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**Energy Conservation Services Program  
Second Quarterly Report, FY 1986  
(1/1/86-3/31/86)**

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

HBC Reference No. 86-150(10)

Prepared for:  
**U.S. Agency for International Development  
Office of Energy**

Washington, DC 20523

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April 30, 1986

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## SUMMARY

i

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.

The organization of this quarterly report has been changed from previous reports to follow the organization of the Office of Energy's Strategy and Program Plan for Energy Conservation. Activities are now organized according to program areas, rather than Hagler, Bailly job codes.

Since the inception of the program, 34 projects have been initiated, 23 of these projects have been completed and 11 are still ongoing (see Exhibit 1 for a summary of all ECSP activities). No new initiatives have been started since October 1986, due to funding problems. All present initiatives represent ongoing projects from previous commitments.

The second Quarterly Activity Report of the third year of ECSP covers the period of January 1, 1986 to March 31, 1986. During the quarter, progress was made on 11 projects, including: (1) the private sector role in power generation, particularly in cogeneration; (2) analyzing results and producing a report on the energy conservation demonstration program for the transportation sector in Costa Rica; and (3) technical assistance in energy conservation planning and cogeneration for Thailand.

A total of 13 professional person-weeks was spent in Thailand, Indonesia, Pakistan, and Egypt (see individual reports for time spent in each country). Quarterly expenditures, as shown in Exhibit 2, were \$242,866 for this quarter, as compared with \$250,003 in the first quarter of the third year of the program (see Exhibits 3 and 4).

Note that the contract authorization has been increased to \$2,980,275 to complete all on-going activities and the contract budget figures have been adjusted accordingly (see Exhibit 2).

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\*This program is part of the Energy Policy Development and Conservation Project (Project No. 936-5728).

## Exhibit 1

Summary of ECSP Activities  
(Inception to date)

ACTIVITY	Period of Performance	Budget	Cumulative expenditures (3/31/86)*
1. Program management and development, including preparation of in-country missions and program planning 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; preparation of a cogeneration in developing countries analysis. (HBC reference 150/151)	9-15/83-ongoing	None	\$368,325
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	\$125,561
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	None	\$88,638
4. Development of data base on AID-funded energy conservation initiatives (HBC reference 154)	10/8/83-5/11/84	\$14,451	\$13,312
5. Preparation of energy auditing manual for use in Sri Lanka (HBC reference 155)	10/21/83-2/27/84	\$38,465	\$43,715
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

\*Based on labor costs incurred and invoices received only.

Exhibit 1

Summary of ECSP Activities  
(Inception to date)

A C T I V I T Y	Period of Performance	Budget	Cumulative expenditures (3/31/86)*
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	\$71,017
8. Development of ECPIE: Energy Conservation Project Investment Evaluation Model and user manual (HBC reference 157)	1/3/84-8/30/84	\$23,805 **	\$43,879
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 **	\$10,295
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	\$26,059
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	\$31,785
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)	5/14/84-3/31/85	None	\$29,138
13. Planning and preparation for the Latin America/Caribbean Regional Energy Conservation Seminar (HBC reference 162)	5/14/84-6/30/85	\$102,000	\$111,419

\*Based on labor costs incurred and invoices received only.

\*\*Scope of work was expanded subsequent to budget preparation.

## Exhibit 1

Summary of ECSP Activities  
(Inception to date)

ACTIVITY	Period of Performance	Budget	Cumulative expenditures (3/31/86)*
14. Missions to Ecuador and Peru to assist in developing industrial energy conservation outreach services and programs (HBC reference 163)	5/14/84-3/31/85	None	\$19,769
15. Ecuador industrial energy conservation training, curriculum development, and audits (HBC reference 164)	7/14/84-3/31/84	\$104,157	\$97,286
16. Revision of training manual for energy demand management and conservation training course for industry and buildings (HBC reference 165)	7/14/84-3/31/85	\$10,675	\$13,431
17. Revision of industrial energy audit manual (HBC reference 166)	7/14/84-9/1/84	\$14,458	\$15,242
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)	9/8/84-6/15/85	\$275,000	\$229,182
20. Industrial Energy Conservation Program (Dominican Republic) Evaluation (HBC reference 169)	10/1/84-2/28/85	\$20,000	\$23,817
21. Regional Industrial Energy Efficiency Project (Central America and Panama) Evaluation (HBC reference 170)	10/1/84-3/15/85	\$36,000	\$38,763
22. Energy Initiatives Project (Djibouti) Evaluation (HBC reference 171)	11/30/84-2/15/85	\$16,285	\$16,823
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	\$12,291

\*Based on labor costs incurred and invoices received only.

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## Exhibit 1

Summary of ECSP Activities  
(Inception to date)

A C T I V I T Y	Period of Performance	Budget	Cumulative expenditures (3/31/86)*
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	\$15,090
25. Demonstration program and public information campaign to increase energy efficiency in the transportation sector (HBC reference 178)	6/1/85-ongoing	\$80,000	\$105,471
26. Study of impediments to private sector development of non-utility power generation (HBC reference 179/1004)	9/1/85-ongoing	\$240,000	\$151,581
27. Market analysis of Cogeneration opportunities in USAID-assisted countries (HBC reference 180)	9/15/85-ongoing	\$75,000	\$8,201
28. Institutional barriers to private sector investment in energy conservation (HBC reference 181)	10/14/85-ongoing	\$60,000	\$23,334
29. General technical assistance: Thailand and Indonesia (HBC reference 182)	10/16/85-ongoing	\$140,000	\$61,218
30. Innovative private sector financing (HBC reference 183)	10/15/85-ongoing	\$75,000	\$16,690
31. Technology Transfer Teams for Energy Conservation (HBC reference 184)	10/16/85-ongoing	\$50,000	\$13,556
32. Asia/Near East Energy Conservation Promotion and Investment Workshop (HBC reference 185)	10/15/85-ongoing	\$120,000	\$865
33. Information exchange and energy conservation network development (HBC reference 186)	10/15/85-ongoing	\$75,000	\$12,063
34. Technology Transfer for Energy Management (HBC reference 187)	10/1/85-ongoing	\$250,000	-0-

\*Based on labor costs incurred and invoices received only.

Exhibit 2

Second-Quarter Expenditures, FY 1986  
(Tenth Quarter of the Contract) -- Summary

	Revised Contract budget <sup>2</sup>	Quarterly expenditures <sup>1</sup>	Cumulative expenditures Through 3/31/86 <sup>1</sup>	
			\$	%
Salaries	\$672,907	\$73,680	\$495,356	73.6
Fringe benefits	188,109	22,106	137,330	73.0
Overhead	796,291	90,996	598,471	75.2
Travel/trans./per diem	373,222	32,944	212,624	57.0
Other direct costs	108,700	17,912	144,656	133.1
Equipment	50,000	-0-	-0-	-0-
Subcontractor	<u>667,348</u>	<u>5,466</u>	<u>237,736</u>	<u>35.6</u>
Total estimated costs	\$2,856,977	243,104	1,826,173	63.9
Fixed fee	<u>123,698</u>	< <u>238</u> > <sup>3</sup>	<u>105,143</u>	<u>85.0</u>
Total estimated costs and fixed fee	\$2,980,275	242,866	1,931,316	64.8

<sup>1</sup>Based on labor costs incurred and invoices received as of 3/31/86 and an audit conducted by Hagler, Bailly's accountants.

<sup>2</sup>\$2,673,444 has been obligated so far, of which \$554,000 has been directly contributed by Regional Bureaus and Missions. Another \$70,000 has been contributed through another contract. Note that the contract authorization has been increased to \$2,980,275 to complete all on-going activities and the contract budget figures have been adjusted from the past quarterly report.

<sup>3</sup>In a bookkeeping measure to maintain fixed fee charges at their 85 percent maximum prior to the conclusion of the contract the fixed fee figures were reduced from the previous quarter.

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Exhibit 3

ECSP Expenditures by Quarter

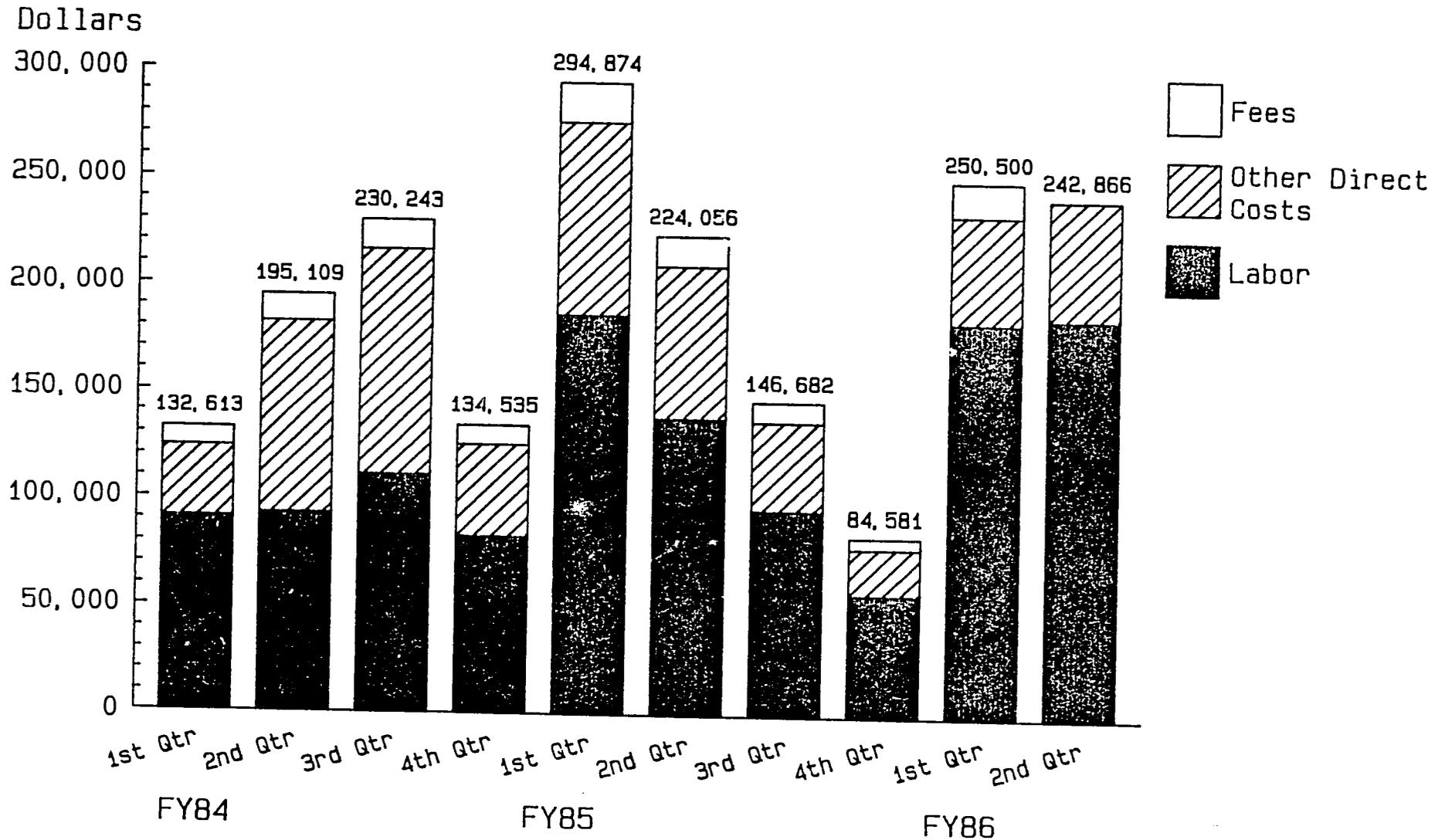
<u>First year</u>	
First quarter (9/15/83-12/15/83)	\$132,613
Second quarter (12/15/83-4/1/84)	195,109
Third quarter (4/2/84-6/30/84)	230,243
Fourth quarter (7/2/84-9/28/84)	134,535
<b>Yearly total</b>	<b>692,500</b>

<u>Second year</u>	
First quarter (10/1/84-12/31/84)	\$294,874
Second quarter (1/2/85-3/31/85)	224,056
Third quarter (4/1/85-6/30/85)	146,682
Fourth quarter (7/1/85-9/30/85)	84,581
<b>Yearly total</b>	<b>750,193</b>

<u>Third year</u>	
First quarter (10/1/85-12/31/85)	\$250,503
Second quarter (1/1/86-3/31/86)	242,866

Exhibit 4

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



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

QUARTERLY ACTIVITY REPORT  
(For period 10/1/85-12/31/85)

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ACTIVITY AREA: Research, Development, and Demonstration

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

COUNTRY: Pakistan, Thailand, India, Indonesia

START DATE: 9/9/85

COMPLETION DATE: Ongoing

BUDGET: \$240,000

QUARTERLY EXPENDITURES: \$88,848

CUMULATIVE EXPENDITURES: \$151,581

S&T/EY MANAGER: Alberto Sabadell

HBC MANAGER: Alain Streicher

HBC REFERENCE: 179/1004

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DESCRIPTION

The focus of this activity is on evaluating the potential for and barriers to development of cogeneration and other nonutility power generation options by the private sector in developing countries. The successful development of such options will improve fuel efficiency, increase domestic fuel utilization, enhance the resiliency and reliability of power supply, and provide opportunities for private sector investment in areas traditionally not available to them. So far two countries have been studied (Pakistan and Thailand), the situation in India will be evaluated in the next quarter.

**Pakistan**

The first draft report on the Pakistan study was sent to AID/Washington and AID/Islamabad for comments. In Mid-January 1986, two meetings were held in Washington between the study team, representatives of AID/Islamabad (Charles Moseley and John Morgan), and Robert Archer from the Bureau for

Asia and the Near East. At these meeting it was decided that the study team will prepare two separate reports, one for AID/Washington and the other for the Mission in Islamabad. The Mission report will be in two parts, the first on cogeneration, and the second on power-only systems. The cogeneration report will be prepared by Hagler, Bailly and Company, and the power-only report will be prepared by Arthur D. Little. These reports are currently under preparation. The Washington report is currently in the final draft version, dated March 18, 1986. This draft incorporates the comments of the Mission and AID/Washington staff and was sent to the Mission for final comments. The Mission comments are due on April 18th, and the final report will be prepared shortly after that.

### Thailand

To perform the cogeneration and nonutility power generation study in Thailand, a team of Hagler, Bailly consultants visited this country for three weeks between January 26 and February 17, 1986. A draft report was completed and is currently being circulated among AID/Washington staff for comments. The study focused on the potential for and impediments to development of cogeneration and other nonutility power options by the private sector in Thailand. During the three week mission to Thailand, the team conducted extensive interviews with representatives of the government, including the National Energy Administration, the National Economic and Social Development Board (NESDB), the Ministry of Interior, electric utilities, private industry, public and private banks and financial institutions, the private sector, and international development institutions. The team also conducted an exhaustive search of the literature available on the subject.

Thailand's electric power sector has absorbed over 70 percent of total government investment in the energy sector and about 15 percent of total government investment in the Fifth Development Plan. The amount of government investment required to supply the growing electricity demand during the Sixth Plan (1987-1991) is estimated at over \$4 billion. Faced with rising public debt, the government is finding it extremely difficult to undertake this level of investment in the power sector. Cogeneration and other nonutility power options, therefore, provide an opportunity for the government to reduce its investment in the power sector.

The study team determined that the potential for economically attractive cogeneration and other nonutility power generation options in Thailand over the next 10 years is about 900-1250 MW, of that amount 600-950 MW could be developed by the private sector with costs competitive with electricity prices from the utilities. Most of this potential lies in cogeneration and power systems using agroindustrial waste. The study also found that although the government and utilities are very open to the idea of nonutility power generation, there is currently no direct policy for such developments.

In addition, the study concluded that the current power supply over-capacity in Thailand provides an excellent window of opportunity for the country to develop and implement such policies in a well planned and well thought out fashion. Key recommendations of the study included:

- Develop and publicize policies that encourage private sector power generation from cogeneration and other nonutility options.
- Develop purchase price provisions reflecting utilities' long term marginal cost of generation, transmission and distribution.
- Sponsor a demonstration project with utilities purchasing power from sugar mills, to provide data and demonstrate the economic and technical characteristics of such transactions.

The team briefed the AID Mission in Bangkok, the National Energy Administration and the NESDB before leaving the country. A draft report dated March 26, 1986 has been circulating in AID/Washington and the final draft will be prepared upon receipt of comments.

## India

Several meetings were held with AID staff from the Bureau for Asia and the Near East and the Office of Energy and staff from the National Research Council's Bureau for Science and Technology in Development. The meetings were held to prepare a scope of work and plan for an in-country visit scheduled for May 5-31, 1986.

## ACTIVITY REPORTS

- Cogeneration and Small Power in Thailand: Potential, Impediments and Policy Issues, Draft Report, March 26, 1986.
- Private-Sector Small-Scale Power Generation in Pakistan: Potential, Impediments, and Policy Issues, Draft Final Report, March 18, 1986.

## KEY PERSONNEL

- Hagler, Bailly & Company: Alain Streicher, Vice-President (17 days in Thailand); Pirooz Sharafi, Senior Associate (23 days in Thailand); Jack Stafurik, Senior Associate (27 days in Thailand).
- Arthur D. Little: Peter Teagan

- USAID/Washington: Robert Archer, Asia/NE; James Sullivan, S&T/EY; David Jhirad, S&T/EY.
- USAID/Islamabad: John Morgan, Charles Moseley, James Bever, Energy Officers
- USAID/Bangkok: John Neave, Energy Officer

## EXPENDITURES

(As of 3/31/86, based on labor costs incurred and invoices received):

	<u>This quarter</u>	<u>Cumulative</u>
Salaries	\$25,422	\$43,686
Fringe benefits	7,627	13,106
Overhead	31,396	53,952
Travel/trans./per diem	17,929	27,403
Other direct costs	6,474	9,516
Equipment	0	0
Subcontractor	<u>0</u>	<u>0</u>
<b>Total</b>	<b>\$88,848</b>	<b>\$147,663</b>
Fee	<u>0</u>	<u>3,918</u>
<b>GRAND TOTAL</b>	<b>\$88,848</b>	<b>\$151,581</b>

The Asia/Near East Bureau has thus far contributed approximately \$100,000 to this task.

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

**QUARTERLY ACTIVITY REPORT**  
 (For period 10/1/85-12/31/85)

**ACTIVITY AREA:** Research, Development, and Demonstration

**ACTIVITY:** Market Analysis of Cogeneration Opportunities in USAID-Assisted Countries  
 (Contract Task Area 7)

**COUNTRY:** Not country-specific

**START DATE:** 10/15/85

**COMPLETION DATE:** 12/31/86

**BUDGET:** \$75,000

**QUARTERLY EXTENDITURES:** \$7,003  
**CUMULATIVE EXPENDITURES:** \$8,201

**S&T/EY MANAGER:** Alberto Sabadell

**HBC MANAGER:** Alain Streicher

**HBC REFERENCE:** 180

**DESCRIPTION**

ECSP staff are modifying the Hagler, Bailly & Company cogeneration market assessment model, which has been used for a number of years in the U.S., to estimate the economic and financial potential of cogeneration in developing countries. Based on the cost of different cogeneration technologies (e.g., fuel oil boiler with steam turbine, natural gas boiler with steam turbine, gas turbine/waste heat recovery boiler, diesel/waste heat recovery boiler), and a market divided into new, replacement, and retrofit segments, the model will estimate, for a range of equipment sizes, the possible market shares. Since every country has a different industrial structure, different fuel inputs, and different regional divisions, the model has to be changed for each country. ECSP staff have adapted the model for Pakistan and Thailand and have made trial runs to evaluate its performance.

Further refinements will be made to the model in the next quarter. As additional data is collected, the model will be modified for additional countries.

## ACTIVITY REPORTS

None.

## KEY PERSONNEL

- Hagler, Bailly & Company: Alain Streicher, Vice President; Pirooz Sharafi, Senior Associate; Marc Babin, Associate

## EXPENDITURES

(As of 3/31/86, based on labor costs incurred and invoices received):

	<u>This quarter</u>	<u>Cumulative</u>
Salaries	\$2,761	3,204
Fringe benefits	828	961
Overhead	3,409	3,956
Travel/trans./per diem	0	0
Other direct costs	5	5
Equipment	0	0
Subcontractor	<u>0</u>	<u>0</u>
<b>Total</b>	<b>\$7,003</b>	<b>\$8,126</b>
Fee	<u>0</u>	<u>75</u>
<b>GRAND TOTAL</b>	<b>\$7,003</b>	<b>\$8,201</b>

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

**QUARTERLY ACTIVITY REPORT**  
 (For period 10/1/85-12/31/85)

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**ACTIVITY AREA:** Research, Development, and Demonstration

**ACTIVITY:** Institutional/Policy Barriers to Energy Conservation

**COUNTRY:** Not country-specific

**START DATE:** 10/1/85      **COMPLETION DATE:** Ongoing

**BUDGET:** \$60,000      **QUARTERLY EXPENDITURES:** \$6,622  
**CUMULATIVE EXPENDITURES:** \$23,334

**S&T/EY MANAGER:** Alberto Sabadell

**HBC MANAGER:** Alain Streicher      **HBC REFERENCE:** 181

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**DESCRIPTION**

During this quarter an extensive bibliography on barriers to energy conservation in developing countries was prepared. Literature was gathered on general barriers to energy conservation, barriers to energy conservation in specific sectors (industry, agriculture, transportation, power, buildings), and barriers to foreign and local private sector investment in energy conservation.

Based upon the literature search and discussions with experts in the areas of energy conservation and private investment in developing countries, a preliminary assessment of barriers to energy conservation was completed. The key barriers to private sector investment in energy conservation in developing countries and to energy conservation in the industry, agriculture, transportation, power, and buildings sectors were identified, classified (e.g., financial, economic, technical, institutional), and assembled into draft matrix by sector.

Activities anticipated in the next quarter include completion of the literature search, bibliography, and matrices and identification and analysis of specific policy barriers to energy conservation in several AID-assisted countries.

### ACTIVITY REPORTS

- Barriers to Energy Conservation in Developing Countries, working bibliography and matrix of barriers by sector, March 31, 1986.

### KEY PERSONNEL

- Hagler, Bailly & Company: Henri-Claude Bailly, President; Alain Streicher, Vice President; Suzanne Leonard, Associate.

### EXPENDITURES

(As of 3/31/86, based on labor costs incurred and invoices received):

	<u>This quarter</u>	<u>Cumulative</u>
Salaries	\$2,374	\$6,963
Fringe benefits	712	2,089
Overhead	2,932	8,600
Travel/trans./per diem	513	3,908
Other direct costs	91	730
Equipment	0	0
Subcontractor	<u>0</u>	<u>0</u>
<b>Total</b>	<b>\$6,622</b>	<b>\$22,290</b>
Fee	<u>0</u>	<u>1,044</u>
<b>GRAND TOTAL</b>	<b>\$6,622</b>	<b>\$23,344</b>

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

**QUARTERLY ACTIVITY REPORT**  
 (For period 10/1/85-12/31/85)

**ACTIVITY AREA:** Research Development & Demonstration

**ACTIVITY:** Innovative Private Sector Financing

**COUNTRY:** Sri Lanka, Costa Rica, Dominican Republic, Central America,  
 Pakistan

**START DATE:** 10/15/85

**COMPLETION DATE:** 12/31/86

**BUDGET:** \$75,000

**QUARTERLY EXPENDITURES:** \$12,178

**CUMULATIVE EXPENDITURES:** \$16,690

**S&T/EY MANAGER:** Jim Sullivan

**HBC MANAGER:** Henri-Claude Bailly

**HBC REFERENCE:** 183

**DESCRIPTION**

ECSP has supported exploratory work in the area of innovative financing of energy conservation projects and has prepared a number of documents outlining these concepts. The next logical step is to identify a private sector project which would lend itself to a demonstration of innovative financing. Previously funded USAID work in Costa Rica, Central America, the Dominican Republic, Sri Lanka, and Pakistan could be the source of such a project.

ECSP contractor staff have been exploring with private and public sector officials possible energy conservation projects that would lend themselves to a demonstration of innovative approaches to financing in a number of places. Visits have been made to Sri Lanka, Costa Rica, and the Dominican Republic and discussions have been held with a variety of industries to identify potential projects. Several facilities have expressed considerable interest including tire, candy, and cement companies in Costa Rica, a tire company in

Sri Lanka, a steel and two cement companies in the Dominican Republic, and other companies in Pakistan, Thailand, and Egypt. These opportunities will be developed further in the next quarter.

### ACTIVITY REPORTS

None.

### KEY PERSONNEL

- Hagler, Bailly & Company: Henri-Claude Bailly, President; Alain Streicher, Vice-President; Robert Kowalski, Senior Associate; Mark Oven, Senior Associate.

### EXPENDITURES

(As of 3/31/86, based on labor costs incurred and invoices received):

	<u>This quarter</u>	<u>Cumulative</u>
Salaries	\$4,405	\$6,060
Fringe benefits	1,322	1,819
Overhead	5,440	7,485
Travel/trans./per diem	490	490
Other direct costs	521	554
Equipment	0	0
Subcontractor	<u>0</u>	<u>0</u>
<b>Total</b>	<b>\$12,178</b>	<b>\$16,408</b>
Fee	<u>0</u>	<u>282</u>
<b>GRAND TOTAL</b>	<b>\$12,178</b>	<b>\$16,690</b>

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

**QUARTERLY ACTIVITY REPORT**  
 (For period 10/1/85-12/31/85)

**ACTIVITY AREA:** Research, Development & Demonstration

**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:** \$130,000

**QUARTERLY EXPENDITURES:** \$17,536

**CUMULATIVE EXPENDITURES:** \$105,471

**S&T/EY MANAGER:** Alberto Sabadell

**HBC MANAGER:** Alain Streicher

**HBC REFERENCE:** 178

**DESCRIPTION**

During this quarter, ECSP staff continued to support the Government of Costa Rica in conducting a project to demonstrate and publicize the effectiveness of low-cost measures for saving fuel in road transportation. Activity centered on gathering and analyzing the data generated by the demonstrations and writing a draft report.

The demonstration project applied fuel conservation measures to fleets of 24 buses and 16 taxis. Initial measures included optimum maintenance and radial tires. After 4 weeks all participating drivers were trained in fuel-efficient driving techniques. Following completion of driver training, driver incentives were given to bus drivers while the test continued for an additional four weeks. Data on kilometers traveled, fuel consumed, routes, drivers, and vehicle types were then collected and analyzed.

The public information and awareness campaign formed the second component of the project. Broad media coverage was obtained for key events such as the certificate award ceremony for taxi driver trainees and the fuel conservation seminar. The seminar attracted 55 persons who were largely operators of bus, taxi, truck and institutional fleets. Brochures for operators of light vehicles, buses and trucks were prepared and will be distributed through existing low cost channels.

During this quarter the remainder of the data on taxi fuel use and mileage was obtained with the help of the Costa Rican Energy Sector Directorate. Dr. David Greene, from Oak Ridge National Laboratory, completed the data analysis, and ECSP staff began preparing a draft report. The report will be circulated for review in April.

The results from the project are very encouraging. Although not all aspects of the project worked as expected, the total savings indicate that the approach is very promising. Specifically, driver training and proper maintenance together produced over 11 percent savings for buses and approximately 17 percent for taxis.

The bus savings were:

Proper maintenance	6.5%
Driver training	4.2%
Driver incentives	1.2%*
Radial tires	-1.8%

The taxi savings were:

Proper maintenance	1.8%*
Driver training	15.1%
Radial tires	0.2%*

\*Not statistically significant

The savings from maintenance and radial tires might have been better but for certain limitations and monitoring problems. Since most taxis were 1985 models, they had less margin for improvement from maintenance than older vehicles. In addition, improved maintenance procedures could have been inadvertently applied to the control group of vehicles, reducing the differential between the test group and the control group. Underinflation may have prevented radial tires from making a significant impact on fuel economy, proper inflation should have produced an additional 3-5 percent gain.

The measures demonstrated in this project will save \$24,900 per year in fuel costs for the participating vehicles -- \$14,500 for buses and \$10,400 for taxis. Replication throughout the fleet of the cost reduction measures in

the host cooperatives would save an estimated \$491,500 in fuel costs -- \$34,700 in the bus fleet and \$456,800 in the taxi fleet. Further benefits will result from better driving habits which will produce reduced accident rates, increased vehicle life, lower maintenance costs, and less pollution.

Apart from demonstrating significant fuel savings, the project had two other favorable impacts: it established an in-country capability for teaching fuel efficient driving, one of the most effective fuel conservation measures; and it proved that the costs of administering such projects can be reduced substantially by enlisting the participation of local businesses that stand to profit from the increased business and exposure brought by participating in the project. These businesses can help keep project costs down by supplying products and services at discounted prices in exchange for publicity in the public information and awareness campaign.

Preliminary conclusions and recommendations will be reported on next quarter as the project draft report is completed.

ECSP staff began planning for follow-on activities during this quarter, specifically, ECSP staff began working on a policy paper to evaluate transportation energy projects in developing countries and establish a framework for identifying and evaluating transportation energy conservation projects for specific USAID-assisted countries. Among other things, the paper will: review projects undertaken in developing countries; analyze transportation energy consumption, oil imports, GNP, and a number of other variables to develop a quantitative system for identifying those USAID-assisted countries that can most benefit from transportation energy conservation projects; categorize and summarize conservation policies and programs used in developed countries; and evaluate the applicability of these programs to USAID-assisted countries. A small workshop of transportation energy experts may be convened to help refine the report and evaluate suggested policies and programs.

## ACTIVITY REPORTS

None

## KEY PERSONNEL

- Hagler, Bailly & Company: Alain Streicher, Vice President; Robert Kowalski, Senior Associate; Jeff Erickson, Associate
- Oak Ridge National Laboratory: Dr. David Greene
- USAID/San Jose: Heriberto Rodriguez, Energy Officer

- Costa Rica: Ministry of Industry, Energy and Mines, Energy Sector Directorate: Dr. Jorge Blanco, Director General; Lic. Ana Lorena Leon, Manager, Inc. Antony Araya.

## EXPENDITURES

(As of 3/31/86, based on labor costs incurred and invoices received):

	<u>This quarter</u>	<u>Cumulative</u>
Salaries	5,635	25,756
Fringe benefits	1,691	7,727
Overhead	6,960	31,810
Travel/trans./per diem	1,426	19,305
Other direct costs	1,824	9,510
Equipment	0	0
Subcontractor	<u>0</u>	<u>5,871</u>
<b>Total</b>	<b>\$17,536</b>	<b>\$99,979</b>
Fee	<u>0</u>	<u>5,492</u>
<b>GRAND TOTAL</b>	<b>\$17,536</b>	<b>\$105,471</b>

USAID/San Jose has contributed \$30,000 to this task.

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

QUARTERLY ACTIVITY REPORT  
(For period 10/1/85-12/31/85)

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ACTIVITY AREA: Research, Development, and Demonstration

ACTIVITY: Technology Transfer for Energy Management

COUNTRY: Egypt

START DATE: 10/1/1985      COMPLETION DATE: 10/31/86

BUDGET: \$250,000

S&T/EY MANAGER: Alberto Sabadell

HBC MANAGER: Henri-Claude Bailly      HBC REFERENCE: 187

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DESCRIPTION

While on another assignment, ECSP staff visited Egypt between February 22 and February 24, 1986 to continue preparing a program plan for a Technology Transfer for Energy Management project. Tentative plans call for the project to be implemented under the Ministry of Industry and the Ministry of Petroleum with assistance from the Egyptian Electricity Authority.

The activity's ultimate goal is to conserve energy use among conventional energy users in Egypt, thereby providing increased foreign exchange earnings through increased oil exports. Additionally, the activity seeks to establish a strong institutional capacity to undertake and manage conservation-related investments and programs. This capacity will be developed among energy consumers, suppliers of equipment and services, lenders, and government policy-makers. The key elements of the program are:

- 1) A program of technical assistance, training and information dissemination, studies, and policy analyses, including the services of a U.S. consulting

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team to assist the Ministries' staff in preparing annual budgets and action plans, developing criteria and procedures for evaluating and implementing demonstration activities, providing technical assistance on design and analysis of specific activities, and leading the training, data collection, information dissemination, and policy research activities of the Ministries.

2) A financing program to demonstrate the technical, financial, and economic feasibility of specific conservation measures and to facilitate their widespread adoption. This will serve to introduce a wide variety of proven energy-efficient technologies that are rarely used here. These technologies and operating practices offer economic and technical potential for significant national energy savings and foreign exchange earnings as well as financial paybacks to individual users.

In order to facilitate adoption, the demonstrations will include: publication and dissemination of comprehensive feasibility studies; direct observation through on-site visits; access to actual performance data; on-the-job and classroom training; circulation of case studies and journal activities; personal contact between energy consumers and others through workshops, seminars, trade association membership, and other mechanisms; opportunities for Egyptian A&E firms, manufacturers, and equipment vendors to increase their capabilities -- leading to expanded markets; and increased inter-agency coordination.

A team is supposed to start in-country work during the next quarter.

### ACTIVITY REPORTS

None.

### KEY PERSONNEL

- Hagler, Bailly & Company: Henri-Claude Bailly, President; Alain Streicher, Vice President (2 days in Cairo)
- USAID/Cairo: Lawrence Ervin

### EXPENDITURES

Expenditures during this quarter for this task are included in HBC Reference 150/151.

The USAID Mission in Cairo will be contributing approximately \$250,000 for the project.

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

QUARTERLY ACTIVITY REPORT  
(For period 10/1/85-12/31/85)

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ACTIVITY AREA: Training and Field Technical Assistance

ACTIVITY: General Technical Assistance  
(Contract Task Area 6)

COUNTRY: Thailand, Indonesia

START DATE: 10/16/85      COMPLETION DATE: 9/30/87

BUDGET: \$140,000      QUARTERLY EXPENDITURES: \$45,722  
CUMULATIVE EXPENDITURES: \$61,218

S&T/EY MANAGER: Alberto Sabadell

HBC MANAGER: Alain Streicher      HBC REFERENCE: 182

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DESCRIPTION

Indonesia

During this quarter, ECSP staff spent two days in Indonesia meeting with Mr. Desmond O'Riordan, Energy Officer at USAID/Jakarta, and Dr. Surjadi of the Directorate General of Electric Power and New Energy reviewing energy conservation activities for Indonesia and discussing possible ECSP involvement in 1986.

The discussing centered on initiating a program in Indonesia similar to that conducted in Sri Lanka between December 1983 and June 1984. The objective of the program would be to train 30-35 senior plant engineers, mostly from the private sector, in energy demand management and energy auditing techniques, in order to enable them to reduce some of their energy costs in the short term. In the first phase of the proposed program, ECSP staff would present the ECSP Energy Demand Management and Conservation training course to 30-35 senior engineers, of which about 20 are expected to

come from the private sector. During the course of this mainly classroom training, the participants would be exposed briefly to the use of energy auditing instrumentation. About 20-25 engineers will be selected to participate in the second phase of the program in which 4 to 5 weeks will be spent, mainly in-plant, in training to perform actual energy audits.

Further discussions are expected in the next quarter to advance this proposal.

### Thailand

During this quarter, ECSP continued to provide support to the government of Thailand -- specifically the National Energy Administration (NEA) and the National Economic and Social Development Board (NESDB) -- in its efforts to accelerate energy conservation in all sectors of the economy. Following on the decisions made in the previous quarter, this support has focused on two areas in which NEA and NESDB urgently needed the "quick response," specialized type of assistance offered by ECSP.

The first area dealt with establishing medium-term national energy saving goals and targets for the industrial sector. These goals and targets had been requested of NEA by NESDB and the prime minister's office for the preparation of the sixth five-year plan (1986-1991), which will be finalized in early spring 1986. The draft final report of the study, Kingdom of Thailand: The National Energy Saving Goals for Industry, 1986-1991, was sent to Thailand for review during March.

The second area was related to the establishment of the private energy conservation center of Thailand. ECSP assistance focused on developing a detailed mobilization work plan for the first 18 months of operation of the center, together with recommendations on the institutional organization, job descriptions and salaries, and projected financial plans. The draft final report of the study, Kingdom of Thailand: The National Energy Conservation Center: A Mobilization Plan, was completed this quarter and was sent to Thailand for review.

Work also progressed in preparing a draft report on cogeneration and small power in Thailand, see HBC Reference 179 for a description.

### ACTIVITY REPORTS

1. Kingdom of Thailand: The National Energy Saving Goals for Industry, 1986-1991, Draft Final Report, March 25, 1986.
2. Kingdom of Thailand: The National Energy Conservation Center: A Mobilization Plan, Final Report, March 24, 1986.

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3. Memorandum on Indonesia Trip Report (to Dr David Jhirad, et. al., from Alain Streicher), February 28, 1986.

### KEY PERSONNEL

- Hagler, Bailly & Company: Alain Streicher, Vice President (2 days in Indonesia; 13 days in Thailand); Bruce Appelbaum, Senior Associate (3 days in Thailand); Robert Kowalski, Senior Associate; John Armstrong, Senior Associate; Mark Oven, Senior Associate
- AID/Washington: Robert Archer and Robert Ichord, A/NE; David Jhirad, S&T/EY
- AID/Bangkok: John Neave, Energy Officer
- AID/Jakarta: Desmond O'Riordan, Energy Officer
- Thailand: Prapath Premani, Secretary General, and Dr. Itthi Bijayendrayodhin, Energy Economics Division, National Energy Administration
- Indonesia: Dr. A.J. Suarjadi, Director for New Energy Development, Ministry of Mines and Energy

### EXPENDITURES

(As of 3/31/86, based on labor costs incurred and invoices received):

	<u>This quarter</u>	<u>Cumulative</u>
Salaries	\$11,943	\$17,137
Fringe benefits	3,583	5,141
Overhead	14,750	21,165
Travel/trans./per diem	11,629	12,790
Other direct costs	3,817	4,017
Equipment	0	0
Subcontractor	0	0
	<hr/>	<hr/>
Total	\$45,722	\$60,250
Fee	0	968
	<hr/>	<hr/>
GRAND TOTAL	\$45,722	\$61,218

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

QUARTERLY ACTIVITY REPORT  
(For period 10/1/85-12/31/85)

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ACTIVITY AREA: Information Exchange

ACTIVITY: Technical Transfer Teams for Energy Conservation  
(Contract Task Area 6)

COUNTRY: Not country-specific

START DATE: 10/16/85

COMPLETION DATE: 9/30/87

BUDGET: \$50,000

QUARTERLY EXPENDITURES: \$8,275  
CUMULATIVE EXPENDITURES: \$13,556

S&T/EY MANAGER: Jim Sullivan

HBC MANAGER: Henri-Claude Bailly

HBC REFERENCE: 184

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DESCRIPTION

Technology Transfer Teams will be comprised of technical personnel from private U.S. firms with experience in selected technologies and interest in business promotion and technology transfer to developing countries. These teams will be sent to developing countries to identify and implement projects for a specific technology. The technology being considered initially for transfer is cogeneration. When a technology transfer team is on mission to a country, it will also identify opportunities and constraints to the transfer of that technology. Team activities will include the design of any information dissemination initiatives, marketing, and training efforts necessary for the efficient transfer of a specific technology. Also, team members will be used to monitor the progress of transfer measures and changes in the investment climate that might affect the eventual transfer of the technology.

The primary objectives of the effort will be:

- Development of an information program to familiarize industrial plant managers and owners with the advantages of cogeneration.
- Detailed market analyses of the constraints and opportunities for cogeneration in selected countries
- Identification of specific potential cogeneration sites
- Incorporating the U.S. and host country private sector into all aspects of the project
- Packaging financing for specific projects
- Carrying out information dissemination programs which succeed in stimulating additional private sector investment in cogeneration.

During this quarter, the Technology Transfer Team had its first formal meeting. ECSP staff and officials from AID and private U.S. companies interested in promoting technology transfer to developing countries met in Washington, DC on February 5, 1986 to begin organizing the project and planning a course of action.

This first meeting had three basic thrusts: 1) to provide team members with background information on the program and its goals; 2) to review the status of the search for promising opportunities for technology transfer; and 3) to establish a work plan for the future.

By way of background, Jim Sullivan expressed AID's interest in energy conservation and cogeneration and stressed that AID is very interested in supporting privately stimulated cogeneration projects. ECSP staff also presented team members with information on several studies that are underway to analyze cogeneration technology transfer opportunities in USAID-assisted countries. Some country market assessments and project feasibility studies are underway and others will begin shortly. The feasibility assessments will have two thrusts: (1) a country viability/constraints assessment, and (2) a feasibility evaluation for each project. In addition, discussions have been held with several companies in developing countries to measure their interest in the project and evaluate their needs.

For 1986, the project development activities of the cogeneration Technology Transfer Team will be focused mainly on Pakistan, Thailand, Sri Lanka, India, Dominican Republic, and perhaps one or two other Latin American or Caribbean countries. To date potential projects have been identified in the Dominican Republic, Belize, Costa Rica, and Sri Lanka, several projects will be identified within the next few months in Pakistan and elsewhere.

AID work in several countries has already provided information on some potential projects. To follow up on this work, ECSP staff will carry out country market assessments and project feasibility studies to evaluate prospective projects. The next meeting of the Technology Transfer Team is planned for June 24, 1986. In preparation, team members are analyzing the factors that will be included in the feasibility assessments and are reviewing market assessment reports on two countries.

### ACTIVITY REPORTS

None.

### KEY PERSONNEL

- Hagler, Bailly & Company: Henri-Claude Bailly, President; Peter Bos, Consultant.
- Technology Transfer Team: Robert Herzog, Remtech, Inc.; Lazaros Lazaridis, ThermoElectron; Jay Ryder, Catalyst Energy Development Corporation; General Electric; Jim Toohar, Cogenics.
- USAID/Washington: Jim Sullivan, S&T/EY

### EXPENDITURES

(As of 3/31/86, based on labor costs incurred and invoices received):

	<u>This quarter</u>	<u>Cumulative</u>
Salaries	\$1,058	\$1,581
Fringe benefits	317	474
Overhead	1,306	1,951
Travel/trans./per diem	87	87
Other direct costs	41	41
Equipment	0	0
Subcontractor	<u>5,466</u>	<u>9,092</u>
<b>Total</b>	<b>\$8,275</b>	<b>\$13,266</b>
Fee	<u>0</u>	<u>330</u>
<b>GRAND TOTAL</b>	<b>\$8,275</b>	<b>\$13,556</b>

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

QUARTERLY ACTIVITY REPORT  
(For period 10/1/85-12/31/85)

ACTIVITY AREA: Information Exchange

ACTIVITY: Asia-Near East Energy Conservation Promotion and Investment  
Workshop (Contract Task Area 4)

COUNTRY: Asia-Near East Region

START DATE: 10/15/85      COMPLETION DATE: Ongoing

BUDGET: \$120,000      QUARTERLY EXPENDITURES: \$865  
CUMULATIVE EXPENDITURES: \$865

S&T/EY MANAGER: Alberto Sabadell

HBC MANAGER: Alain Streicher      HBC REFERENCE: 185

DESCRIPTION

Discussions and planning were continued during the quarter to organize a workshop in the Asia/Near East region similar to the Latin America/Caribbean Regional Energy Conservation Seminar which was held in Costa Rica in January 1985. Tentative plans call for holding the workshop in Bangkok, probably in September or October. Tentative arrangements have been made to hold the workshop at the Asian Institute of Technology.

The purpose of the workshop is to expand private sector participation and investment in energy conservation and to improve AID energy conservation project implementation. Tentatively, the workshop will last four days with an optional fifth day. The following topics will be covered:

- Day 1 -- Introduction and presentations on USAID-assisted energy conservation projects

- Day 2 -- Project implementation experience and problems
- Day 3 -- Private sector financial and economic issues
- Day 4 -- Cogeneration development and private power generation
- Day 5 -- Optional field trip

Consideration is also being given to holding either a catalog show or inviting a group of U.S. equipment vendors to present information on available U.S.-manufactured energy efficient equipment.

Cables received to date indicate an interest in sending people from 7 of the 10 AID missions in the region: the Philippines, Morocco, Pakistan, India, Thailand, Jordan, and Egypt.

### ACTIVITY REPORTS

None.

### KEY PERSONNEL

- Hagler, Bailly & Company: Henri-Claude Bailly, President; Alain Streicher, Vice President; Gerald Schwinn, Associate
- USAID/Washington: Robert Archer, A/NE

### EXPENDITURES

(As of 3/31/86, based on labor costs incurred and invoices received):

	<u>This quarter</u>	<u>Cumulative</u>
Salaries	338	338
Fringe benefits	102	102
Overhead	418	418
Travel/trans./per diem	0	0
Other direct costs	4	4
Equipment	0	0
Subcontractor	0	0
	<hr/>	<hr/>
<b>Total</b>	<b>\$862</b>	<b>\$862</b>
Fee	3	3
	<hr/>	<hr/>
<b>GRAND TOTAL</b>	<b>\$865</b>	<b>\$865</b>

The Asia/Near East Bureau will contribute approximately \$60,000 to this activity.

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

**QUARTERLY ACTIVITY REPORT**  
 (For period 10/1/85-12/31/85)

**ACTIVITY AREA:** Information Exchange

**ACTIVITY:** Information Exchange and Energy Conservation Network  
 Development (Contract Task Area 5)

**COUNTRY:** Not country-specific

**START DATE:** 10/15/85      **COMPLETION DATE:** Ongoing

**BUDGET:** \$75,000      **QUARTERLY EXPENDITURES:** \$12,603  
**CUMULATIVE EXPENDITURES:** \$12,603

**S&T/EY MANAGER:** Alberto Sabadell

**HBC MANAGER:** Gerald Schwinn      **HBC REFERENCE:** 186

**DESCRIPTION**

In order to keep better track of the many information activities of ECSP, we have established this separate task to monitor such activities. It is here that we will report each quarter on the number of publications requested and distributed as well as the ECPIE Model and other computer products. Exhibit 6 shows the requests through this quarter for publications and the ECPIE Model.

During this quarter, the ECPIE Model was revised. The new version was sent to all those who received the first edition.

During this quarter, the fourth issue of *Update*, the newsletter for the Energy Conservation Services Program, was written and was sent to AID for review. It will be distributed early in the next quarter.

## ACTIVITY REPORTS

- Energy Conservation Services Program: Update No. 4, Draft, March 1986.

## KEY PERSONNEL

- Hagler, Bailly & Company: Henri-Claude Bailly, President; Alain Streicher, Vice President; Gerald Schwinn, Associate; Jeff Erickson, Associate.

## EXPENDITURES

(As of 3/31/86, based on labor costs incurred and invoices received):

	<u>This quarter</u>	<u>Cumulative</u>
Salaries	\$4,104	\$4,104
Fringe benefits	1,231	1,231
Overhead	5,069	5,069
Travel/trans./per diem	0	0
Other direct costs	1,659	1,659
Equipment	0	0
Subcontractor	<u>0</u>	<u>0</u>
<b>Total</b>	<b>\$12,063</b>	<b>\$12,063</b>
Fee	<u>0</u>	<u>0</u>
<b>GRAND TOTAL</b>	<b>\$12,063</b>	<b>\$12,063</b>

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

**QUARTERLY ACTIVITY REPORT**  
 (For period 10/1/85-12/31/85)

**ACTIVITY AREA:** General Program Management

**ACTIVITY:** Program Management and Development

**COUNTRY:** Not country-specific

**START DATE:** 9/15/83

**COMPLETION DATE:** Ongoing

**BUDGET:** None

**QUARTERLY EXPENDITURES:** \$43,757

**CUMULATIVE EXPENDITURES:** \$368,325

**S&T/EY MANAGER:** Alberto Sabadell

**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, the regional bureaus, or directly by S&T/EY. (Some of these activities eventually become separate activities for program management purposes.) The second-quarter activities for the third year of ECSP (in addition to those that are already treated as separate program activities) are described below:

- In response to a request from the National Energy Policy Commission to the USAID Mission in the Dominican Republic, ECSP staff carried out a short fact-finding mission to the Dominican Republic from March 23 to March 26, 1986 to develop a detailed work plan and budget to carry out activities in transport energy and cogeneration. The study objectives were: 1) to develop a comprehensive diagnosis of the current and expected energy consumption in the transport sector, and identify policy options for energy efficiency improvement; and 2) to provide an estimate of the potential for industrial cogeneration, identify constraints/impediments to its development, and recommend policy initiatives

to stimulate it. A detailed proposal based on this mission will be sent in the next quarter.

- In response to a request from the American Embassy in Amman, Saudi Arabia, ECSP produced a list of U.S. information sources that have material on energy conservation or energy efficiency. This list included a number of computerized databases, private research organizations, and government-sponsored information sources.
- During this quarter, the white paper on cogeneration, Cogeneration in Developing Countries: Prospects and Problems, which was prepared during the previous quarter, was finalized by incorporating comments and suggestions received from the Office of Energy and the Bureau for Asia and the Near East. This systematic analysis of the potential for cogeneration in developing countries also supplemented planning efforts for cogeneration activities initiated in Pakistan, Thailand, and India (see HBC Reference 179). A detailed description of the structure of the Hagler, Bailly proprietary model was also developed to be incorporated as an appendix in future cogeneration market studies. Publication and distribution of a final report is expected next quarter.
- Power Plant Rehabilitation: ECSP staff have begun looking at the potential for increasing the generating capacity of existing power plants in developing countries through life extension and improved availability. The availability of existing power plants in many developing countries is in the range of 55 to 70 percent. As compared to over 80 percent in the U.S. Many factors contribute to the low availability of power plants in developing countries including: poor fuel quality, unsatisfactory repair and maintenance, unreliable spares (quality), late receipt of repair material, lack of properly trained repair and maintenance personnel, inability of the station authorities to take on timely repair work due to tight supply situation.

Increasing power plant availability and life extension is a very low cost method of improving the power generating structure of a utility. If power plant availability is improved, the need for future expansion and new plants is reduced.

During this quarter, ECSP staff developed a scope of work for the activity, briefed AID staff on the scope of work, and received approval to continue with the next two steps, which are:

- Perform a literature search to identify the preliminary potential for power plant rehabilitation. This will emphasize identifying a market for U.S. manufacturers and power plant service organizations. Fifteen USAID-assisted countries have been targeted for the initial evaluation.

- Identify the role AID may be able to play in helping rehabilitate these power plants.

### ACTIVITY REPORTS

1. Energy Conservation Services Program: First Quarterly Report, FY1986 10/1/85-12/31/85, February 7, 1986.
2. Memorandum on energy conservation information centers in the U.S. (to Robert Ichord, USAID, Asia/Near East Bureau for the U.S. Embassy, Amman, Saudi Arabian), February 24, 1986.
3. Cogeneration in Developing Countries: Prospects and Problems, November, 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; Bruce Exstrum, Associate; Jeff Erickson, Associate;

### EXPENDITURES

(As of 3/31/86, based on labor costs incurred and invoices received):

	<u>This quarter</u>	<u>Cumulative</u>
Salaries	\$15,640	\$115,661
Fringe benefits	4,693	33,025
Overhead	19,316	141,094
Travel/trans./per diem	870	7,038
Other direct costs	3,476	46,730
Equipment	0	0
Subcontractor	<u>0</u>	<u>4,745</u>
<b>Total</b>	<b>\$43,995</b>	<b>\$348,293</b>
Fee	< <u>238*</u> >	<u>20,032</u>
<b>GRAND TOTAL</b>	<b>\$43,757</b>	<b>\$368,325</b>

\* In a bookkeeping measure to maintain fixed fee charges at their 85 percent maximum prior to the conclusion of the contract the fixed fee figures were reduced from the previous quarter.

Exhibit 5

Requests for ECSP Publications and Computer Products

<u>TITLE</u>	<u>SOURCE OF REQUEST</u>				
	<u>USAID STAFF</u>	<u>USAID PROJECT STAFF</u>	<u>PRIVATE SECTOR U.S.</u>	<u>PRIVATE SECTOR ABROAD</u>	<u>OTHER DONOR AGENCIES</u>
Energy Demand Management & Conservation Manual	4	3	1	2	1
Industrial Energy Audit Manual	3	4	1	2	1
ECPIE	6	7	4	2	1
Latin America & Caribbean Regional Energy Conservation Seminar - Paper	2	3	1	2	1
Conclusions & Recommendations of the Latin America & Caribbean Energy Seminar	1	1			1
Energy Equipment Cost Directory	2	3		1	1
Transportation Sector in Costa Rica & Opportunities for Energy Conservation	1	3	1		
Financing Energy Conservation in Developing Countries	2	2	2	1	1