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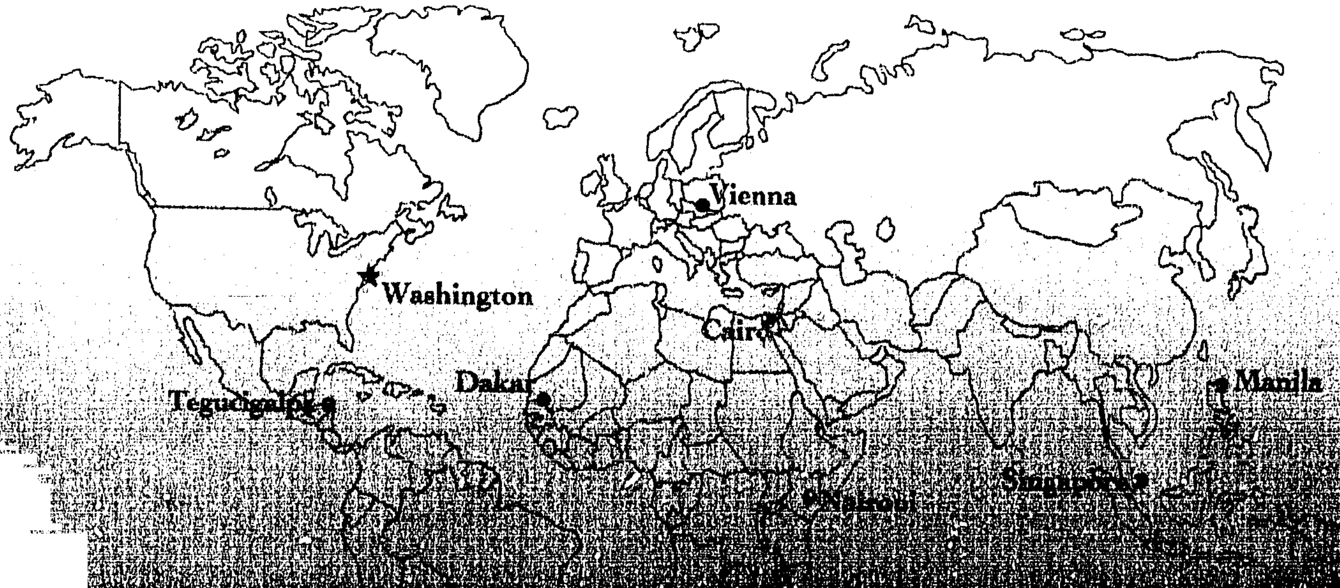
Regional Inspector General For Audit
Bonn

Audit of Romania Energy Efficiency Activities (Project Nos. 180-0015 and 180-0030)

Audit Report No. 8-186-95-005
February 22, 1995



INSPECTOR GENERAL

U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT

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February 22, 1995

MEMORANDUM

TO: DAA/PA, Barbara Turner

FROM: RIG/A/B, John Competello

SUBJECT: Audit of Romania Energy Efficiency Activities (Project Nos. 180-0015 and 180-0030) Audit Report No. 8-186-95-005

This is our report on the subject audit. In preparing this report we considered ENI Bureau comments to the December 7, 1994 draft report. Based on these comments and the provision of previously requested information, we deleted one finding section and revised the remaining sections to better reflect your concerns. We have included your comments in their entirety as Appendix II.

Based on your comments, we consider Recommendation No 2. resolved and it can be closed when required actions are taken. However, since you did not agree with Recommendation No. 1, we consider it unresolved. So that we may promptly close the recommendations, please provide us with information within 30 days concerning actions taken to implement them.

Background

Central and Eastern European countries which were formerly governed under Communist centrally planned systems developed inefficient and sometimes hazardous energy practices. In response to these energy problems, the United States Agency for International Development (USAID) authorized two regional energy projects with total funding of over $100 million.

On November 16, 1990 USAID authorized the Emergency Energy Project (No. 180-0015) to assist countries in Central and Eastern Europe to address: wasteful energy practices in industry, operational bottlenecks in oil refineries, inefficient international oil procurement practices, and inappropriate domestic petroleum price structuring. The project, initially scheduled to last about one year, was

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extended to December 30, 1994, and its initial $10 million funding was increased to $11.75 million. As of June 30, 1994, USAID financial reports showed that $11.7 million had been obligated under this project of which $11.3 million had been spent.

On May 28, 1991 USAID authorized the Regional Energy Efficiency Project (No. 180-0030) to support United States participation in a multilateral effort generally aimed at: improving energy policies and energy cooperation between countries in the region, promoting policies and institutional reforms and programs for increasing energy investments, reducing energy-related environmental damage, and improving nuclear safety in selected countries. In April 1993, the initial $34 million four-year regional project was extended by two years to June 14, 1997, and its funding nearly tripled to $96 million. As of June 30, 1994, USAID financial reports showed that $48.5 million had been obligated for this project of which $29.5 million had been spent.

USAID has financed numerous activities in pursuit of these projects' multiple objectives. These activities have provided technical assistance, low-cost energy equipment, and training primarily through seven U.S. contractors, one U.S. non-profit organization, one international association, and three U.S. government agencies.

This report addresses only the principal industrial energy efficiency activities undertaken in Romania under both projects. Specifically, under Project No. 180-0015 the audit focused on:

- Assistance made available to eight industrial companies under a regional contract awarded to Resources Management Associates (RMA). The contract period was from February 12, 1991 through March 31, 1993, during which time RMA was to conduct audits of the companies' energy efficiency, and based on the results of those audits, provide each company with appropriate technical assistance, equipment, and training.

- Assistance to two oil refineries under a contract awarded to Davy McKee Corporation (DMK). The contract period was from March 14, 1991 through August 31, 1992 during which time DMK was to evaluate and recommend changes in operating practices and equipment.

Under Project No. 180-0030 the audit focused on:

- Assistance directed at establishing a private sector group in Romania to promote and market energy efficiency activities in the industrial sector. USAID awarded a contract to RCG/Hagler, Bailly, Inc. (RCG/Hagler) to develop the capability of a select group of private sector companies (known as Energy Service Companies) to provide energy efficiency consulting services to Romanian industry. The regional contract began on April 16, 1992, and is scheduled to end on April 15, 1996.

As of June 30, 1994, the total expenditures for all of the above and related energy efficiency activities in Romania was estimated to be $4 million.

The Bureau for Europe and the New Independent States (ENI) has overall management responsibility for both regional projects. Day-to-day management responsibility rests with ENI's Office of Environment, Energy and Urban Development and, specifically, in its Energy and Infrastructure Division (ENI/EEUD/EI). The Office of the USAID Representative in Romania was not delegated any management responsibility, but occasionally assisted in monitoring project activities in Romania.

Audit Objectives

The audit was included in the Office of Inspector General's fiscal year 1994 audit plan. Specifically, the audit was designed to answer the following objectives:

- **Did the Bureau for Europe and the New Independent States manage energy efficiency activities in Romania to ensure that USAID-financed inputs were provided as agreed and resulted in planned outputs?**

- **Did energy efficiency activity outputs contribute to improved energy efficiency in Romania?**

In addressing these objectives, the audit considered the findings of other studies and evaluations of energy efficiency activities in Romania. These included an August 1992 U.S. General Accounting Office report (GAO/NSIAD-92-257) addressing Romania's energy needs, and a contracted June 1994 evaluation of industrial energy activities under Project 180-0015.

Appendix I contains a description of the scope and methodology of the audit.

Audit Findings

Did the Bureau for Europe and the New Independent States manage energy efficiency activities in Romania to ensure that USAID-financed inputs were provided as agreed and resulted in planned outputs?

The Bureau generally ensured that the inputs associated with the energy efficiency activities under review were provided as agreed and resulted in planned outputs, except that a market study, planned to help private Energy Service Companies (ESCOs) identify potential industrial customers, was never performed, and certain USAID-funded equipment needed repairs and/or replacement parts which could not be easily obtained.

During site visits to four of the eight companies participating in the energy audits under Project No. 180-0015, officials from each company stated that Resources Management Associates (RMA) had conducted such audits at their plants and that these audits identified opportunities for improving energy efficiency. Physical inspections confirmed that the plants had received and installed, as appropriate, the equipment that was provided as a result of the energy audits. Further, as part of a larger oil refinery study, Davy McKee Corporation (DMK) completed energy efficiency evaluations of two oil refineries. A visit to one of the two evaluated refineries substantiated the plant's implementation of DMK's energy efficiency recommendations.

USAID-financed technical assistance under Project No. 180-0030 provided training and certification in modern energy efficiency concepts and techniques to 16 Romanians who have engineering experience. This private sector group, whose firms are referred to as Energy Service Companies (ESCOs), has formed a fledgling energy association with ties to the Association of Energy Engineers in the United States. In addition to training, USAID provided the ESCOs access to energy efficiency audit equipment worth $28,000. A physical inspection confirmed the arrival of this equipment, but noted that USAID had not determined its final distribution or disposition. In response to the draft report, the ENI Bureau stated that its intent was to leave the diagnostic equipment with a non-government entity such as the local chapter of the Association of Energy Engineers, once well established.

Five individuals who participated in the USAID-funded training were interviewed. They were pleased with its quality and were optimistic that the simplified methods learned would give them a competitive edge over other Romanian firms in marketing energy efficiency services. This advantage could have been greater had RCG/Hagler, Bailly, Inc. (RCG/Hagler) completed a planned market study for the ESCOs. Such a study might have assisted them in identifying industrial customers for their services. Because this matter also relates to the following audit objective, it is discussed in that section.

Did the energy efficiency activity outputs contribute to improved energy efficiency in Romania?

The outputs of USAID-financed activities under Project No. 180-0015 had contributed to increased energy efficiency awareness and actual energy savings at selected sites, although these savings may be limited due to problems experienced with some project-financed equipment. The outputs under Project No. 180-0030 also appear to have contributed to increasing energy efficiency awareness at selected sites, but it was still too early to gauge any actual energy savings.

Visits to four of the eight Romanian industrial plants evaluated by Resources Management Associates (RMA) and one of the two oil refineries evaluated by Davy McKee Corporation (DMK) under Project No. 180-0015 confirmed that implementation of the recommendations and utilization of the energy efficiency equipment provided as a result thereof had increased short-term energy efficiency. In June 1994 an independent evaluation financed by USAID reported that the use of the $210,000 worth of USAID-financed equipment at the eight plants produced annual energy savings ranging from $2.4 million to $2.7 million. While these returns are less than the $10 million annual savings estimated in RMA's justification for the equipment purchase, as mentioned in GAO's August 1992 report, they are greater than the total estimated cost associated with implementing the activities at the eight plants, or about $776,000.

As of August 31, 1994, USAID had approved nine plants that had contracted with different USAID-sponsored Energy Service Companies (ESCOs) for participation in USAID-financed energy efficiency activities under Project 180-0030. The ESCOs were to perform energy efficiency audits under USAID-contractor supervision, and USAID will provide up to $10,000 worth of U. S.-manufactured energy efficiency equipment to each of the selected plants. Although the energy efficiency audits have not been completed, personnel at one of the participating plants stated that audit results had already led to increased energy efficiency.

However, long-term energy efficiencies resulting from activities under both projects appeared less certain. Under Project No. 180-0015 the actual energy efficiencies realized by the eight industrial plants may be diminished in the future due to problems with USAID-financed equipment. Furthermore, optimum energy efficiencies were not achieved because the plants were unable to finance all of the energy audit recommendations. The financial problems hindering these plants from implementing all of the energy recommendations also limit the prospects for the success of Project No. 180-0030.

ENI Needs to Evaluate Impediments to Achieving a Sustainable Market-Based Energy Audit Industry

One of the energy efficiency objectives under Project No. 180-0030 was to train private Romanian firms in energy efficiency audit techniques and help identify a market for these firms to service. The USAID-financed contractor, RCG/Hagler, Bailly, Inc. (RCG/Hagler) trained 16 ESCO representatives in energy efficiency auditing techniques.[1] The five ESCOs interviewed stated they were trained in simple, but effective, energy testing methods including the use of energy testing equipment. After becoming trained in modern energy-efficiency techniques, the ESCOs were to identify and contract with industrial plants needing energy efficiency audits, and to negotiate a fee individually with each plant for their services. To get the program going, incentives were provided to both the ESCOs and participating plants. The ESCOs that contracted with the first 10 plants approved by USAID to participate in the energy efficiency program were to receive on-site assistance in performing the energy audits from the USAID-financed contractor, and the participating company would receive up to $10,000 worth of energy efficiency equipment from U.S. manufacturers.

Despite the incentives, the ESCOs have had difficulty identifying companies willing to pay for energy efficiency audits. At the time of the audit, only 7 of the 16 ESCOs had contracted with USAID-approved companies for the audits. According to five ESCOs interviewed and RCG/Hagler's in-country representative, industrial plants and factories had been reluctant to sign up for the energy efficiency audits because:

- most industrial plants were not able to finance such activities; and
- plant managers were not interested in energy audits because they believed that they would be as ineffective as the studies carried out under the Communist regime.

These same factors were identified by GAO which reported in August 1992 that insufficient capital for investment in energy efficiency technologies and inadequate management and training support of energy efficiency practices at the plant level were contributing to the lack of energy efficiency in Romania.

Financing energy efficiency activities appears to be a general problem for Romanian industry. With few exceptions, the plants visited expressed doubts at their ability to finance the energy audits, let alone the recommendations resulting from those audits. The lack of capital for such expenditures was a real problem

[1] The ESCOs are generally local engineering consulting firms with other sources of income looking for new markets.

without an apparent solution. No USAID, Romanian government, or other donor program was identified that addressed these specific financial constraints. However, in commenting on the draft report, the ENI Bureau stated that energy efficiency financing was a problem that was understood at the time the ESCO activity was being designed, nor was it a problem unique to Romania, but was to be addressed in future contract proposals. The Bureau also stated that the European Bank for Reconstruction and Development, the World Bank, and the European Union were all interested in energy efficiency activities, and were considering projects that would provide some financing for such activities. However, from the information provided, it was unclear when these activities would be implemented and the extent to which they would include Romania.

Two other problems are adding to the difficulties being encountered by ESCOs to develop and market their skills. First, development of some ESCOs may be delayed because not all ESCOs will receive on-the-job supervision from RCG/Hagler. Under the ESCO program, some ESCOs were to receive direct supervision from the U.S. contractor while performing their first energy audits. Unfortunately, it appears that more than half of the ESCOs (9 of 16) will not benefit from this experience because the USAID-funded activity budgeted only enough funds for the U.S. contractor to supervise energy audits of 10 plants, but now, only nine plants will participate. In its comments to the draft report, the ENI Bureau stated that the ESCO activity was designed to be competitive. The Bureau added that it was understood at the beginning that some ESCOs might not succeed in getting a client as there was only enough resources to finance U.S. contractor supervision of 10 audits. The Bureau said the limiting factor was ENI's budget.

Second, according to RCG/Hagler's Memoranda of Agreement with the ESCOs, a market study of Romania was also to be performed which might have assisted in identifying customers for ESCO services. However, the study was not performed. RCG/Hagler's in-country representative said the market study was not conducted because its projected cost came in significantly higher than the amount budgeted based on an unreliable data base. The USAID Project Officer also stated that the market study was not done due to budgetary concerns, but also because it was thought the results would have been of questionable value. While this may be the case, the audit revealed that the most significant problem facing ESCOs was identifying clients willing and able to pay for their services. A market study by itself would not ensure success, but it could have provided USAID and the ESCOs with essential information concerning market conditions, size and composition, and constraints to accessing the market effectively.

As a result of these problems, we question whether a market-based energy audit industry is sustainable or will generate the long-term energy efficiencies USAID hoped to achieve. These conditions also lead us to question whether continued funding of this program in Romania is warranted, especially given current USAID budgetary constraints and renewed emphasis on identifying and terminating marginally performing activities.

In conclusion, both energy projects seek to improve industrial energy efficiency in Romania by identifying, through use of energy audits, cost-effective methods of correcting wasteful energy practices and equipment. The implementation of recommendations in energy audits had improved industrial energy efficiency at participating plants under Project No. 180-0015, but it was doubtful if the newly created Energy Service Companies established under Project No. 180-0030 would be able to widely replicate these measures unless the impediments to developing and marketing their services are effectively addressed. Until such time, the monies invested in these energy efficiency activities will probably not yield the benefits or energy returns necessary to consider the program cost-effective.

<u>Recommendation No. 1</u>: We recommend that the Bureau for Europe and the New Independent States:

1.1 evaluate the impact of the constraints identified by this audit -- that is, the partial development of Energy Service Companies and the financial constraints on industry -- on widely implementing energy efficiency activities in Romania, and based on the results of such an evaluation;

1.2 determine whether it is cost-effective to continue Energy Service Company activities, to include completing the market study and other related activities designed to assist Energy Service Companies to market their services.

The ENI Bureau disagreed with the finding and conclusion. It added that the recommendation in the draft report was premature and did not consider the sequencing of assistance and the broader economic, financing, and other donor and multilateral approaches being considered for the Central and Eastern European region. Modifications were made to the text to reflect some of the Bureau's concerns. However, the Bureau provided no evidence that it had assessed the impact of the problems identified by the audit that were hampering the progress of the energy service companies established under Project No. 180-0030. Because the Bureau does not agree with the recommendation, RIG/A/B considers it open and unresolved.

Problems with USAID-Financed
Equipment Need to Be Resolved

Under Project 180-0015, $210,000 worth of energy efficiency equipment was donated to the eight industrial companies targeted for assistance. This equipment was expected to be used regularly to measure and control use of energy at each company. The equipment selected for review was accounted for and most of it was functioning as expected. However $30,400 in equipment (14 percent) was found inoperable:

- Of six combustion analyzers provided, three (total value $15,800) were not functioning:

    - One analyzer had stopped working for undetermined reasons three months after it was provided to a pulp and paper factory. According to company officials, the U.S. manufacturer has been unresponsive to requests for assistance, and the company's attempts to repair the equipment on its own have been unsuccessful. A subcontractor to RMA, who oversaw the installation and ensured the equipment was operating properly, also made inquiries, but had not received a response.

    - One combustion analyzer provided to the GRIRO Steel Manufacturing Plant had not worked since November 1993 due to a lack of replacement oxygen sensors. We were told that an oxygen sensor is a relatively inexpensive item, but the $5,300 analyzer is worthless without it. (USAID, through RMA, did provide some spare parts under the project, but it appears the oxygen sensors were consumed more quickly than expected.)

    - Another analyzer provided to a cement factory was experiencing printer problems which are described in the operation manual as the result of a corrupted memory. The analyzer also lacked replacement oxygen sensors.

- One gas-flow meter ($5,800) at GRIRO Steel Manufacturing Plant had never worked properly and the problem could not be corrected locally.

- Two flow meters ($8,800) at the Bucharest Milk Plant were not functioning properly according to a follow-up review made by SCIENTECH, Inc. for the ENI Bureau. According to a representative of the milk plant, they were neither advised of this finding nor otherwise aware that the meters were not working properly; therefore, they had not attempted to replace them or make repairs.

The inability to get the U.S. manufacturer to respond to the combustion analyzer's problems and the lack of spare parts caused USAID equipment recipients to question whether U.S. manufacturers were interested in the Romanian market. A problem with one U.S. manufacturer or supplier can make it more difficult for other U.S. companies to establish a market presence. More importantly, without reliable equipment the companies cannot routinely monitor their energy usage and make needed adjustments to maintain energy efficiency over the long-term, as the program intended.

The ENI Project Officer stated that he has known since early 1991 that it would be necessary to follow-up on the use and sustainability of the equipment donated to the participants, and that he initiated a follow-up program in 1994. Under that program, the Bureau stated that the U.S. contractor (RCG/Hagler, Bailly, Inc.) responsible for follow-up activities, has surveyed every plant audited under Project No. 180-0015 and is tracing requests for spare parts, replacement of defective equipment, and attempting to link recipients with the U.S. manufacturer or representative for future needs. Further, the project officer noted that the contractor has intervened on behalf of the recipients who had defective combustion analyzers in an attempt to make the manufacturer responsive to the problems. In response to the draft report, the Bureau also stated that it had been advised that three equipment manufacturers that had provided equipment under the program now have representatives in Romania. In our opinion, the Bureau was appropriately addressing the problems associated with the equipment provided under Project No. 180-0015. It now needs to document and implement the lessons learned from this experience to minimize the impact of inoperable equipment and potential for local negative publicity about U.S. manufactured equipment.

Recommendation No. 2: We recommend that the Bureau for Europe and the New Independent States:

2.1 determine why equipment suppliers have not provided prompt and complete assistance related to servicing and providing parts for equipment financed under Project No. 180-0015, and

2.2 report on the measures it has taken or intends to take to minimize problems with equipment components in on-going and future projects.

The ENI Bureau believed this problem was overstated and that the discussion did not adequately recognize actions taken to correct the problems, but agreed additional improvements could be made in this area. Modifications were made to the text and recommendation to better reflect the Bureau's concerns and actions taken to resolve the problem. Because the Bureau indicated its willingness to implement the recommendation RIG/A/B considers it resolved.

Other Matters

The draft report included a discussion on ENI Bureau's management of energy efficiency financial data. Specifically, this section addressed ENI Bureau's failure to provide the auditors with specific financial information for the energy efficiency activities under review. Subsequent to the draft report, the ENI Bureau did provide virtually all of the information requested, so that section and its recommendation were deleted from the report. However, we are concerned that the ENI Bureau may not have adequate information systems in place to provide its managers with the levels of information needed to appropriately assess the reasonableness of costs incurred as compared with amounts budgeted, or the cost-effectiveness of energy efficiency activities in Romania. Such systems take on more urgency given the current cost-cutting environment and pressure on the Agency to reduce its budget and to show results.

Project officers play a pivotal role in discharging USAID's overall stewardship and accountability for use of public funds. When implementing projects through the use of direct USAID contracts, the project officer is responsible for monitoring the performance of the contractor in order to facilitate the attainment of project objectives and to safeguard USAID's interests and investment. This requires appropriate financial and performance information. Regional projects, such as Project Nos. 180-0015 and 180-0030, primarily managed by one USAID/Washington-based office and involve multiple implementing organizations, further heighten the importance of appropriate information systems.

Throughout the audit, repeated requests were made to the project office for basic financial data on energy efficiency activities in Romania so that we could specifically determine USAID's investment in energy efficiency activities in Romania. We were told that the data was readily available and would be provided; however, it took the ENI Bureau about nine months to fully respond to our requests. For the most part, the ENI Bureau provided us with copies of individual contractor invoices and related documents used to identify budget and expenditure amounts for specific energy efficiency activities in Romania. In two cases, the ENI Bureau could only estimate the amount associated with the activities in Romania.

The fact that the Bureau could not readily provide the basic project financial data that was requested implies that it has not established information systems to capture financial data by energy activity "type" and by "country." We presumed the reason for this was that the energy efficiency programs were designed with a regional as opposed to a country-specific emphasis, and therefore, information systems were not designed to capture financial data by country or activity. However, without this information one cannot assess the reasonableness of costs incurred as related to amounts budgeted or the cost-effectiveness of the energy efficiency activities in Romania. This was particularly relevant to the Energy Service Company activity under Project No. 180-0030 whose cost-effectiveness needed to be determined in view of the problems the ESCOs were encountering. Had the ENI Bureau better financial and performance information, it may have been able to identify and reallocate enough funds from lower priority energy activities to complete the market study and provide direct supervision on the first energy audit for all of the 16 firms trained under the ESCO activity of Project 180-0030.

SCOPE AND METHODOLOGY

Scope

In accordance with generally accepted government auditing standards, we audited selected energy efficiency activities in Romania carried out under Project Nos. 180-0015 and 180-0030. The audit focused on contracts to Resource Management Associates (RMA) and Davy McKee Corporation (DMK) awarded under Project No. 180-0015, and the contract with RCG/Hagler, Bailly (RCG/Hagler) awarded under Project No. 180-0030. RMA's contract was for regional work from February 12, 1991 through March 31, 1993. DMK's contract covered the period March 14, 1991 through August 31, 1992. Work in Romania under both of these contracts has ended. RCG/Hagler's regional contract covers the period April 16, 1992 through April 15, 1996; work in Romania is continuing. We conducted the audit from April 26, 1994 through September 27, 1994.

Project documentation was obtained from ENI Bureau offices in Washington, D.C., and the Office of the USAID Representative in Bucharest, Romania (USAID/Bucharest). Information obtained from USAID/Washington was provided via mail, telephone, facsimile, and electronic mail. However, not all the information we requested was provided in a timely manner and we were unable to determine why. Subsequent to completing the audit work, a meeting was held at USAID/Washington with responsible ENI Bureau officials to discuss draft audit findings and conclusions.

Visits, including physical inspections, were made at sites in Romania only. Besides meeting with the USAID/Bucharest Representative and his staff, and reviewing the office's records.

- Under Project No. 180-0015, we made site visits to:
    - 4 of 8 industrial plants whose energy efficiency was assessed by RMA, and
    - 1 of the 2 oil refineries assessed by DMK.

The purpose of these visits was to interview plant management about the effectiveness of energy efficiency audits, and to inventory energy efficiency equipment supplied under the contract.

- Under Project No. 180-0030, our field work included interviewing 5 of 16 ESCOs about their training in energy efficiency audit techniques, their success in working as energy auditors, and the sustainability of the energy audit industry. To determine the quality and appropriateness of the energy audits, we also visited 2 of the 9 USAID-approved plants which had contracted with ESCOs for energy audits.

- We also interviewed officials of Romanian government agencies responsible for managing the oil, gas, coal and electricity industries, as well as the Romanian Ministry of Industry, the Romanian Agency for the Conservation of Energy, the Romanian Restructuring Agency, U. S. Embassy officials, and other international donors.

For expenditure data, we relied on unaudited sources, such as USAID's Financial Accounting and Control System and contractor invoices. We relied on the contracts and project authorization documents, both as amended, for obligation and project authorization amounts.

Methodology

We reviewed USAID project documentation, such as the Project Authorization Memoranda, Assistance Strategy for Romania, and the contracts. We reviewed our report on the Audit of the Bureau for Europe's Technical Assistance Contracts (Report No. 8-180-93-05 issued June 30, 1993), which discussed aspects of Project 180-0015. We also reviewed monthly reports to ENI and contractors' trip reports about their activities, such as: plant evaluations, status of energy audits, and energy equipment failures. We inventoried energy efficiency equipment provided to those industrial plants we visited to verify receipt and substantiated use of maintenance logs that document energy savings. We also reviewed RCG/Hagler's internal controls over energy efficiency equipment donated to ESCOs for their use during energy audits.

We also reviewed an August 1992 GAO report entitled, "East European Energy, Romania's Energy Needs Persist," and a June 1994 SCIENTECH, Inc. evaluation report of activities under Project No. 180-0015.

In addition to reviewing documentation to gain a better understanding of the programs and determining their current status, we interviewed:

- the USAID/Representative to Romania and the USAID Project Specialist who has some on-site monitoring responsibility for the program;

- the Romanian national who is the RCG/Hagler Coordinator for Romania with in-country responsibility for the program and who previously held a similar position with Resource Management Associates under Project No. 180-0015;

- officials of ARCE, the Romanian Agency for Energy Conservation, which is developing a strategy for energy conservation;

- the Director General of the Energy Division, Romanian Ministry of Industry, which is responsible for Electric and Heat Energy programs;

- the Head of Technical Assistance Division of the Restructuring Agency for the Government of Romania, which is analyzing, diagnosing and preparing action plans for a portfolio of companies;

- the Head of International Assistance Programs of RENEL, the Romania Electricity Authority, a public sector power utility company;

- the Manager, International Relations of RAFIROM, the Romania Petroleum Refining Holding Company, which is responsible for developing the strategy for the petroleum industry;

- management representatives in four of eight industrial plants which received energy efficiency assessments by RMA under Project No. 180-0015;

- management representatives in one of the two oil refineries that DMK assessed under Project No. 180-0015;

- management representatives and plant technicians from two of the nine USAID/Washington approved plants that had contracted with ESCOS for an energy efficiency audit under Project No. 180-0030;

- Five of the 16 engineers trained in energy efficiency audit techniques under Project No. 180-0030;

- the Commercial Attache, U. S. Embassy, Bucharest; and

- officials of other international donor groups, such as World Bank, EC SYNERGY, and EC PHARE.

The RCG/Hagler Coordinator for Romania acted as our primary translator during our interviews with Ministries, management and technical plant personnel, and other officials. Translation services were also provided to us by our primary contact with USAID/Bucharest and by an individual recommended to us by USAID/Bucharest.

Comments on the 12/7 Draft IG Report
Audit of Romania Energy Efficiency Activities
(Project Nos. 180-0015 and 180-0030)

SUMMARY

Following is suggested revised language for the recommendations in the draft report:

Recommendation #1: Revise or delete in view of ENI-IG meeting and the explanation of the expenditure data provided on the Romania industry energy efficiency work.

Recommendation No. 2: We suggest that this recommendation be revised to read as follows:

"We recommend that the ENI Bureau take into consideration the conditions and requirements for energy efficiency financing in reviewing the results of 180-0030 ESCO Development and in designing new activities."

Recommendation 3: We suggest the recommendation be revised by deleting part 3.2. which reads:

"establish procedures to reasonably assure that adequate consumable supplies are provided to maintain USAID-financed equipment, and that equipment suppliers under Project Nos. 180-0015 and 180-0030 respond appropriately to project recipients' requests for assistance."

COMMENTS ON FIRST RECOMMENDATION

Page 1 Para 2: Project was extended to June 30, 1994 not December 30, 1994.

Page 3 Para 2: The first sentence should be revised to read as follows: "Total amounts budgeted and expended for all activities reviewed in Romania were available for the industry energy efficiency components of both projects but not for the DMC refinery work and Scientech evaluation which were done on a regional basis with budgets and expenditure reporting on a regional basis.

Page 5 Para 1: Given the recent meeting and explanation of the financial data submitted, the last sentence which reads as follows should be deleted: "While the audit confirmed the delivery of inputs and achievement of outputs, it was unable to determine the costs associated with either inputs or outputs."

Page 5 Para 3: Recommend adding the sentence "The intent has been to leave diagnostic equipment with a non-governmental entity such as the Association of Energy Engineers chapter, once well established, at the end of the activity."

Page 6 Para 1: Recommend deletion of the second and third sentences and substitute: "The Audit confirmed the delivery of technical assistance and equipment."

Page 6 Para 2: Recommend deletion of 2nd sentence which reads "In addition, the savings achieved are less than could have been realized had all energy audit recommendations been implemented." Under 180-0015 the objective was to identify and implement the short-term low cost-no cost energy efficiency measures. This was what was agreed with the host countries in the Aide Memoires and this was done successfully. Over and above that, the audits identified (1) additional measures beyond the resources of the program that could potentially be financed from limited internal resources, and (2) larger investments that would require external financing. To the extent that these more costly measures did or didn't get implemented is not a direct reflection on the Project. This conclusion appears to hold the project responsible for implementation of all three levels of energy efficiency opportunities.

Page 7 Para 1: Recommend revising the last sentence by deleting "...the total cost associated with the USAID-financed activities at these plants could not be identified" and substitute the following "...which compares favorably with the $737,461 cost of the Industry Energy Efficiency Component."

Page 7 Para 3: Recommend revising the following sentence which reads "The financial problems hindering these plants from implementing all of the energy recommendations also limit the prospects for the success of Project No. 180-0030." Revision suggested is: "The financial problems hindering these plants need to be taken into consideration in the completion of the industry energy efficiency activities under 180-0030 and future activities."

Page 8 Para 1: Recommend deletion of paragraph. As explained at the 1/13 meeting, the final voucher for RMA (11/92) and RCG/HB voucher (6/30/94) provide a detailed breakdown of total expenditures for the Romania Industry Energy Efficiency component. This is the basis for limited cost benefit analysis.

Page 8 Recommendation: Revise or delete in view of ENI-IG discussion.

<u>COMMENTS ON SECOND RECOMMENDATION</u>

Page 8 Heading: The current heading--"ENI Needs to Assess the Cost-Effectiveness of ESCOs" should be revised to read "ENI Needs to Consider Impediments to ESCOs and Financing in Future Work."

We recommend this section be rewritten in light of our discussion and the following observations. The draft recommendation is premature and does not consider the sequencing of assistance and the broader economic, financing, and other donor and multilateral approaches as discussed below.

1) Energy Efficiency Financing: Even in developing countries with reasonably market-oriented economies, energy efficiency financing has frequently been problematic. It is not a new problem; it was understood during design of the Emergency Energy Project, 180-0030 ESCO work, and is addressed in the new contract RFP.

2) Evolution of Energy Efficiency Assistance/Strategic Approach:

--The Emergency Energy Project was focused on introducing low-cost/no-cost energy efficiency measures including energy organization and management, technologies, and audit methodologies. Local subcontractors, preferably emerging local private engineers, participated in the program.
--180-0030 ESCO development builds upon the initial success of the Emergency Energy Project and is designed to: (1) develop local private sector energy service capabilities consistent with an economy in transition to a market economy (through seminars and on-the-job training), (2) provide access to modern energy efficiency technologies (diagnostic and plant equipment), and (3) establish linkages to U.S. energy efficiency practices (Assn. of Energy Engineers). Given the limited resources and the market-oriented character of the effort, not all those going through the seminars were guaranteed participation in the industry audit program--only those successful in getting contracts.
--New Energy Efficiency RFP: The approach recognizes the issues of sustainability and financing and includes focus on (1) the development of Demand Side Management demonstrations, and (2) innovative financing arrangements (introduced in the training in 180-0030 Energy Performance Contracting by Shirley Hansen). DSM demonstrations will help create a market for energy services and provide a basis for multilateral and other financing. Energy Performance Contracting, nearing breakthrough in Hungary and Czech Republic and experienced on a small-scale in Bulgaria, will provide an innovative means of introducing financing.

(3) Multilateral and Donor Approaches

The USAID approach has demonstrated the significant energy efficiency potential and begun to establish the local capability to implement more widespread application with private sector market-oriented approaches and increased participation of the multilateral banks and donors.

Under increasing pressure to consider a more balanced approach to lending, both the World Bank and EBRD are increasingly receptive to Integrated Resource Planning (IRP) techniques which consider both supply and demand side approaches to providing electricity, Demand Side Management and innovative approaches including ESCOs and third party financing. Under the World Bank power lending program Romania will incorporate load research into its program providing the basis for an economic assessment of DSM. Our approach will be to undertake a demonstration to establish how effective DSM can be in achieving end-use efficiency, channeling financing to energy efficiency investments and utilizing private ESCO capabilities.

For the first time, the World Bank held an international roundtable last fall to examine these options and lending implications.

EBRD has shifted its policy to emphasize DSM (with significant credit due to the U.S. Executive Director's persuasion) and gives priority in its draft energy efficiency strategy (not for circulation) to the innovative financing approaches and the need for energy service companies. They are also considering a special effort focused on energy efficiency financing in Romania.

The European Union is in the process of establishing a $5 million credit fund to support energy performance contracting arrangements.

Consequently, the three major entities besides AID addressing energy efficiency are all on the verge of supporting what we have laid the foundation for over the past 4 years in Central and Eastern Europe. AID has been at the forefront in establishing the ESCOs and innovative approaches in this region. With others finally becoming receptive, particularly with financing, it is wrong and premature to examine cutting off our assistance.

Page 9 Para 1: The draft reads: "At the time of the audit, only 7 of 16 ESCOs had contracted with ...companies for the audits." This program was designed to be competitive. It was understood from the beginning that some might not succeed in getting a client as we had resources for only 10 audits. The limiting factor was our budget.

Page 9 Para 3: It is recommended the following sentences be revised: "The lack of capital for such expenditures is a problem with no real remedy in sight. "...nor does it appear that USAID program planners adequately recognized this problem." The recommended revised sentence is: "The difficulty of financing energy efficiency is a problem that needs to be examined during the remainder of the project and in the design of new activities."

Page 10 Para 2: The quoted sentence below is unjustified and premature given the state of the assistance and anticipated other donor/multilateral support in the future:

"...it was doubtful if the newly created Energy Service Companies would be able to widely replicate these measures due to their limited experience and training in marketing such activities and, more importantly, due to general financial constraints on industry. The audit found no evidence that either problem was being appropriately addressed."

Page 10 Recommendation No. 2: We suggest that this recommendation be revised to read as follows:

"We recommend that the ENI Bureau take into consideration the conditions and requirements for energy efficiency financing in reviewing the results of 180-0030 ESCO Development and in designing new activities."

(Please see attached documents from EBRD, World Bank and GRIRO on energy efficiency approaches activities that reinforce our views.)

COMMENTS ON RECOMMENDATION NO. 3--EQUIPMENT

Page 11 Para 1: "While most of the equipment was functioning as expected, the audit identified $30,400 in equipment (14 percent) that was inoperable."

This situation should be recognized as being a success given the circumstances in 1991 and subsequently. The audit should also note that none of the portable equipment was stolen--a remarkable situation which reflects the value assigned to the equipment.

Page 12 Para 1: The report references the unresponsive U.S. vendor and extrapolates that the question whether U.S. manufacturers were interested in the Romanian market. This is not a reasonable extrapolation. We provided information on vendors positive experiences in previous submissions and suggest the report reference their views. I have been advised by RCG/HB that three equipment manufacturers from which equipment was purchased now have Romanian representatives that were involved in the initial program (Bacharach, UE Systems and Armstrong).

Page 12 Para 2: "...we have not been provided evidence that ENI has fully addressed these problems to better assure the continuation of energy efficiencies achieved to date, and to minimize the potential for local negative publicity about U.S. manufactured equipment."

RCG/Hagler, Bailly has surveyed every plant audited under 180-0015 and is following up on responses received to provide spare parts, replace defective equipment and link the plant with the U.S. manufacturer or representative for future needs. Future equipment purchases will give greater emphasis to the service and support characteristics of equipment providers to assure higher likelihood of reasonable service. (Please see attached 180-0030 RCG/HB Task Description for Equipment Follow-up.)

Page 12 Recommendation 3: We suggest the recommendation be revised by deleting part 3.2. which reads:

"establish procedures to reasonably assure that adequate consumable supplies are provided to maintain USAID-financed equipment, and that equipment suppliers under Project Nos. 180-0015 and 180-0030 respond appropriately to project recipients' requests for assistance."