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**ENERGY CONSERVATION SERVICES PROGRAM:
FOURTH QUARTERLY REPORT
(7/2/84 - 9/28/84)**

HBC Reference No. 84-150 (4)

Prepared for:

**Office of Energy
U.S. Agency for International Development
Washington, DC 20523**

Prepared by:

**Hagler, Bailly & Company
2301 M Street, NW
Washington, DC 20037**

October 31, 1984

SUMMARY

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ACTIVITY REPORTS:

Program Management and Development (150/151)

Preparation of Audit Reports and Detailed Feasibility Studies for a Tire Plant and Textile Mill (Sri Lanka) (156b)

ECPIE: Energy Conservation Project Investment Evaluation Model (157)

Monograph on Innovative Approaches to Financing Energy Conservation Investments in Less Developed Countries (158)

ASEAN Buildings Energy Conservation Activities (160)

Transportation Energy Conservation (Costa Rica) (161)

"Seminario sobre la Conservacion de Energia" (162)

Ecuador Industrial Energy Conservation Training, Curriculum Development, and Audits (164)

Revision of Training Manual (165)

Revision of Industrial Energy Auditing Manual (166)

Evaluation of the IIE/TVA Conventional Energy Training Project (CTEP) Course (167)

Organization and Planning of the Pakistan National Energy Conservation Center (168)

SUMMARY

The Energy Conservation Services Program (ECSP) provides a broad range of technical advisory services, training, and information dissemination activities to AID-assisted developing countries.* The objective of this 4-year program is to promote energy conservation in industry, transportation, electric power generation and transmission, and in the design and operation of commercial and institutional buildings. On September 15, 1983, U.S. AID contracted with Hagler, Bailly & Company (prime contractor) and Reliance Energy Services (subcontractor) to provide technical and management assistance to the program.

The first quarter of activities ended on December 16, 1983. During the first quarter, five distinct activities were initiated as summarized in the first Quarterly Activity Report (QAR) dated January 12, 1984. During the second reporting period, which ended March 31, 1984, nine separate activities were carried out and are described in the Second Quarterly Activity Report dated May 11, 1984. During the third quarter, ending June 29, 1984, ten separate activities were carried out.

The Fourth Quarterly Activity Report covers the period July 2 through September 28, 1984. During the fourth quarter, 12 separate activities were carried out; 8 of these activities were initiated in one of the previous quarters (see Exhibit 1). The emphasis during the quarter was placed on (1) carrying out training and auditing activities in Ecuador, (2) revising the training and auditing manuals prepared for Sri Lanka so that they are appropriate for all AID recipient countries, (3) carrying forward the planning for the regional energy conservation workshop (Seminario sobre la Conservacion de Energia), and (4) conducting an evaluation of the IIE/TVA Conventional Energy Training Project Course. A total of 17 professional person-weeks were spent in Ecuador, Costa Rica, and Pakistan (see individual reports for country-by-country length of visit).

Quarterly expenditures, as shown in Exhibit 2, were \$134,535 (as compared with \$230,243 in the third

*This program is part of the Energy Policy Development and Conservation Project.

quarter, \$195,109 in the second quarter, and \$132,613 in the first quarter).

Exhibit 1

Summary of ECSP Activities
(Inception to date)

Activity	Period of performance	Budget	Cumulative expenditures (9/21/84) 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	\$ 76,469
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 ²	\$ 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 ³	\$ 34,645
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
0. 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

Based on labor costs incurred and invoices received only.

First draft.

Sri Lanka version.

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Exhibit 1 (continued)

Summary of ECSP Activities
(Inception to date)

Activity	Period of performance	Budget	Cumulative expenditures (9/21/84) ¹
11. Attendance at ASEAN Conference on Energy Conservation in Buildings (Phase I) in Singapore; mission to Manila, Bangkok, and Jakarta to explore status of building energy conservation activities; and preparation of project paper for expanded Phase II building conservation activities (HBC reference 160)	5/5/84-6/4/84	None	\$ 18,586
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	\$ 18,417
13. Planning and preparation for the Latin America/Caribbean Regional Energy Conservation Seminar (HBC reference 162)	5/14/84-ongoing	\$102,000	\$ 5,544
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-ongoing	\$104,157	\$ 26,568
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	\$ 2,722
17. Revision of industrial energy audit manual (HBC reference 166)	7/14/84-9/1/84	\$ 14,458	\$ 15,007
18. Evaluation of the IIE/TVA Conventional Energy Training Project (CETP) Course (HBC reference 167)	6/30/84-8/30/84	\$ 19,096	\$ 17,683
19. Organization and planning of the Pakistan National Energy Conservation Center (HBC reference 168)	9/8/84-ongoing	None	\$ 4,786

¹Based on labor costs incurred and invoices received only.

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Exhibit 2

Fourth-Quarter Expenditures -- Summary

	Contract budget ¹	Quarterly expenditures ²	Cumulative expenditures ²	
			\$	%
Salaries	\$ 344,063	\$ 34,241	\$156,683	45.5
Fringe benefits	89,456	8,560	39,603	44.3
Overhead	390,168	40,660	183,750	47.1
Travel/trans./per diem	274,722	15,403	54,292	19.8
Other direct costs	41,200	13,383	41,234	100.1
Equipment	50,000	0	0	0.0
Subcontractor	<u>667,348</u>	<u>13,629</u>	<u>173,646</u>	<u>26.0</u>
Total estimated costs	\$1,856,957	\$125,876	\$649,208	35.0
Fixed fee	<u>123,698</u>	<u>8,659</u>	<u>43,295</u>	<u>35.0</u>
Total estimated costs and fixed fee	\$1,980,655	\$134,535	\$692,503	35.0

¹Only \$1,040,409 has been obligated so far.

²Based on labor costs incurred and invoices received as of 9/21/84.

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

QUARTERLY ACTIVITY REPORT
(For period 7/2/84-9/28/84)

ACTIVITY: Program Management and Development

COUNTRY: Not country-specific

START DATE: 9/15/83

COMPLETION DATE: Ongoing

BUDGET: None

QUARTERLY EXPENDITURES: \$27,095

CUMULATIVE EXPENDITURES: \$76,469

ST/EY MANAGER: Pamela Baldwin

HBC MANAGER: Henri-Claude Bailly

HEC 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 ST/EY. (Some of these initiatives eventually become separate activities for program management purposes.) The fourth-quarter initiatives (in addition to those that are already treated as separate program activities) included:

- o Translation of the brochure (see QAR, 4/2/84-6/30/84) on the Energy Conservation Services Program into Spanish and French and the publication of the Spanish-language brochure.
- o Preparation of the second issue of Update on the Energy Conservation Services Program. The purpose of Update is to report on a regular basis (i.e., 3-4 times per year) on the progress of ECSP. Update also describes energy conservation efforts undertaken by AID field missions and regional bureaus and other donors. The second issue will focus on financing for energy conservation investments, the upcoming Costa Rica energy conservation seminar, the first phase of the Ecuador training and auditing program,

and energy conservation activities of the World Bank. Update is distributed to all AID field missions as well as relevant counterpart agencies; about 350 copies of the second issue will be distributed.

- o To support the distribution of Update, ECSP program brochures, and other program materials, we have developed a worldwide mailing list totalling nearly 400 individuals actively engaged in energy conservation projects. The list includes AID Washington and field energy personnel, staff at international donor organizations, and energy officials in developing countries. Some of the individuals on our list are people, several of them from LDCs, who have heard about ECSP and have requested to be placed on the mailing list.
- o Planning meetings were held with AID/Washington staff to initiate an evaluation of the Energy Conservation and Resource Development Project (Project No. 517-0144) in the Dominican Republic, and the Regional Industrial Energy Efficiency Project (Project No. 596-0095) of the Regional Office for Central America and Panama (ROCAP). Missions to the Dominican Republic and Central America and the evaluations will take place in the next quarter.
- o We have participated in meetings to discuss ECSP support to the Energy Initiatives Project (Project No. 603-0013) in Djibouti. We have assisted the work being conducted by VITA in the electric utility sector and will be sending a mission to Djibouti in the next quarter to evaluate the project.
- o A paper has been prepared on the ECSP-funded Energy Conservation Project Investment Evaluation Model. This paper will be given at a week-long symposium to be held in Colombo, Sri Lanka, on "Microcomputers for Developing Countries." The symposium is being sponsored by the Board on Science and Technology for International Development of the U.S. National Research Council. The meeting will take place in the next quarter.

ACTIVITY REPORTS

1. Programa de Servicios para la Conservacion de la Energia (Spanish version of the ECSP brochure).

KEY PERSONNEL

- o Hagler, Bailly & Company: Henri-Claude Bailly, President; Alain Streicher, Vice President; Dennis Goins, Vice President; Michael Fisher, Manager; Gerald Schwinn, Associate; Marc Babin, Associate; Faith Klareich, Research Associate
- o U.S. AID/Washington: Robert Archer, LAC/DR
- o VITA: Donna Read, Washington; Stephen Hirsch, Djibouti.

EXPENDITURES

(As of 9/21/84, based on labor costs incurred and invoices received):

	<u>This quarter</u>	<u>Cumulative</u>
Salaries	\$ 7,204	\$ 22,553
Fringe benefits	1,801	5,663
Overhead	8,555	26,650
Travel/trans./per diem	1,558	2,992
Other direct costs	6,071	9,090
Equipment	0	0
Subcontractor	<u>0</u>	<u>4,745</u>
Total	\$25,189	\$71,693
Fee	<u>1,906</u>	<u>4,776</u>
GRAND TOTAL	\$27,095	\$76,469

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

QUARTERLY ACTIVITY REPORT
(For period 7/2/84-9/28/84)

ACTIVITY: Preparation of Audit Reports and Detailed Feasibility Studies for a Tire Plant and Textile Mill (Contract Task Area 3)

COUNTRY: Sri Lanka

START DATE: 3/5/84

COMPLETION DATE: 8/15/84

BUDGET: \$69,061

QUARTERLY EXPENDITURES: \$ 4,316

CUMULATIVE EXPENDITURES: \$68,254

ST/EY MANAGER: Pamela Baldwin

HBC MANAGER: Alain Streicher

HBC REFERENCE: 156b

DESCRIPTION

During this quarter, the final report on the Feasibility Study of Thulhiriya Textile Mills was completed. Efforts continued to identify potential third-party financiers for the proposed conservation projects at the Sri Lanka Tyre Corporation and the Thulhiriya Textile Mills.

As a follow-on to these ECSP activities, the Energy Department of the World Bank (as part of the joint World Bank-UNDP Energy Sector Management Assistance Program) funded, and Hagler, Bailly and Reliance Energy Services prepared, terms of reference for energy audits and feasibility studies in 18 energy-intensive facilities representing 25 percent of all energy consumed in the industrial sector. These specifications will be presented to donor organizations for funding.

ACTIVITY REPORTS

1. Feasibility Study of Thulhiriya Textile Mills, Final Report, July 1984.

KEY PERSONNEL

- o Hagler, Bailly & Company: Alain Streicher, Vice President; Timothy Bleakley, Associate
- o Ministry of Power and Energy: Dr. Mohan Munasinghe, Senior Energy Advisor
- o CTSC (Ceylon Tobacco Service Company): Dr. Nalin Walpita (formerly with EDMAC)
- o Sri Lanka Tyre Corporation: P. P. Subasinghe
- o Thulhiriya Textile Mills: J. C. Sethi and K. M. Randeria
- o Reliance Energy Services: Richard Smith, Managing Consultant; Bruce Appelbaum, Managing Consultant.

EXPENDITURES

(As of 9/21/84, based on labor costs incurred and invoices received):

	<u>Budget</u>	<u>This quarter</u>	<u>Cumulative</u>
Salaries	\$19,622	\$1,005	\$19,851
Fringe benefits	4,905	251	4,963
Overhead	23,301	1,194	23,567
Travel/trans./per diem	13,245	9	10,853
Other direct costs	2,750	1,563	3,146
Equipment	0	0	0
Subcontractor	<u>0</u>	<u>0</u>	<u>0</u>
Total	\$63,824	\$4,022	\$62,380
Fee	<u>5,237</u>	<u>294</u>	<u>5,877</u>
GRAND TOTAL	\$69,061	\$4,316	\$68,257

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

QUARTERLY ACTIVITY REPORT
(For period 7/2/84-9/28/84)

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

COUNTRY: Not country-specific

START DATE: 1/3/84

COMPLETION DATE: 8/30/84

BUDGET: \$23,805

QUARTERLY EXPENDITURES: \$ 4,672

CUMULATIVE EXPENDITURES: \$34,645

ST/EY MANAGER: Pamela Baldwin

HBC MANAGER: Henri-Claude Bailly

HBC REFERENCE: 157

DESCRIPTION

This activity consists of the design and validation of a financial and economic evaluation model that is microcomputer-based (see second and third QARs, 12/15/83-6/30/84). During this quarter, the user manual was completed, and changes were made to the model to generalize it so that it can be a useful tool to evaluate energy conservation investments by a firm in any developing country. The model also continued to be used by the Sri Lankan energy conservation task force (EDMAC) to evaluate conservation project investments.

ACTIVITY REPORTS

1. The Energy Conservation Project Investment Evaluation Model (ECPIEM): A User's Manual, August 1984.

KEY PERSONNEL

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

EXPENDITURES

(As of 9/21/84, based on labor costs incurred and invoices received):

	<u>Budget¹</u>	<u>This quarter</u>	<u>Cumulative</u>
Salaries	\$ 8,607	\$1,757	\$11,773
Fringe benefits	2,410	439	2,944
Overhead	9,915	2,086	13,974
Travel/trans./per diem	0	0	3,324
Other direct costs	750	68	304
Equipment	0	0	0
Subcontractor	<u>0</u>	<u>0</u>	<u>0</u>
Total	\$21,682	\$4,350	\$32,319
Fee	<u>2,123</u>	<u>332</u>	<u>2,326</u>
GRAND TOTAL	\$23,805	\$4,672	\$34,645

¹For the Sri Lanka version of the model only.

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

QUARTERLY ACTIVITY REPORT
(For period 7/2/84-9/28/84)

ACTIVITY: Monograph on Innovative Approaches to Financing Energy Conservation Investments in Less Developed Countries (Contract Task Area 7)

COUNTRY: Not country-specific

START DATE: 1/3/84

COMPLETION DATE: 9/10/84

BUDGET: \$7,500

QUARTERLY EXPENDITURES: \$ 3,472

CUMULATIVE EXPENDITURES: \$10,257

ST/EY MANAGER: Pamela Baldwin

HBC MANAGER: Henri-Claude Bailly

HBC REFERENCE: 158

DESCRIPTION

This activity consisted of the preparation of a monograph that describes several innovative approaches for financing conservation projects and illustrates application of the approaches in LDCs (see QAR, 12/15/83-4/1/84). During this quarter, certain changes were made to the paper. To clarify each of the innovative approaches, an analysis was done of an actual project using each of the five approaches. The example used to illustrate each financing mechanism was the wood gasifier retrofit project at the Thulhiriya Textile Mills in Sri Lanka. The monograph is now complete and is available for distribution.

ACTIVITY REPORT

1. Innovative Approaches to Financing Conservation Investments in Developing Countries, September 10, 1984.

KEY PERSONNEL

- o Hagler, Bailly & Company: Henri-Claude Bailly, President; Dennis Goins, Vice President; Michael Fisher, Manager.

EXPENDITURES

(As of 9/21/84, based on labor costs incurred and invoices received):

	<u>Budget</u>	<u>This quarter</u>	<u>Cumulative</u>
Salaries	\$3,799	\$1,304	\$ 3,870
Fringe benefits	700	326	967
Overhead	3,324	1,548	4,595
Travel/trans./per diem	50	0	0
Other direct costs	200	71	219
Equipment	0	0	0
Subcontractor	<u>0</u>	<u>0</u>	<u>0</u>
Total	\$7,073	\$3,249	\$ 9,651
Fee	<u>427</u>	<u>223</u>	<u>606</u>
GRAND TOTAL	\$7,500	\$3,472	\$10,257

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

QUARTERLY ACTIVITY REPORT
(For period 7/2/84-9/28/84)

ACTIVITY: ASEAN Buildings Energy Conservation Activities (Contract Task Area 6)

COUNTRY: Indonesia, Malaysia, Philippines, Singapore, Thailand

START DATE: 5/19/84

COMPLETION DATE: 9/10/84

BUDGET: None

QUARTERLY EXPENDITURES: \$ 8,089

CUMULATIVE EXPENDITURES: \$18,586

ST/EY MANAGER: Pamela Baldwin

HBC MANAGER: John Cable

HBC REFERENCE: 160

DESCRIPTION

This is a follow-on activity from the ASEAN Conference held in Singapore in May (see QAR, 4/2/84-6/30/84). The conference reviewed the ASEAN-supported demonstration project on commercial building energy conservation in Singapore. The conference concluded that the project was successful and should move into a second phase that would continue to expand efforts in Singapore and replicate the Singapore activities in each of the other ASEAN countries.

During this quarter, we provided assistance to the Asia Bureau energy officer in preparing a project paper to be submitted to the ASEAN ministerial meeting in Manila in October 1984. The project paper will describe the Singapore phase and detail the proposed expansion to all ASEAN countries.

ACTIVITY REPORT

None (project report in preparation).

KEY PERSONNEL

- o Hagler, Bailly & Company: John Cable, Vice President
- o U.S. AID/Washington: Robert Ichord, ASIA/TR/EFE.

EXPENDITURES

(As of 9/21/84, based on labor costs incurred and invoices received):

	<u>This quarter</u>	<u>Cumulative</u>
Salaries	\$1,282	\$ 5,289
Fringe benefits	321	1,323
Overhead	1,523	6,281
Travel/trans./per diem	4,293	4,298
Other direct costs	113	207
Equipment	0	0
Subcontractor	<u>0</u>	<u>0</u>
Total	\$7,532	\$17,398
Fee	<u>557</u>	<u>1,188</u>
GRAND TOTAL	\$8,089	\$18,586

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

QUARTERLY ACTIVITY REPORT
(For period 7/2/84-9/28/84)

ACTIVITY: Transportation Energy Conservation (Contract Area 2)

COUNTRY: Costa Rica

START DATE: 5/14/84

COMPLETION DATE: Ongoing

BUDGET: None

QUARTERLY EXPENDITURES: \$15,845

CUMULATIVE EXPENDITURES: \$18,417

ST/EY MANAGER: Pamela Baldwin

HBC MANAGER: Robert Kowalski **HBC REFERENCE:** 161

DESCRIPTION

The purpose of this activity is to assess the current energy situation in the transportation sector of Costa Rica and to identify opportunities for AID-funded and other activities to improve the efficiency of energy use in this sector. During this quarter, the draft report on the mission to Costa Rica was submitted, and work continued to prepare a final report and recommendations to AID for further activities.

ACTIVITY REPORT

1. Draft Report of the Transportation Energy Conservation Reconnaissance Mission to Costa Rica June 3-16, 1984, prepared by David Greene and Frank Southworth, Oak Ridge National Laboratory, and Robert Kowalski, July 2, 1984.

KEY PERSONNEL

- o Hagler, Bailly & Company: Robert Kowalski, Senior Consultant
- o Oak Ridge National Laboratory: David Greene, Frank Southworth

- o U.S. AID/Washington: Robert Archer, LAC/DR
- o U.S. AID/San Jose: Heriberto Rodriguez, Energy Officer;
Alvaro Umana, Representative to MIEM/DSE.

EXPENDITURES

(As of 9/21/84, based on labor costs incurred and invoices received):

	<u>Revised second quarter</u>	<u>This quarter</u>	<u>Cumulative</u>
Salaries	\$ 942	\$ 5,116	\$ 6,058
Fringe benefits	236	1,279	1,515
Overhead	1,119	6,075	7,194
Travel/trans./per diem	7	2,159	2,166
Other direct costs	82	79	161
Equipment	0	0	0
Subcontractor	<u>0</u>	<u>0</u>	<u>0</u>
Total	\$2,386	\$14,708	\$17,094
Fee	<u>186</u>	<u>1,137</u>	<u>1,323</u>
GRAND TOTAL	\$2,572	\$15,845	\$18,417

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

QUARTERLY ACTIVITY REPORT
(For period 7/2/84-9/28/84)

ACTIVITY: Seminario sobre la Conservacion de Energia (Contract Task Area 4)

COUNTRY: Latin America/Caribbean region

START DATE: 6/2/84

COMPLETION DATE: Ongoing

BUDGET: \$102,000

QUARTERLY EXPENDITURES: \$4,846

CUMULATIVE EXPENDITURES: \$5,544

ST/EY MANAGER: Pamela Baldwin

HBC MANAGER: Henri-Claude Bailly

HBC REFERENCE: 162

DESCRIPTION

This activity will consist of a 5-day seminar sponsored in cooperation with the Bureau for Latin America and the Caribbean (see QAR, 4/2/84-6/30/84). The seminar will bring together AID energy officials, AID contractors, and persons from the region in the public and private sector actively engaged in industrial energy conservation programs.

During this quarter, planning for the agenda and arrangements to hold the meeting in San Jose, Costa Rica moved forward. A 7-day visit to Costa Rica was made during this quarter to meet with AID/San Jose mission staff, the Costa Rican government energy office, and to visit hotels and a possible meeting site for the seminar. As a result of the trip, it was recommended that the daily meetings be held at the Instituto Centroamericano de Administracion de Empresas (INCAE), a U.S. AID-supported graduate business school. INCAE and the energy office of the Ministry of Industry, Energy and Mines were sounded out as to their willingness to join with AID in sponsoring the seminar. An initial cable was sent to all AID energy officers in the region informing them of the seminar, inviting them to send participants from their countries, and asking for comments on the draft agenda.

ACTIVITY REPORT

1. Report on Mission to Costa Rica, Sunday, September 16
Through Saturday, September 22, September 26, 1984.

KEY PERSONNEL

- o Hagler, Bailly & Company: Henri-Claude Bailly, President; Gerald Schwinn, Associate (7 days, Costa Rica)
- o U.S. AID/Washington: Robert Archer, LAC/DR.

EXPENDITURES

(As of 9/21/84, based on labor costs incurred and invoices received):

	<u>Budget</u>	<u>This quarter</u>	<u>Cumulative</u>
Salaries	\$ 27,413	\$1,533	\$1,799
Fringe benefits	6,852	383	450
Overhead	32,553	1,820	2,136
Travel/trans./per diem	19,050	813	813
Other direct costs	11,950	25	25
Equipment	0	0	0
Subcontractor	<u>0</u>	<u>0</u>	<u>0</u>
Total	\$ 98,818	\$4,574	\$5,223
Fee	<u>4,182</u>	<u>272</u>	<u>321</u>
GRAND TOTAL	\$102,000	\$4,846	\$5,544

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

QUARTERLY ACTIVITY REPORT
(For period 7/2/84-9/28/84)

ACTIVITY: Ecuador Industrial Energy Conservation Training, Curriculum Development, and Audits (Contract Task Areas 3 and 4)

COUNTRY: Ecuador

START DATE: 7/14/84

COMPLETION DATE: Ongoing

BUDGET: \$104,157

QUARTERLY EXPENDITURES: \$26,568

CUMULATIVE EXPENDITURES: \$26,568

ST/EY MANAGER: Pamela Baldwin

HBC MANAGER: Alain Streicher

HBC REFERENCE: 164

DESCRIPTION

This activity is a follow-on from the missions to Ecuador and Peru described in the last QAR (4/2/84-6/30/84) as "Industrial Energy Conservation Program Assistance" (HBC reference 163). During this quarter, there was another mission to Ecuador with visits to Quito and Guayaquil to meet with the AID Mission, INE (Instituto Nacional de Energia), and ESPOL (Escuela Superior Politecnica del Litoral). Final preparations were made for the audit training program to be held at ESPOL, and work was initiated on an energy curriculum to be offered by ESPOL.

Subsequently, a Hagler, Bailly/Reliance team spent 101 professional person-days in Guayaquil in August and September. This activity was carried out in cooperation with the AID Mission, INE, and ESPOL.

First, a 1-day seminar on industrial energy audits was held at ESPOL in Guayaquil on August 28, jointly sponsored by AID, INE, and ESPOL and attended by 30 graduate engineers from ESPOL's staff, INE and other Ecuadorian government agencies, and engineers from private-sector firms. Following the seminar, a 4-week training program for 14 graduate Ecuadorian engineers was held.

The training program, based on the courses taught in Sri Lanka earlier this year (see QAR, 12/5/83-4/1/84), consisted of:

- o Four days of classroom instruction at ESPOL
- o Two weeks of in-plant auditing work at a textile factory and a brewery near Guayaquil
- o One week of data analysis and summary work at ESPOL.

INE purchased the necessary equipment for the course and the audits. Twelve engineers completed the course; six rated the program "excellent," and six "very good."

During the training course, meetings were held with the faculty and staff of ESPOL to work on the development of a postgraduate curriculum in energy engineering. The program would be offered at ESPOL with assistance from AID and outside consultants. Graduates of the program would be certified as energy engineers. A proposal to initiate such a program at ESPOL is now pending with AID.

While the course was in session, preliminary energy audits were conducted at a textile factory (Textiles Continental S.A.), a brewery (Las Penas Brewery, Compania de Cervezas Nacionales C.A.), and a cement factory (La Cemento Nacional). Draft preliminary audit reports have been prepared on all three. The textile factory and the brewery also were the subject of detailed energy audits with active participation by the students in the training course. The data analysis to prepare the reports is now under way. Initial estimates are that the adoption of quite low-cost measures would result in energy savings of 17 percent at the textile mill and 11 percent at the brewery. The replacement of the boiler at the brewery would result in an additional savings of 10 percent. A full audit was not conducted at the cement factory because it is already highly energy-efficient.

At their initiative, the engineers in the course decided to conduct on their own an additional detailed audit of a paper manufacturing plant in Guayaquil. All 12 are planning to participate, and work began on October 1. A report will be submitted to us for review. ESPOL is also considering several ways to have the energy audit manual used in the course translated into Spanish.

ACTIVITY REPORTS

None (trip reports, preliminary audit reports, and full audit reports are in preparation).

KEY PERSONNEL

- o Hagler, Bailly & Company: Alain Streicher, Vice President (21 days in Ecuador); Robert Kowalski, Senior Consultant (13 days in Ecuador)
- o Reliance Energy Services: Richard Smith, Managing Consultant (37 days in Ecuador); Bruce Appelbaum, Managing Consultant (37 days in Ecuador)
- o U.S. AID/Ecuador: Carl Duisberg, Regional Energy Officer
- o U.S. AID/Washington: Robert Archer, LAC/DR
- o ESPOL: Ing. Eduardo Orces, Head, Department of Mechanical Engineering; Dr. Alfredo Barriga, Research Coordinator
- o INE: Ing. Juan Zak.

EXPENDITURES

(As of 9/21/84, based on labor costs incurred and invoices received):

	<u>Budget</u>	<u>This quarter</u>	<u>Cumulative</u>
Salaries	\$ 15,145	\$ 9,216	\$ 9,216
Fringe benefits	3,785	2,304	2,304
Overhead	17,985	10,944	10,944
Travel/trans./per diem	5,518	1,745	1,745
Other direct costs	2,888	763	763
Equipment	0	0	0
Subcontractor	<u>52,802</u>	<u>0</u>	<u>0</u>
Total	\$ 98,123	\$24,972	\$24,972
Fee	<u>6,034</u>	<u>1,596</u>	<u>1,596</u>
GRAND TOTAL	\$104,157	\$26,568	\$26,568

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

QUARTERLY ACTIVITY REPORT
(For period 7/2/84-9/28/84)

ACTIVITY: Revision of Training Manual (Contract Task Area 5)

COUNTRY: Not country-specific

START DATE: 7/14/84

COMPLETION DATE: Ongoing

BUDGET: \$10,675

QUARTERLY EXPENDITURES: \$2,722

CUMULATIVE EXPENDITURES: \$2,722

ST/EY MANAGER: Pamela Baldwin

HBC MANAGER: Alain Streicher **HBC REFERENCE:** 165

DESCRIPTION

The purpose of this activity is to revise and to generalize to any or all developing countries the workbook on energy management techniques and equipment that was prepared for the Sri Lanka Energy Demand Management and Conservation Training Course (see QAR, 9/15/83-12/15/83). The revision began during this quarter and will be completed in the next quarter. The revised manual will be titled Energy Demand Management and Conservation Training Course for Industry and Buildings.

ACTIVITY REPORT

None.

KEY PERSONNEL

- o Hagler, Bailly & Company: Alain Streicher, Vice President
- o Reliance Energy Services: Richard Smith, Senior Consultant.

EXPENDITURES

(As of 9/21/84, based on labor costs incurred and invoices received):

	<u>Budget</u>	<u>This quarter</u>	<u>Cumulative</u>
Salaries	\$ 1,531	\$ 847	\$ 847
Fringe benefits	383	212	212
Overhead	1,818	1,006	1,006
Travel/trans./per diem	0	0	0
Other direct costs	3,720	509	509
Equipment	0	0	0
Subcontractor	<u>2,597</u>	<u>0</u>	<u>0</u>
Total	\$10,049	\$2,574	\$2,574
Fee	<u>626</u>	<u>148</u>	<u>148</u>
GRAND TOTAL	\$10,675	\$2,722	\$2,722

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

QUARTERLY ACTIVITY REPORT
(For period 7/2/84-9/28/84)

ACTIVITY: Revision of Industrial Energy Auditing Manual
(Contract Task Area 5)

COUNTRY: Not country-specific

START DATE: 7/14/84

COMPLETION DATE: 9/1/84

BUDGET: \$14,458

QUARTERLY EXPENDITURES: \$15,007

CUMULATIVE EXPENDITURES: \$15,007

ST/EY MANAGER: Pamela Baldwin

HBC MANAGER: Alain Streicher **HBC REFERENCE:** 1

DESCRIPTION

During this quarter, a major revision of the auditing manual was completed. The manual was originally prepared for use in Sri Lanka (see QAR, 12/15/83-4/1/84) as part of the Energy Demand Management and Conservation Training Course.

The content and approach have been generalized so that the manual can be used in any AID recipient country. The manual serves both as an instruction course in audit procedure training and a guide to carrying out preliminary and detailed energy audits in industrial facilities. All units have been changed to Standard International Units (SIU), and new sections have been added on energy norms and the use of computers for energy monitoring and management. The revised manual was used in the training that ECSP contractors conducted at the Escuela Superior Politecnica del Litoral (ESPOL) in Guayaquil, Ecuador.

English-language copies are now available for distribution. Work is under way to translate the manual into Spanish and French and to distribute them when they are published.

ACTIVITY REPORT

1. Industrial Energy Auditing Manual, August 1984.

KEY PERSONNEL

- o Hagler, Bailly & Company: Alain Streicher, Vice President
- o Reliance Energy Services: Richard Smith, Senior Consultant.

EXPENDITURES

(As of 9/21/84, based on labor costs incurred and invoices received):

	<u>Budget</u>	<u>This quarter</u>	<u>Cumulative</u>
Salaries	\$1,300	\$ 2,426	\$ 2,426
Fringe benefits	325	607	607
Overhead	1,544	2,881	2,881
Travel/trans./per diem	0	0	0
Other direct costs	5,180	3,163	3,163
Equipment	0	0	0
Subcontractor	<u>5,370</u>	<u>5,076</u>	<u>5,076</u>
Total	\$13,719	\$14,153	\$14,153
Fee	<u>739</u>	<u>854</u>	<u>854</u>
GRAND TOTAL	\$14,458	\$15,007	\$15,007

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

QUARTERLY ACTIVITY REPORT
(For period 7/2/84-9/28/84)

ACTIVITY: Evaluation of the IIE/TVA Conventional Energy Training Project (CETP) Course (Contract Task Area 4)

COUNTRY: Not country-specific

START DATE: 6/30/84

COMPLETION DATE: 8/30/84

BUDGET: \$19,096

QUARTERLY EXPENDITURES: \$17,689

CUMULATIVE EXPENDITURES: \$17,689

ST/EY MANAGER: Pamela Baldwin

HBC MANAGER: Alain Streicher **HBC REFERENCE:** 167

DESCRIPTION

During this quarter, a team of Hagler, Bailly and Reliance staff visited Chattanooga to observe and evaluate the 1984 Tennessee Valley Authority's Energy Conservation Training Course (Industrial and Utility). The 1984 course contained 7 major units divided into 105 sessions and ran from June 9th through July 27th, including a 7-day field assignment in a TVA facility. There were 30 participants from 18 countries.

Based on the review of course materials, the on-site evaluation, the observation of classroom sessions, and the interviews with participants, it was clear that the 1984 course was a success. As a result of the course evaluation, recommendations were made for some modifications, including a longer field assignment, a change in the sequence of sessions, and a different method of grading and ranking participants.

ACTIVITY REPORT

1. Evaluation of the 1984 Tennessee Valley Authority's Energy Conservation Training Course (Industrial and Utility), August 30, 1984.

KEY PERSONNEL

- o Hagler, Bailly & Company: Alain Streicher, Vice President; James Williams, Vice President; Robert Kowalski, Senior Consultant
- o Reliance Energy Services: Max Lopp, Senior Consultant.

EXPENDITURES

(As of 9/21/84, based on labor costs incurred and invoices received):

	<u>Budget</u>	<u>This quarter</u>	<u>Cumulative</u>
Salaries	\$ 3,570	\$ 4,367	\$ 4,367
Fringe benefits	892	1,092	1,092
Overhead	4,239	5,186	5,186
Travel/trans./per diem	1,160	1,976	1,976
Other direct costs	2,106	557	557
Equipment	0	0	0
Subcontractor	<u>5,893</u>	<u>3,385</u>	<u>3,385</u>
Total	\$17,860	\$16,563	\$16,563
Fee	<u>1,236</u>	<u>1,126</u>	<u>1,126</u>
GRAND TOTAL	\$19,096	\$17,689	\$17,689

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

QUARTERLY ACTIVITY REPORT
(For period 7/2/84-9/28/84)

ACTIVITY: Organization and Planning of the Pakistan National
Energy Conservation Center (Contract Task Area 6)

COUNTRY: Pakistan

START DATE: 9/8/84

COMPLETION DATE: Ongoing

BUDGET: None

QUARTERLY EXPENDITURES: \$4,786

CUMULATIVE EXPENDITURES: \$4,786

ST/EY MANAGER: Pamela Baldwin

HBC MANAGER: Henri-Claude Bailly

HBC REFERENCE: 168

DESCRIPTION

The purpose of this task will be to help the government of Pakistan and U.S. AID/Islamabad to organize a national energy conservation center. During this quarter, preparatory work was initiated in Washington, and Henri-Claude Bailly left for Pakistan on September 21.

ACTIVITY REPORT

None.

KEY PERSONNEL

- o Hagler, Bailly & Company: Henri-Claude Bailly, President
(7 days in Pakistan)
- o U.S. AID/Islamabad: James Bever.

EXPENDITURES

(As of 9/21/84, based on labor costs incurred and invoices received):

	<u>Budget</u>	<u>This quarter</u>	<u>Cumulative</u>
Salaries		\$1,542	\$1,542
Fringe benefits		385	385
Overhead		1,831	1,831
Travel/trans./per diem		757	757
Other direct costs		24	24
Equipment		0	0
Subcontractor		<u>0</u>	<u>0</u>
Total		\$4,539	\$4,539
Fee		<u>247</u>	<u>247</u>
GRAND TOTAL		\$4,786	\$4,786