00-3073-00

936-5728

HBC Reference No. 84-150(8)

Prepared for: 000184
Office of Energy 5
U.S. Agency for International Development
Washington, DC 20523

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The Energy Conservation Services Program (ECSP) provides a broad range of technical advisory services, training, and information dissemination activities to AID-assisted countries.* The objective of this 4-year program is to promote energy conservation in industry, transportation, electric power generation and transmission, and commercial and institutional building design and operation. On September 15, 1983, the U.S. Agency for International Development (AID) contracted with Hagler, Bailly & Company (prime contractor) and Reliance Energy Services (subcontractor) to provide technical and management assistance to the program. In November of 1984, Hagler, Bailly & Company became a subsidiary of RCG International. As part of this acquisition, the operations of Reliance Energy Services, another RCG subsidiary, were merged with Hagler, Bailly & Company.**

In the first year of the contract, 18 separate activities were initiated and carried out from September 15, 1983 to September 28, 1984. During the second year of ECSP from October 1, 1984 to September 30, 1985, eight separate activities have been initiated and carried out (see Exhibit I for a summary of all ECSP activities).

The fourth Quarterly Activity Report of the second year of ECSP covers the period July 1 through September 30, 1985. During this quarter, three separate activities were carried out, one of which was initiated during this quarter -- private-sector involvement in power generation in Pakistan. The emphasis during the

*This program is part of the Energy Policy Development and Conservation Project (Project No. 936-5728). Note: The contract officer for ECSP, Pamela Baldwin, is on leave through December 31, 1985. During her absence, Dr. David Jhirad is the acting ECSP contract officer.

**For the purposes of this report, references to Reliance Energy Services or any of its employees have been incorporated under the name of Hagler, Bailly & Company.

Exhibit 1

Summary of ECSP Activities
(Inception to date)

Activity	Period of performance	Budget	Cumulative expenditures (9/30/85) ¹
1. Program management and development, including preparation of in-country missions and program planning activities; preparation of <u>Update</u> progress report on ECSP activities; publication of descriptive brochure on ECSP; providing technical assistance to AID-, ESCAP-, and National Research Council-sponsored meetings; preparation of an international mailing list of individuals working on energy conservation in developing countries; planning for evaluations of AID projects in the Dominican Republic, Central America, and Djibouti (HBC reference 150/151)	9/15/83-ongoing	None	\$240,158
2. Organization, preparation, and presentation of 2-week energy demand management and conservation training course in Sri Lanka for Ministry of Power and Technology -- December 7-17, 1983 (HBC reference 152)	10/10/83-12/30/83	\$124,131	\$126,259
3. Support in preparation of Technology Transfer for Energy Management Project Paper with U.S. AID/Philippines and Ministry of Energy/Bureau of Energy Utilization (HBC reference 153)	9/15/83-4/30/84	\$133,000	\$ 86,778
4. Development of data base on AID-funding energy conservation initiatives (HBC reference 154)	10/8/83-5/11/84	\$ 14,451	\$ 13,407
5. Preparation of energy auditing manual for use in Sri Lanka (HBC reference 155)	10/21/83-2/27/84	\$ 38,465	\$ 43,755
6. Organization, preparation, and presentation of 4-week energy auditing course in Sri Lanka for Ministry of Power and Energy -- February 27-April 10, 1984 (HBC reference 156(a))	1/3/84-4/10/84	\$ 80,220	\$ 77,788
7. Completion of full audit reports and feasibility study of energy conservation projects for Sri Lanka Tyre Corporation and Thulhiriya Textile Mills (HBC reference 156(b))	3/15/84-8/15/84	\$ 69,061	\$ 68,257
8. Development of ECPIE: Energy Conservation Project Investment Evaluation Model and user manual (HBC reference 157)	1/3/84-8/30/84	\$ 23,805 ²	\$ 43,118
9. Preparation of monograph on innovative approaches to financing energy conservation investments in less developed countries (HBC reference 158)	1/3/84-9/10/84	\$ 7,500 ²	\$ 10,257
10. Completion of feasibility study of guide and directory of U.S. energy-efficient equipment for distribution to developing countries -- activity jointly sponsored with Office of Industrial Programs, U.S. Department of Energy (HBC reference 159)	1/3/84-7/12/84	\$ 25,000	\$ 25,941

¹Based on labor costs incurred and invoices received only.

²Scope of work was expanded subsequent to budget preparation.

Exhibit 1 (continued)

Summary of ECSP Activities
(Inception to date)

Activity	Period of performance	Budget	Cumulative expenditures (9/30/85) ¹
11. Missions to ASEAN countries to assist in the project planning for regional building energy conservation activities (HBC reference 160)	5/5/84-6/4/84	None	\$ 31,770
12. Mission to assess current energy situation in the transportation sector of Costa Rica and identify possible AID-funded activities to improve energy use efficiency; conducted in cooperation with Oak Ridge National Laboratory (HBC reference 161)	5/14/84-ongoing	None	\$ 28,738
13. Planning and preparation for the Latin America/Caribbean Regional Energy Conservation Seminar (HBC reference 162)	5/14/84-ongoing	\$102,000	\$109,391
14. Missions to Ecuador and Peru to assist in developing industrial energy conservation outreach services and programs (HBC reference 163)	5/14/84-ongoing	None	\$ 19,625
15. Ecuador industrial energy conservation training, curriculum development, and audits (HBC reference 164)	7/14/84-3/31/84	\$104,157	\$ 97,249
16. Revision of training manual for energy demand management and conservation training course for industry and buildings (HBC reference 165)	7/14/84-ongoing	\$ 10,675	\$ 13,417
17. Revision of industrial energy audit manual (HBC reference 166)	7/14/84-9/1/84	\$ 14,458	\$ 15,241
18. Evaluation of the IIE/TVA Conventional Energy Training Project (CETP) Course (HBC reference 167)	6/30/84-8/30/84	\$ 19,096	\$ 21,704
19. Organization and planning of the Pakistan National Energy Conservation Center (HBC reference 168)	9/8/84-ongoing	\$275,000	\$223,826
20. Industrial Energy Conservation Program (Dominican Republic) Evaluation (HBC reference 169)	10/1/84-2/28/85	\$ 20,000	\$ 23,357
21. Regional Industrial Energy Efficiency Project (Central America and Panama) Evaluation (HBC reference 170)	10/1/84-3/15/85	\$ 36,000	\$ 38,687
22. Energy Initiatives Project (Djibouti) Evaluation (HBC reference 171)	11/30/84-2/15/85	\$ 16,286	\$ 17,225
23. Fact-finding mission to Haiti to examine the energy efficiency of the sugar and manufacturing industries (HBC reference 173)	2/20/85-12/31/85	\$ 11,500	\$ 11,789
24. Joint reconnaissance visit to Sri Lanka to identify energy bottlenecks in the agricultural sector (HBC reference 177)	6/1/85-12/31/85	None	\$ 14,538
25. Mission to Costa Rica to design a demonstration program and public information campaign for increasing energy efficiency in the transportation sector (HBC reference 178)	6/1/85-ongoing	None	\$ 40,211
26. Study of impediments to private sector development of non-utility power generation (HBC reference 179)	9/1/85-12/31/85	\$ 60,000	\$ 4,418

¹Based on labor costs incurred and invoices received only.

Exhibit 2

Fourth-Quarter Expenditures, FY 1985
 (Eighth Quarter of the Contract) -- Summary

	Contract budget ¹	Quarterly expenditures ²	Cumulative expenditures through 9/30/85 ²	
			\$	%
Salaries	\$ 344,063	\$ 24,239	354,073	102.9
Fringe benefits	89,456	5,862	88,725	99.8
Overhead	390,168	27,843	417,347	107.0
Travel/trans./per diem	274,722	6,624	151,676	55.1
Other direct costs	41,200	8,965	115,178	280.0
Equipment	50,000	-0-	-0-	.0
Subcontractor	<u>667,348</u>	<u>5,815</u>	<u>225,599</u>	<u>33.8</u>
Total estimated costs	\$1,856,957	\$79,348	\$1,352,600	72.8
Fixed fee	<u>123,698</u>	<u>5,233</u>	<u>90,068</u>	<u>72.8</u>
Total estimated costs and fixed fee	\$1,980,655	\$ 84,581	\$1,442,668	72.8

¹Only \$1,678,909 has been obligated so far, of which \$529,000 has been contributed by Regional Bureaus and Missions.

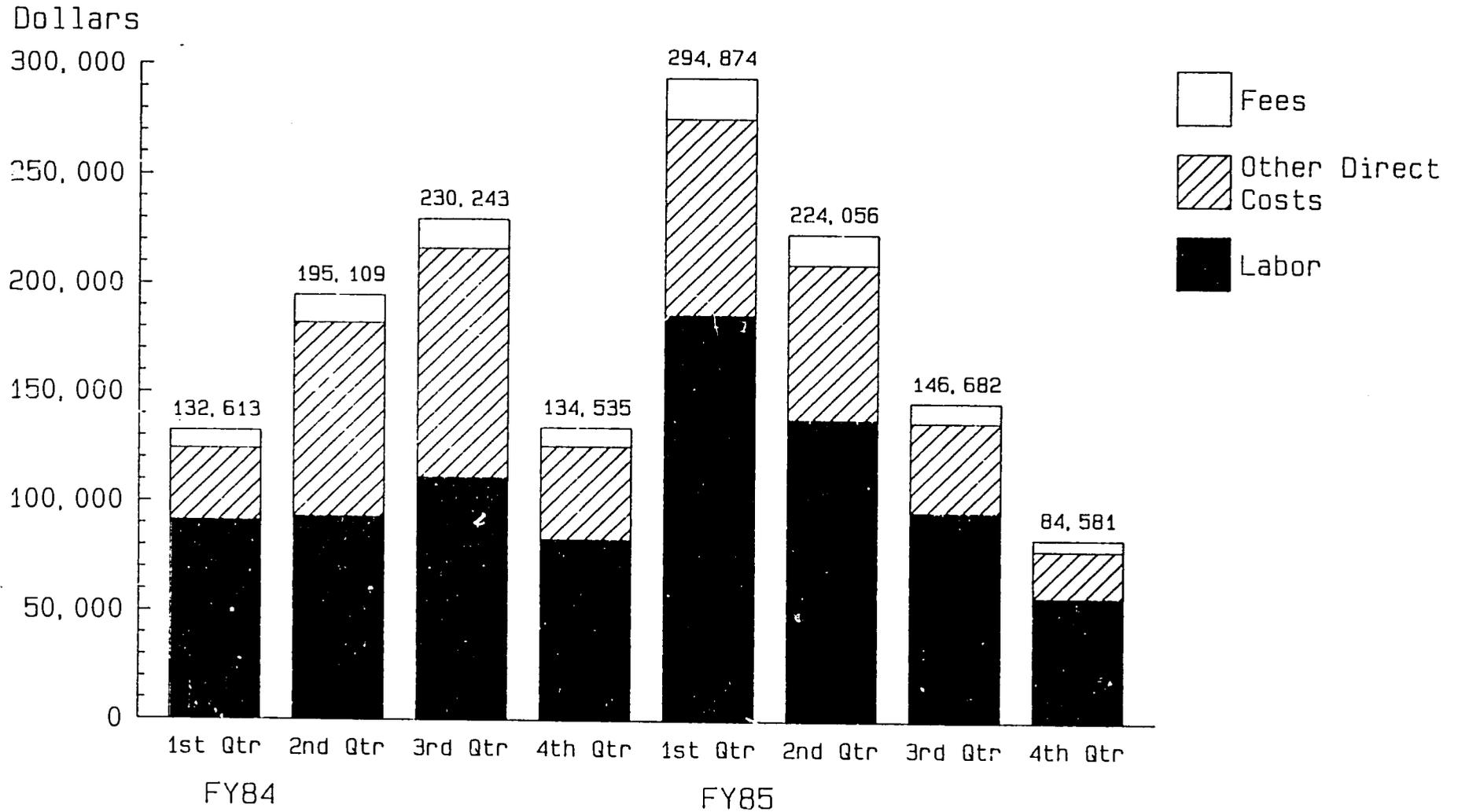
²Based on labor costs incurred and invoices received as of 9/30/85.

Exhibit 3

ECSP Expenditures by Quarter

<u>First year</u>		<u>Second year</u>	
First quarter (9/15/83-12/15/83)	\$132,613	First quarter (10/1/84-12/31/84)	\$294,874
Second quarter (12/15/83-4/1/84)	195,109	Second quarter (1/2/85-3/31/85)	224,056
Third quarter (4/2/84-6/30/84)	230,243	Third quarter (4/1/85-6/30/85)	146,682
Fourth quarter (7/2/84-9/28/84)	<u>134,535</u>	Fourth quarter (7/1/85-9/30/85)	<u>84,581</u>
Yearly total	692,500		750,193

ECSP Quarterly Expenditures for Labor, Other Direct Costs, and Fees



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quarter was placed on (1) developing an energy conservation demonstration program for the transportation sector in Costa Rica, (2) planning for the study team visit to Pakistan to investigate barriers to private-sector non-utility electrical generation, and (3) work to complete the energy conservation strategy paper for the Office of Energy. A total of 7 professional person-weeks were spent in Costa Rica (see individual reports for country-by-country lengths of visits). This quarter represented to some extent a transfer between the completion of many of the activities initiated during the first two years of ECSP and a range of new activities planned to begin in the next year. On the basis of the AID Office of Energy Strategy and FY86-FY87 Program Plan for Energy Conservation a number of new projects will commence that are likely to expand the scope of ECSP activities and further involve ECSP in the planning and implementation stages of conservation projects.

As the scope of activities under ECSP has grown and involved a widening circle of other AID projects, additional resources have become available to support energy conservation work. The planning efforts in the Philippines (HBC Reference No. 152) and Pakistan (HBC Reference No. 168) have received direct funding from the AID missions in those countries. The Bureau for Latin America and the Caribbean provided half the funding for the Energy Conservation Seminar (HBC Reference No. 162), and the mission in the Dominican Republic and the Regional Office for Central America and Panama (ROCAP) provided funding for the evaluations of their respective projects (HBC Reference Nos. 169 and 170). ROCAP has subsequently provided additional funding to support planning work for SIECA (Secretaria Permanente de Integracion Economica Centroamericana). The mission in San Jose is providing funding for the transportation fuel savings demonstration program and public awareness campaign (HBC Reference No. 178) and the the Asia and Near East Bureau is providing funding for the Pakistan non-utility electrical generation study (HBC Reference No. 179).

A number of activities described in this quarterly report are continuing into the next quarter, including the Costa Rica transportation demonstration project and the study on barriers to private sector initiatives in non-utility electrical generation in Pakistan. A study team will be leaving in October for Pakistan. They will spend 3 weeks investigating regulatory or

institutional impediments to private-sector non-utility electrical generation. Certain new activities are also under consideration. Next quarter, planning activities will begin for initiating a program in Egypt similar to the Technology Transfer for Energy Management (TTEM) project in the Philippines. Also, there have been ongoing discussions with officials in Thailand, Indonesia and the Philippines to explore opportunities for ECSP activities in these countries.

Quarterly expenditures, as shown in Exhibit 2, were \$84,581 as compared with \$146,682 in the third quarter of the second year of the program (see Exhibits 3 and 4).

U.S. AID CONSERVATION SERVICES PROGRAM
(Contract Number: DAN-5728-C-00-3073-00)

QUARTERLY ACTIVITY REPORT
(For period 7/1/85-9/30/85)

ACTIVITY: Program Management and Development

COUNTRY: Not country-specific

START DATE: 9/15/83

COMPLETION DATE: Ongoing

BUDGET: None

QUARTERLY EXPENDITURES: \$ 36,410

CUMULATIVE EXPENDITURES: \$240,158

S+T/EY MANAGER: Dr. David Jhirad

HBC MANAGER: Henri-Claude Bailly

HBC REFERENCE: 150/151

DESCRIPTION

This activity consists of the various management tasks associated with the execution of the contract -- e.g., progress review meetings, preparation of quarterly reports. It also includes planning activities associated with new initiatives. These initiatives are either triggered by the field or the regional bureaus or directly by S&T/EY. (Some of these initiatives eventually become separate activities for program management purposes.) The fourth-quarter initiatives for the second year of ECSP (in addition to those that are already treated as separate program activities) included:

- Distribution of the third Update. Over 300 copies were printed and sent to all AID field missions as well as relevant counterpart agencies in developing countries and international organizations. Requests to be placed on the mailing list for the Update have been received from 14 organizations. Also included in the third Update was an annotated list of ECSP publications available at no charge to AID staff members and energy officials associated with AID-assisted projects. Other individuals requesting copies of publications will be charged a nominal fee. Thus far, 8 requests for materials have been received from AID projects in the Dominican Republic, Jamaica, Guatemala, the Philippines, and the Caribbean

Development Bank. Two requests from private-sector organizations in the United States and Singapore have also been received.

- The paper Financing Energy Conservation in Developing Countries, compiled from the proceedings of the Latin America/Caribbean Regional Energy Seminar, is currently under review at AID. It was developed to serve as a planning tool for those in developing countries seeking energy conservation project financing, particularly in instances where there are formidable barriers to overcome. It is anticipated that the final report will be ready for distribution next quarter.
- Preparation of the second edition of the ECSP Energy Equipment Cost Directory. An expanded version of the Energy Equipment Cost Directory was begun last quarter with a mailing to over 150 US manufacturers and distributors of energy equipment. In the first edition of the equipment cost directory, information on 45 types of energy equipment was assembled for use in developing countries where product information on U.S. equipment vendors is not easily accessible. The products contained in the first edition were broken down into the following equipment categories:
 - boiler systems
 - electrical systems
 - energy management systems and controls
 - fixed and portable instrumentation
 - heat exchangers
 - heated medium distribution systems
 - lighting systems
 - solar heaters.

The format is standardized, so for each entry the model number, operating characteristics, name and address of supplier, and manufacturer's retail price F.O.B. in U.S. dollars appears for each piece of equipment.

In updating the cost directory, coverage will be expanded to include more equipment categories as well as additional products in existing categories. Information on approximately 30 new companies and their products will be contained in this latest edition. There will be no format changes. The second edition will be available next quarter.

- In support of the planning efforts of AID's Office of Energy, Hagler, Bailly & Company is continuing to

assist the Office of Energy in formulating a strategic work plan. These efforts have been targeted toward identifying and justifying new areas for energy conservation initiatives in AID-assisted countries over the next two years.

Since the oil burden is significant in developing countries where the price of oil in local currencies continues to rise, the quickest and cheapest way to alleviate balance of payment problems is to extend the use of domestic energy supplies. Increased energy efficiency throughout the economy is one way in which developing countries can generate greater wealth with limited resources and the same amount of energy.

As part of the AID Office of Energy Strategy and FY86-FY87 Program Plan For Energy Conservation, the power, industrial and transportation sectors of developing economics have been identified as areas where short-term, quick pay-back activities can have immediate effect on development. The types of countries most likely to benefit from these measures would be major oil users that display the ability to obtain additional donor organization financing for long-term follow-up activities. Some of the activities ECSP would promote during the next two years include (1) demonstration projects using "innovative financing techniques, (2) model national energy conservation programs, (3) model energy-efficiency programs for small industry, and (4) "sister" relationships between existing LDC energy management associations, particularly with regard to rural development and the private sector. A draft report is currently under review at AID and upon approval will be made ready for distribution next quarter.

- Work was begun this quarter on a systematic analysis of the potential of specific energy applications in developing countries -- i.e., cogeneration and small power/hydropower. Electrical generation has become a critical component to the economies of developing countries as various sectors of the economy depend on its availability and supply reliability for sustained growth. Initiatives taken in these areas would begin to involve the private sector actively in measures to sustain energy conservation measures. The study done on cogeneration in developing countries also supplements planning efforts for the initiation of cogeneration activities in Pakistan under the ECSP program (see HBC Reference 179).
- This quarter work has been continuing on the preparation of the 24-month report. This report will highlight the accomplishments of the ECSP program to date, focusing on

activities in Ecuador, Sri Lanka, Central America, the Philippines, and Pakistan in three major program areas: (1) research, development, and demonstrations; (2) training and technical assistance; and (3) information dissemination. A draft report will be completed next quarter.

ACTIVITY REPORTS

1. Energy Conservation Services Program: Fourth Quarterly Report, FY 1985 (7/1/85-9/30-85), September 1985.
2. Energy Conservation Services Program: Update No. 3, June 1985.
3. Financing Energy Conservation in Developing Countries (draft), June 12, 1985.

KEY PERSONNEL

- Hagler, Bailly & Company: Henri-Claude Bailly, President; Alain Streicher, Vice President; Pirooz Sharafi, Senior Associate; Bruce Appelbaum, Senior Associate; Gerald Schwinn, Associate; Faith Klareich, Research Associate; Beverly Abreu, Research Associate.

EXPENDITURES

(As of 9/30/85, based on labor costs incurred and invoices received):

	<u>This quarter</u>	<u>Cumulative</u>
Salaries	11,800	73,574
Fringe benefits	2,950	18,392
Overhead	14,013	87,366
Travel/trans./per diem	200	4,169
Other direct costs	5,173	36,914
Equipment	-0-	-0-
Subcontractor	<u>-0-</u>	<u>4,745</u>
Total	34,136	225,160
Fee	<u>2,273</u>	<u>14,998</u>
GRAND TOTAL	36,410	24,0158

U.S. AID CONSERVATION SERVICES PROGRAM
(Contract Number: DAN-5728-C-00-3073-00)

QUARTERLY ACTIVITY REPORT
(For period 7/1/85-9/30/85)

ACTIVITY: ECPIE -- Energy Conservation Project Investment Evaluation Model (Contract Task Area 7)

COUNTRY: Not country-specific

START DATE: 1/3/84

COMPLETION DATE: Ongoing

BUDGET: \$23,805*

QUARTERLY EXPENDITURES: \$ 97

CUMULATIVE EXPENDITURES: \$43,118

S+T/EY MANAGER: Dr. David Jhirad

HBC MANAGER: Henri-Claude Bailly

HBC REFERENCE: 157

DESCRIPTION

This activity entailed the design and validation of a microcomputer-based financial and economic evaluation model. The computer program that has been developed analyzes the financial and economic performance and foreign currency usage of energy conservation, fuel substitution, and cogeneration investments.

The model, which was demonstrated during the Latin America/Caribbean Regional Energy Conservation Seminar held in Costa Rica in January 1985 (see HBC Reference 162), raised substantial interest among the participants at the seminar. Final revisions were made to the model and the user's manual during the second quarter of FY 1985 to incorporate certain recommendations made by the participants at the seminar. Based on the enthusiastic response to the model, AID decided to make the model and user's manual available to those interested at a price of \$40, with the proceeds from the sales going toward the cost of reproduction, shipping, and handling. As of the end of this quarter, fifteen requests had been received for copies of the model and user's manual from

*Budget was for a first version of the model, which was subsequently changed, expanded, and tested.

individuals in both the public and private sectors in the United States and AID-assisted countries.

ACTIVITY REPORTS

None.

KEY PERSONNEL

- Hagler, Bailly & Company: Henri-Claude Bailly, President; Michael Fisher, Manager.

EXPENDITURES

(As of 9/30/85, based on labor costs incurred and invoices received):

	<u>This quarter</u>	<u>Cumulative</u>
Salaries	17	14,870
Fringe benefits	4	3,717
Overhead	20	17,658
Travel/trans./per diem	-0-	3,334
Other direct costs	50	846
Equipment	-0-	-0-
Subcontractor	-0-	-0-
	<u>91</u>	<u>40,425</u>
Total	91	40,425
Fee	<u>6</u>	<u>2,693</u>
GRAND TOTAL	97	43,118

U.S. AID CONSERVATION SERVICES PROGRAM
(Contract Number: DAN-5728-C-00-3073-00)

QUARTERLY ACTIVITY REPORT
(For period 7/1/85-9/30/85)

ACTIVITY: Costa Rica Fuel Efficiency in the Transportation Sector (Contract Task Area 4)

COUNTRY: Costa Rica

START DATE: 6/1/85

COMPLETION DATE: Ongoing

BUDGET: None

QUARTERLY EXPENDITURES: \$32,771

CUMULATIVE EXPENDITURES: \$40,211

S+T/EY MANAGER: Dr. David Jhirad

HBC MANAGER: Alain Streicher **HBC REFERENCE:** 178

DESCRIPTION

During this quarter, several members of the ECSP contract staff went to Costa Rica to assist the government of Costa Rica in designing and conducting a project to increase fuel savings in the transportation sector through low-cost, quick payback measures. These measures consist of a demonstration program and public information and awareness campaign for increasing energy efficiency in both public and private transportation. The present effort is the result of earlier work conducted by a reconnaissance mission to Costa Rica in June 1984 by staff from the Oak Ridge National Laboratory and ECSP (see QAR, 4/1/84-6/30/84, HBC Reference 161). ECSP contractor staff made a preparatory visit in June 1985.

Work on the demonstration program began this quarter with the preparation of a course to be conducted on energy-efficient driving techniques. Costa Rican instructors and drivers will be trained using Spanish-language versions of the instructional materials of the Driver Energy Conservation Awareness Training (DECAT) program developed by the U.S. Department of Energy. Statistical information continues to be gathered on the performance of a taxi cooperative, Coopeguaria, and a bus fleet, Guadalupe, to determine the short-term outcome of these energy-saving measures under local operating conditions.

Cooperation from local companies and institutions has been significant. The contribution of goods and services free or for a nominal charge has exceeded expectations. Also, the accessibility of these services and materials illustrates the degree to which local resources could be mobilized quickly for broader implementation of a fuel savings program. Preliminary findings show that the fuel savings achieved through these measures could be as high as 20 percent. The methods used to acquire this energy saving will be easily replicable in other areas not included in the current demonstration program.

For the second component of this project, the information and awareness campaign, ECSP staff will provide counseling and samples of promotional materials used in other countries. Much of the implementation work will rely on personnel from Costa Rica's Energy Sector Directorate (DSE). Also, the campaign will tap into the resources and networks available through the Press and Communications Directorate of RECOPE (Costa Rican petroleum refinery) and the Road Safety Directorate of MOPT (Ministry of Public Works and Transportation). As such, this phase of the project is expected to be a highly collaborative effort.

ACTIVITY REPORT

1. Costa Rica -- Transportation Fuel Conservation Project
(draft report), September 1985.

KEY PERSONNEL

- Hagler, Bailly & Company: Alain Streicher, Vice President (2 days in Costa Rica); Robert Kowalski, Senior Associate (48 days in Costa Rica)
- AID/San Jose: Heriberto Rodriguez, Energy Officer
- Costa Rica: Alexandra Hernandez, Ministry of Industry, Energy and Mines, Directorate of Sectoral Energy; Dr. Julio Jaen, Ministry of Public Works and Transportation Directorate of Road Safety.

EXPENDITURES

(As of 9/30/85, based on labor costs incurred and invoices received):

	<u>This quarter</u>	<u>Cumulative</u>
Salaries	9,168	11,645
Fringe benefits	2,292	2,911
Overhead	10,887	13,828
Travel/trans./per diem	3,381	3,616
Other direct costs	3,295	3,999
Equipment	-0-	-0-
Subcontractor	<u>1,700</u>	<u>1,700</u>
Total	30,724	37,700
Fee	<u>2,046</u>	<u>2,511</u>
GRAND TOTAL	32,771	40,211

The AID mission in San Jose has contributed \$30,000 to the project.

U.S. AID CONSERVATION SERVICES PROGRAM
(Contract Number: DAN-5728-C-00-3073-00)

QUARTERLY ACTIVITY REPORT
(For period 7/1/85-9/30/85)

ACTIVITY: Pakistan: Private-Sector Involvement in Power Generation (Contract Task Area 6)

COUNTRY: Pakistan

START DATE: 9/9/85

COMPLETION DATE: 12/31/85

BUDGET: \$60,000

QUARTERLY EXPENDITURES: \$4,418

CUMULATIVE EXPENDITURES: \$4,418

ST/EY MANAGER: Dr. David Jhirad

HBC MANAGER: Alain Streicher **HBC REFERENCE:** 179

DESCRIPTION

During this quarter, planning was begun on a study that will identify barriers to private-sector development of off-system electrical generation in Pakistan. The study will be based in part on the findings of a team of energy experts that will visit key power sector, private-sector, and government officials in Pakistan to acquire their views, collect and analyze existing data, and debrief the AID Mission on the team's preliminary findings and recommendations.

Preparations were made this quarter for the team's visit to Pakistan in October. The study team will be composed in part of ECSP contract staff. The study will identify impediments to off-system electrical generation that exist at the policy, regulatory, or institutional level. Pakistan's internal energy situation could contain inherent constraints to non-utility electrical generation such as lack of available capital and skilled manpower, and structural limitations within the industrial base. Such factors will be explored extensively by the study team. A cost/benefit analysis of different alternatives to off-system electrical generation will be presented in the study. In contrast, U.S. experience in the area of private-sector non-utility electrical generation will be detailed to illustrate the success

of a government incentive program set up to foster these types of investments.

A proposed action plan will be generated from the study. It will attempt to identify the potential market and the expected level of economic success for private-sector cogeneration and small power generation from renewables and indigenous resources, particularly coal and gas. Recommendations will be made suggesting how the Pakistan government can encourage these activities.

ACTIVITY REPORT

None.

KEY PERSONNEL

- Hagler, Bailly & Company: Alain Streicher, Vice President (2 days in Pakistan); James Williams, Vice President; Pirooz Sharafi, Senior Associate
- AID/Washington: Robert Archer, Asia/NE
James Sullivan, S+T/EY
- AID/Islamabad: James Bever.

EXPENDITURES

(As of 9/30/85, based on labor costs incurred and invoices received):

	<u>BUDGET</u>	<u>This QUARTER</u>	<u>CUMULATIVE</u>
Salaries	18,573	1,699	1,699
Fringe benefits	4,853	425	425
Overhead	20,554	2,018	2,018
Travel/trans./per diem	8,300	-0-	-0-
Other direct costs	4,000	-0-	-0-
Equipment	-0-	-0-	-0-
Subcontractor	-0-	-0-	-0-
Total	56,280	4,142	4,142
Fee	276	276	
GRAND TOTAL	60,000	4,418	4,418

The Asia/Near East Bureau has contributed \$40,000 to the project.