

March 1997

NUCLEAR SAFETY

International Atomic Energy Agency's Nuclear Technical Assistance for Cuba



**Resources, Community, and
Economic Development Division**

B-276158

March 24, 1997

The Honorable Jesse A. Helms
Chairman, Committee on Foreign Relations
United States Senate

The Honorable Dan Burton
Chairman, Committee on Government Reform
and Oversight
House of Representatives

The Honorable Bob Graham
United States Senate

The Honorable Peter Deutsch
The Honorable Robert Menendez
House of Representatives

Since 1958, the International Atomic Energy Agency (IAEA),¹ in promoting the peaceful uses of nuclear energy, has been providing nuclear technical assistance to its member states through projects that supply equipment, expert services, and training.² Currently, more than 90 countries receive nuclear technical assistance, mostly through over 1,000 projects in IAEA's technical cooperation program. The United States is a member of IAEA and financially contributes to the agency's technical cooperation program. Through its technical cooperation program, IAEA is providing nuclear technical assistance to Cuba in 10 program areas, including general atomic energy development, the application of isotopes and radiation in

¹IAEA is affiliated with the United Nations and has 124 member states, including the United States. IAEA's policy-making organizations are the General Conference and its decision-making body, the 35-member Board of Governors, of which the United States is a member. In September 1996, the General Conference elected 11 new member states to the Board of Governors, including Cuba, to serve for a 2-year term.

²Under IAEA's 1957 statute and article IV of the 1970 Treaty on Non-Proliferation of Nuclear Weapons, the agency facilitates the peaceful development and practical application of nuclear energy, in addition to carrying out its responsibilities for nuclear safeguards and safety. Member states are eligible to receive nuclear technical assistance from the agency even if they are not a party to nonproliferation treaties. However, member states that receive IAEA's nuclear technical assistance are asked to sign a revised supplementary agreement with the agency to ensure that the nuclear technical assistance they receive will be used only for the peaceful applications of atomic energy and that the nuclear technical assistance projects in their country will be subject to IAEA's safeguards.

agriculture, and nuclear safety. Some of this assistance is for Cuba's partially constructed nuclear power reactors.³

In 1983, Cuba started to construct two Soviet-designed 440-megawatt pressurized water reactors (known as the VVER 440 model) at Juragua near Cienfuegos on the south central coast of Cuba, about 180 miles south of Key West, Florida. The construction of these reactors was suspended in 1992 until financing should become available to complete them. The President of Cuba, in a January 1997 public statement, announced the indefinite postponement of the reactor program due to a lack of financial resources. In February 1997, we met with the Vice Minister, Ministry of the Russian Federation for Atomic Energy, who told us that Russia intends to resume the construction of Cuba's reactors in 1998 with financing provided by an international consortium of countries, including Russia. The United States opposes the completion of these reactors and discourages other countries from providing assistance, except for safety purposes, to Cuba's nuclear program.

As requested, this report provides information on (1) the dollar value and type of all nuclear technical assistance projects IAEA provided for Cuba, (2) the sources of funding for all nuclear technical assistance projects IAEA provided for Cuba, and (3) IAEA's nuclear technical assistance projects for the Cuban nuclear power reactors and U.S. officials' views on this assistance.

Results in Brief

IAEA spent about \$12 million on nuclear technical assistance projects for Cuba from 1963—when Cuba started to receive nuclear technical assistance from IAEA—through 1996. About three-fourths of the assistance Cuba received through these projects consisted of equipment, such as computer systems, and radiation-monitoring and laboratory equipment. IAEA's nuclear technical assistance for Cuba was given primarily in the areas of general atomic energy development and in the application of isotopes and radiation in agriculture. IAEA recently approved an additional \$1.7 million for nuclear technical assistance projects for Cuba for 1997 through 1999. In addition, IAEA spent about \$2.8 million on training for Cuban nationals and research contracts for Cuba that were not part of specific nuclear technical assistance projects.

³See *Nuclear Safety: Concerns About the Nuclear Power Reactors in Cuba* (GAO/RCED-92-262, Sept. 24, 1992) and *Nuclear Safety: Concerns With the Nuclear Power Reactors in Cuba* (GAO/T-RCED-95-236, Aug. 1, 1995), which discuss concerns about the safety of the Cuban reactors.

Most of IAEA's nuclear technical assistance projects for Cuba were funded through the agency's technical cooperation fund, which is supported by member states' voluntary contributions. In 1996, the United States contributed over \$16 million—about 30 percent—of the total \$53 million in the fund.⁴ From 1981 through 1993, the United States was required, under section 307(a) of the Foreign Assistance Act of 1961, as amended, to withhold a share of its voluntary contribution to the fund because the fund provided assistance for Cuba, Libya, Iran, and the Palestine Liberation Organization. In 1994, the Foreign Assistance Act was amended to, among other things, exempt IAEA from the withholding requirement. Although the United States was no longer required to withhold the portion of its voluntary contribution that would have gone to Cuba and the other proscribed entities, State Department officials continued to withhold funds in 1994 and 1995 but did not withhold any of the United States' voluntary contribution to IAEA's technical cooperation fund for 1996. Because IAEA's technical cooperation fund provides nuclear technical assistance for Cuba, from 1981 through 1995, the United States withheld a total of about \$2 million that otherwise would have gone for nuclear technical assistance for Cuba.

Of the total dollar value of all nuclear technical assistance projects that IAEA has provided for Cuba, about \$680,000 was approved for nuclear safety assistance for Cuba's nuclear power reactors from 1991 through 1998, of which about \$313,000 has been spent. IAEA is assisting Cuba in developing the ability to conduct a safety assessment of the nuclear power reactors and in preserving, or "mothballing," the reactors while construction is suspended. IAEA is also implementing a training program for personnel involved in the operational safety and maintenance of all nuclear installations in Cuba, including the reactors. State Department and U.S. Mission officials in Vienna, Austria, told us that they did not object to IAEA's providing nuclear safety assistance to Cuba's reactors because the United States generally supports nuclear safety assistance for IAEA member states that will promote the establishment of a safety culture and quality assurance programs.

Background

IAEA's technical cooperation program provides nuclear technical assistance through projects that have three main components—equipment, expert

⁴In 1996, the United States contributed about \$99 million to IAEA. According to the U.S. Ambassador to the United Nations System Organizations in Vienna, Austria, this contribution included about \$63 million to IAEA's total regular budget of \$219 million in 1996 and a voluntary contribution of \$36 million, of which over \$16 million was for the technical cooperation fund. As of February 1997, the United States had not yet made its 1997 payments to IAEA.

services, and training activities (project- and non-project-related), including fellowships, scientific visits, and training courses—that support the upgrading or establishment, for peaceful purposes, of nuclear techniques and facilities in IAEA member states. IAEA’s technical cooperation program funds projects in 10 major program areas, including the development of member states’ commercial nuclear power and nuclear safety programs.⁵ Nuclear technical assistance projects are approved by IAEA’s Board of Governors for a 2-year programming cycle, and member states are required to submit written project proposals to IAEA 1 year before the start of the programming cycle. These proposals are then appraised for funding by IAEA staff and by the agency’s member states in terms of technical and practical feasibility, national development priorities, and long-term advantages to the recipient countries.

Within IAEA, the Department of Technical Cooperation and three other technical departments—the departments of Research and Isotopes, Nuclear Safety, and Nuclear Energy—are the main channels for technology transfer activities within the technical cooperation program. While the funding for IAEA’s technical cooperation program comes primarily from member states’ voluntary contributions, the funding for activities in the other three technical departments is through IAEA’s regular budget. The United States contributes about 25 percent of IAEA’s regular budget. In 1996, the United States’ contribution to IAEA’s regular budget of \$219 million was \$63 million.

Dollar Value and Type of All Nuclear Technical Assistance Projects IAEA Provided for Cuba

IAEA spent about \$12 million on nuclear technical assistance projects for Cuba from 1963—when Cuba started to receive nuclear technical assistance from IAEA—through 1996, for equipment, expert services, fellowships, scientific visits, and subcontracts (agreements between IAEA and a third party to provide services to its member states). IAEA has approved an additional \$1.7 million in nuclear technical assistance projects for Cuba for 1997 through 1999. Over half of this additional assistance will be provided for the application of isotopes and radiation in medicine, industry, and hydrology.

In addition to the approximately \$12 million for nuclear technical assistance projects for Cuba, IAEA spent \$2.39 million on regional and

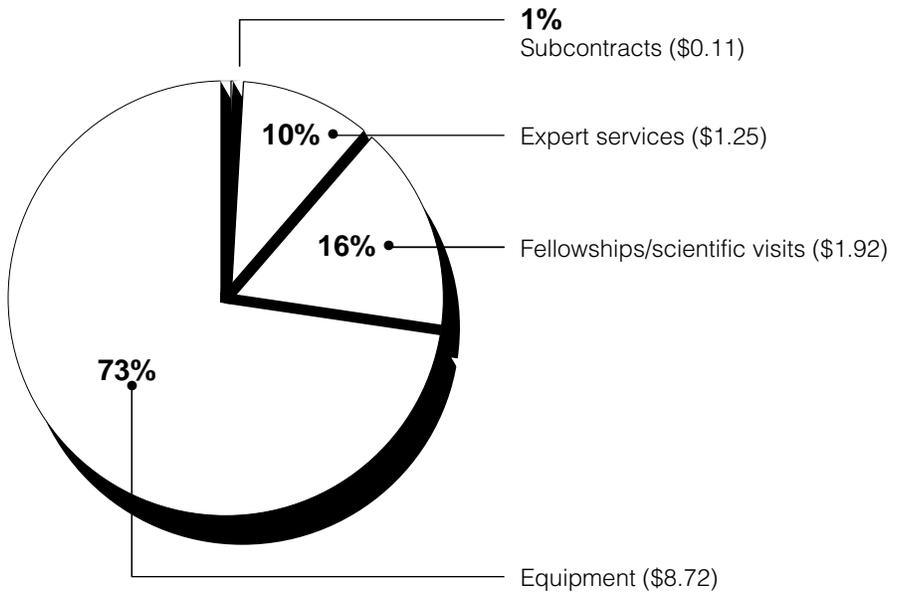
⁵The program areas classified by sector include general atomic energy development; nuclear physics; nuclear chemistry; the prospecting, mining, and processing of nuclear materials; nuclear engineering and technology; the application of isotopes and radiation in agriculture; the application of isotopes and radiation in medicine; the application of isotopes and radiation in biology; the application of isotopes and radiation in industry and hydrology; and safety in nuclear energy.

interregional training courses for Cuban nationals. These courses were not related to IAEA's nuclear technical assistance projects. (This information was available from IAEA only for 1980 through 1996.) Cuban nationals attended IAEA training courses in radiation protection and nuclear safety, probabilistic safety assessment, safety analysis and assessment techniques for the operational safety of nuclear power plants, and quality assurance for nuclear power plants. In addition, IAEA spent about \$433,000 on research contracts for Cuba. (This information was available from IAEA only for 1989 through 1996.) Under IAEA's research contract program, the agency places contracts and cost-free agreements with research centers, laboratories, universities, and other institutions in member states to conduct research projects supporting its scientific programs.

As shown in figure 1, of the approximately \$12 million for nuclear technical assistance projects that Cuba received from 1963 through 1996—about \$8.7 million—or almost three-fourths—consisted of equipment, such as computer systems, and radiation-monitoring and laboratory equipment.⁶ (App. I provides information on all nuclear technical assistance projects that IAEA provided for Cuba, by program area, from 1980 through 1996. Most of this assistance was provided in the areas of general atomic energy development and in the application of isotopes and radiation in agriculture).

⁶Cuba ranked 20th, in terms of the amount of assistance received, out of the 114 IAEA member states receiving nuclear technical assistance during this period. Cuba is ranked against the other member states that received equipment, expert services, fellowships and scientific visits, and subcontracts during this period.

Figure 1: Dollar Value and Type of All Nuclear Technical Assistance Projects IAEA Provided for Cuba, 1963 Through 1996, Dollars in Millions



Note: Figures in parenthesis have been rounded.

Source: IAEA.

Sources of Funding for All Nuclear Technical Assistance Projects IAEA Provided for Cuba

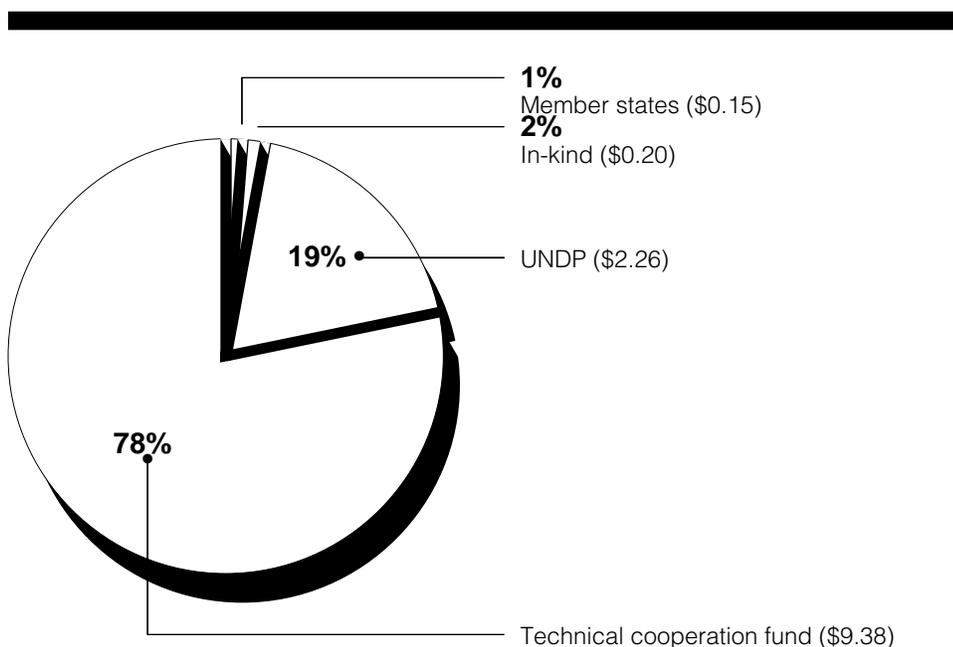
While the costs of administration and related support for IAEA’s technical cooperation program are funded through IAEA’s regular budget, most of the funding for IAEA’s nuclear technical assistance projects comes from voluntary contributions made by the member states to IAEA’s technical cooperation fund. Some funding is also provided to IAEA from the United Nations Development Program (UNDP).⁷ Other sources of financial support include extrabudgetary income, which is in addition to the funds donated to the technical cooperation fund and is contributed by member states for specific projects, and assistance-in-kind, which is provided by member states that donate equipment, provide expert services, or arrange fellowships on a cost-free basis.

As shown in figure 2, IAEA’s technical cooperation fund was the primary source of funding for the nuclear technical assistance projects provided

⁷IAEA is the executing agency for UNDP’s development projects in areas involving nuclear science and technology and receives UNDP funds for implementing such projects.

for Cuba, for equipment, expert services, fellowships, scientific visits, and subcontracts.

Figure 2: Sources of Funding for All Nuclear Technical Assistance Projects IAEA Provided for Cuba, 1963 Through 1996, Dollars in Millions



Note: Figures in parenthesis have been rounded.

Source: IAEA.

In 1996, the United States voluntarily contributed \$36 million to IAEA. Of this amount, the United States contributed over \$16 million—about 30 percent—of the total \$53 million in the technical cooperation fund. (Cuba contributed its share of \$45,150—or 0.07 percent—to the fund in 1996.)⁸ From 1981 through 1993, the United States was required, under section 307(a) of the Foreign Assistance Act of 1961, as amended, to withhold a proportionate share of its voluntary contribution to the technical cooperation fund for Cuba, Libya, Iran, and the Palestine Liberation Organization because the fund provided assistance to these entities. The

⁸IAEA determines the amount a member state should contribute to the fund on the basis of a United Nations formula. According to IAEA, from 1971 to 1996, Cuba contributed \$653,525 to IAEA's regular budget. From 1962 to 1996, Cuba also made voluntary contributions of \$635,541 to the agency.

United States withheld about 25 percent of its voluntary contribution to the fund, which otherwise would have helped to fund projects for Cuba and the other proscribed entities. On April 30, 1994, the Foreign Assistance Act was amended, and Burma, Iraq, North Korea, and Syria were added to the list of entities from which U.S. funds for certain programs sponsored by international organizations were withheld. At the same time, IAEA and the United Nations Children's Fund (UNICEF) were exempted from the withholding requirement. Consequently, as of 1994, the United States was no longer required to withhold a portion of its voluntary contribution to IAEA's technical cooperation fund for any of these entities, including Cuba. However, State Department officials continued to withhold funds in 1994 and 1995. But beginning in 1996, the United States no longer withheld any of its voluntary contribution to the fund for these entities, including Cuba. Because IAEA's technical cooperation fund provides nuclear technical assistance for Cuba, from 1981 through 1995, the United States withheld a total of about \$2 million that otherwise would have gone for nuclear technical assistance for Cuba.

IAEA's Nuclear Technical Assistance Projects for Cuba's Nuclear Power Reactors and U.S. Officials' Views on This Assistance

Of the total dollar value of all nuclear nuclear technical assistance projects that IAEA has provided for Cuba, about \$680,000 has been approved for four nuclear technical assistance projects for Cuba's nuclear power reactors from 1991 through 1998. As of January 1997, \$313,364 of this amount had been spent for two of these projects. State Department officials told us that they did not object to these projects because the United States generally supports nuclear safety assistance for IAEA member states. Following is a summary of each of these projects. (See app. II for more details.)

- Since 1991, IAEA has assisted Cuba in undertaking a safety assessment of the reactors' ability to respond to accidents and in conserving, or "mothballing," the nuclear power reactors while construction is suspended. The agency had spent almost three-fourths of the approximately \$396,000 approved for the project, as of January 1997. Of this amount, Spain has agreed to provide about \$159,000 in extrabudgetary funds. According to IAEA's information on the technical cooperation program for 1995 to 1996, this project is designed to develop proper safety and emergency systems and to preserve the plant's emergency work and infrastructure in order to facilitate the resumption of the nuclear power plant's activities. Seven reports were prepared by IAEA experts under this project that discuss the power plant's ability to cope with a nuclear

accident.⁹ Our requests to review or to be provided with copies of these reports were denied by IAEA because information obtained by the agency under a technical cooperation project is regarded as belonging to the country receiving the project and cannot be divulged by IAEA without the formal consent of the country's government. At the time of our review, the government of Cuba had not given IAEA permission to release these reports.

- Since 1995, IAEA has assisted Cuba in designing and implementing a training program for personnel involved in the operational safety and maintenance of all nuclear installations, including the reactors, in Cuba. IAEA has spent about \$31,000 of the about \$74,000 approved for the project. Furthermore, according to IAEA's information on the technical cooperation program for 1995 to 1996, this project will develop and implement an adequate training program that will improve operational safety at all nuclear installations in Cuba and will promote a safety culture.
- For the 1997 to 1998 technical cooperation program, IAEA has approved two new projects to assist in licensing the reactors and establishing a quality assurance program for them. Funding of about \$210,000 has been approved for these two projects. According to IAEA's information on the technical cooperation program for 1997 to 1998, the objective of the licensing project is to strengthen the ability of Cuba's nuclear regulatory body to carry out the process of licensing the reactors. According to IAEA's information, the quality assurance project will assist the nuclear power plant in developing an effective program that will improve safety and lower construction costs.

U.S. Officials' Views on IAEA's Nuclear Technical Assistance Projects for Cuba's Nuclear Power Reactors

In our September 1992 report and in our August 1995 testimony on the nuclear power reactors in Cuba, we reported that the United States preferred that the reactors not be completed and discouraged other countries from providing assistance, except for safety purposes, to Cuba's nuclear power program. In a statement made at the August 1995 hearing, the State Department's Director of the Office of Nuclear Energy Affairs agreed that the United States supported efforts by IAEA to improve safety and the quality of construction at the facility but that the administration strongly believed that sales or assistance to the Cuban nuclear program should not be provided until Cuba had undertaken a legally binding nonproliferation commitment. Cuba is not a party to the 1970 Treaty on

⁹The seven expert reports prepared under this project include the following: Thermo-Hydraulic Analysis of Design Basis Accident (1991), Safety Analysis Program Review (1991), Level I Probabilistic Safety Assessment (1992), Preservation of the Juragua NPP (1993), Upgrading Regulatory Infrastructure (1995), Upgrading Regulatory Infrastructure (1995), and Developing National Emergency Plant and Response Capability (1996).

Non-Proliferation of Nuclear Weapons, but as a member of IAEA, it is entitled to receive nuclear technical assistance from the agency.¹⁰

State Department officials responsible for IAEA's technical cooperation program and U.S. Mission officials at the United Nations System Organizations in Vienna, Austria, told us that they did not object to IAEA's providing nuclear safety assistance to Cuba's reactors because the United States generally supports nuclear safety assistance for IAEA member states that will promote the establishment of a safety culture and quality assurance programs. These U.S. officials also said that the United States has little control over other IAEA member states that choose to provide extrabudgetary funds for any of the agency's nuclear technical assistance projects, including those in Cuba. State Department and Arms Control and Disarmament Agency officials told us that the United States will not provide extrabudgetary funds for IAEA's nuclear technical assistance projects with Cuba or generally to other IAEA member states that are not parties to the Non-Proliferation Treaty, will not host Cuban nationals at training courses held by IAEA in the United States, or select Cuban nationals for training as IAEA fellows in the United States. However, according to the State Department, U.S. experts are allowed to work on IAEA's nuclear technical assistance projects in the areas of nuclear safety and physical protection for Cuba. We found that one U.S. expert had visited Cuba three times to help with an IAEA nuclear technical assistance project designed to eradicate agricultural pests.

Agency Comments

We provided copies of a draft of this report to the Department of State for its review and comment. The Department obtained and consolidated additional comments from the Arms Control and Disarmament Agency; the Department of Energy; the Nuclear Regulatory Commission; the U.S. Mission to the United Nations System Organizations and IAEA in Vienna, Austria. On March 5, 1997, we met with an official in the State Department's Bureau of International Organization Affairs to discuss the consolidated comments. In general, reviewing officials agreed with the facts and analysis presented. Additional clarifying information was provided, and we revised the text as appropriate. An IAEA official in the

¹⁰Cuba signed the Treaty of Tlatelolco in March 1995 but has not ratified it. Both the Non-Proliferation Treaty and the Treaty of Tlatelolco bind signatories to blanket nonproliferation agreements for their entire nuclear program and would require inspections of all of Cuba's nuclear facilities by IAEA, known as full-scope safeguards. According to the State Department, despite Cuba's failure to accept IAEA's full-scope safeguards, all of Cuba's nuclear facilities are subject to safeguards under separate, legally binding agreements between IAEA and Cuba. Cuba also signed a revised supplementary agreement with IAEA on July 13, 1993, which obligates Cuba to use IAEA's nuclear technical assistance only for the peaceful applications of atomic energy.

Department of Technical Cooperation noted that, in assessing the safety and planning for the conservation of Cuba's nuclear power reactors while their construction is suspended, IAEA's role in the area of nuclear power is to assist governments in taking actions that are consistent with the highest standards and best practices involving the design, performance, and safety of nuclear facilities.

Scope and Methodology

We discussed the United States' participation in IAEA's technical cooperation program with officials of and gathered data from the Departments of State and Energy; the Arms Control and Disarmament Agency; the Nuclear Regulatory Commission; Argonne National Laboratory; the National Academy of Sciences; and the National Research Council in Washington, D.C., and the U.S. Mission to the United Nations System Organizations and IAEA in Vienna, Austria. We gathered data from IAEA on its nuclear technical assistance for Cuba, during the period from 1958, when the technical cooperation program began, until 1996. In some cases, funding data for the entire period from 1958 through 1996 was not available from IAEA. Cuba started to receive nuclear technical assistance from IAEA in 1963.

We also met with officials in IAEA's departments of Technical Cooperation and Nuclear Safety who are responsible for managing IAEA's nuclear technical assistance projects for Cuba's nuclear power reactors and with the Vice Minister, Ministry of the Russian Federation for Atomic Energy, to discuss Russia's plans to complete the Cuban reactors.

As agreed with your offices, in a forthcoming report we plan to discuss, among other things, the United States' participation in IAEA's technical cooperation program and information on the dollar value and type of nuclear nuclear technical assistance provided to the agency's member states.

We performed our work from November 1996 through March 1997 in accordance with generally accepted government auditing standards.

We are sending copies of this report to the Secretaries of State and Energy, the Chairman of the Nuclear Regulatory Commission, the Director of the Arms Control and Disarmament Agency, and other interested parties. We will also make copies available to others on request. Please call me at (202) 512-3600 if you or your staff have any questions. Major contributors to this report are listed in appendix III.

A handwritten signature in black ink, appearing to read "Allen Li". The signature is written in a cursive style with a large initial "A" and a long horizontal stroke at the end.

Allen Li
Associate Director, Energy,
Resources, and Science Issues

Contents

Letter		1
Appendix I International Atomic Energy Agency's Nuclear Technical Assistance Projects Provided for Cuba, by Program Area		16
Appendix II International Atomic Energy Agency's Nuclear Technical Assistance Projects for Cuba's Nuclear Power Reactors	Nuclear Power Plant Safety Assessment and Program Suspension Plan Project	17
	Training in the Operational Safety of Nuclear Installations Project	18
	Licensing of Cuba's Nuclear Power Plant Project	19
	Quality Assurance Program for Cuba's Nuclear Power Plant Project	19
Appendix III Major Contributors to This Report		20
Related GAO Products		24
Tables	Table II.1: Expenditures for the Nuclear Power Plant Safety Assessment and Program Suspension Plan Project, 1991 Through 1996, as of January 1997	18
	Table II.2: Expenditures for Training in the Operational Safety of Nuclear Installations Project, 1995 Through 1996, as of January 1997	18
Figures	Figure 1: Dollar Value and Type of All Nuclear Technical Assistance Projects IAEA Provided for Cuba, 1963 Through 1996, Dollars in millions	6

Contents

Figure 2: Sources of Funding for All Nuclear Technical Assistance Projects IAEA Provided for Cuba, 1963 Through 1996, Dollars in millions	7
Figure I.1: All Nuclear Technical Assistance Projects IAEA Provided for Cuba, by Program Area, 1980 Through 1996	16

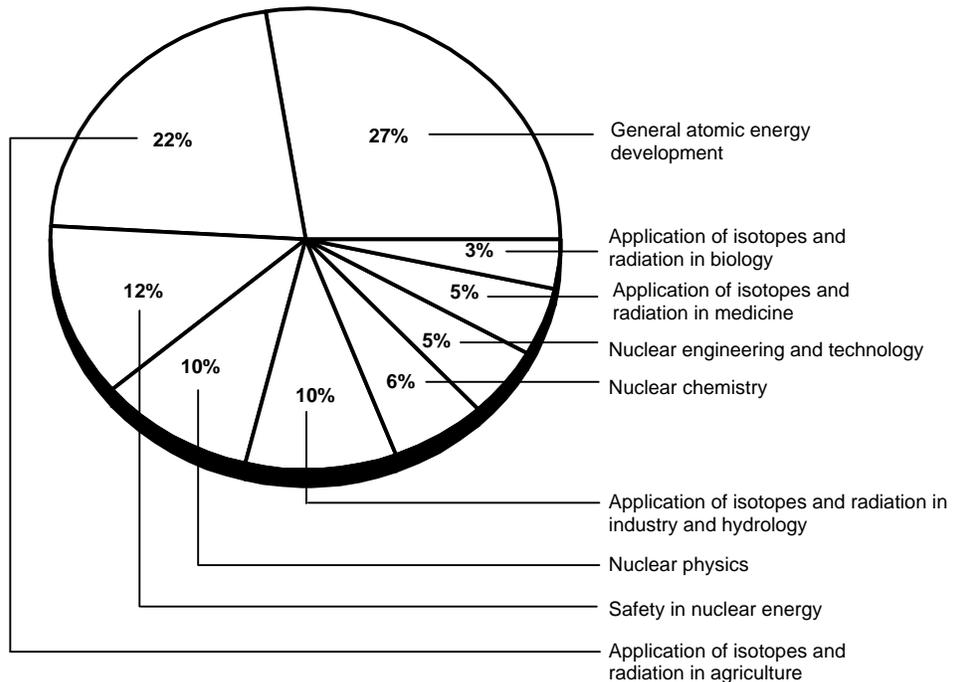
Abbreviations

GAO	General Accounting Office
IAEA	International Atomic Energy Agency
UNDP	United Nations Development Program
UNICEF	United Nations Children's Fund

International Atomic Energy Agency's Nuclear Technical Assistance Projects Provided for Cuba, by Program Area

As shown in figure I.1, almost half—about \$5 million—of the \$10.4 million that the International Atomic Energy Agency (IAEA) spent for nuclear nuclear technical assistance projects for Cuba from 1980 through 1996 was provided in the areas of general atomic energy development and in the application of isotopes and radiation in agriculture.¹ Nuclear safety was the next largest program area; over 12 percent of the funds, or over \$1.2 million, went for nuclear technical assistance projects in this area.

Figure I.1: All Nuclear Technical Assistance Projects IAEA Provided for Cuba, by Program Area, 1980 Through 1996



Source: IAEA.

¹IAEA was not able to provide us with data for years prior to 1980.

International Atomic Energy Agency's Nuclear Technical Assistance Projects for Cuba's Nuclear Power Reactors

Of the total dollar value of all nuclear nuclear technical assistance projects that IAEA has provided for Cuba, about \$680,000 has been approved for four nuclear technical assistance projects for Cuba's nuclear power reactors from 1991 through 1998. As of January 1997, \$313,364 of this amount had been spent for two of these projects. IAEA's four nuclear technical assistance projects for Cuba's nuclear power reactors include (1) a safety assessment and a plan for conserving the nuclear power plant during the suspension of its construction; (2) training in the safe operation of nuclear installations, including the power plant; (3) helping Cuba's regulatory body develop a process for licensing the power plant; and (4) developing a quality assurance program for the power plant.

Nuclear Power Plant Safety Assessment and Program Suspension Plan Project

This ongoing project was originally approved in 1991 to develop the ability to undertake a safety assessment of Cuba's nuclear power plant program. In 1995, this project was expanded to, among other things, develop the ability to conduct a safety assessment of the nuclear power plant and to provide supervision and advice in the conservation, or "mothballing", of the nuclear power plant during the suspension of construction. According to IAEA's project summaries for the technical cooperation program for 1995 to 1996, this project is designed to develop proper safety and emergency systems and to preserve the plant's emergency work and infrastructure in order to facilitate the resumption of the nuclear power plant's activities. A Spanish firm that provides architectural and engineering services is assisting IAEA in providing supervision and advice for the implementation of a plan to suspend the program and is training the Cuban technical staff in conducting a probabilistic safety assessment of the plant. Activities undertaken by the Spanish firm at the plant include the conservation and protection of existing structures, equipment, and components, in order to keep them in the best possible state for future use when the project and the construction of the plant are restarted.

Under this project, IAEA has provided experts on regulation, licensing, and emergency planning; equipment, such as personal computers, software, printers; and training in inspections and emergency planning. As of January 1997, IAEA had spent over \$282,000 of the approved \$395,837 budget, as shown in table II.1 below. Spain also provided extrabudgetary funds for this project. IAEA has spent about \$113,000 of the approximately \$159,000 that Spain has offered to provide for this project.

Appendix II
International Atomic Energy Agency's
Nuclear Technical Assistance Projects for
Cuba's Nuclear Power Reactors

Table II.1: Expenditures for the Nuclear Power Plant Safety Assessment and Program Suspension Plan Project, 1991 Through 1996, as of January 1997

Dollars in thousands					
Year	Expert services	Equipment	Fellowships	Subcontracts ^a	Total
1991	\$10,361	\$7,527	0	0	\$17,889
1992	12,385	7,330	\$16,587	0	36,303
1993	4,137	18,965	15,074	0	38,177
1994	1,517	0	4,963	\$73,922	80,403
1995	20,111	10,035	7,547	0	37,694
1996	0	0	33,202	38,960	72,162
Total	\$48,514	\$43,859	\$77,375	\$112,883	\$282,632

Note: Totals may not add because of rounding.

^aIncludes expenditures made under a subcontract between IAEA and Spain.

Source: IAEA.

Training in the Operational Safety of Nuclear Installations Project

According to IAEA's project summaries for the technical cooperation program for 1995 to 1996, this ongoing project is intended to design and implement a training program for personnel involved in the operational safety and maintenance of nuclear installations, including the nuclear power plant. Even though the construction of Cuba's nuclear power plant was suspended, according to IAEA's project summaries, Cuba requested assistance to train personnel involved in the operational safety of nuclear installations. IAEA is assisting in designing a training program that will include the development of computerized systems for instruction, simulation, evaluation, and certification of staff. As of January 1997, IAEA had spent about \$31,000 of the approved \$73,926 for the project, as shown in table II.2.

Table II.2: Expenditures for Training in the Operational Safety of Nuclear Installations Project, 1995 Through 1996, as of January 1997

Dollars in thousands				
Year	Expert services	Equipment	Fellowships	Total
1995	\$6,980	\$11,690	0	\$18,670
1996	0	0	\$12,062	12,062
Total	\$6,980	\$11,690	\$12,062	\$30,732

Note: Totals may not add because of rounding.

Source: IAEA.

Licensing of Cuba's Nuclear Power Plant Project

According to IAEA's project summaries for the technical cooperation program for 1997 to 1998, the objective of this new project is to strengthen the ability of Cuba's nuclear regulatory body to carry out the process of licensing the nuclear power plant. IAEA's Board of Governors approved this project in December 1996 for a budget of \$107,000 for 1997 through 1998. According to IAEA's project summaries, Cuba's nuclear regulatory body asked the agency to help it acquire the ability to review the safety of the nuclear power plant as a preliminary step in the licensing process. In addition, Cuba has asked IAEA to assist its nuclear regulatory body in adopting the best international practices on licensing for the latest design of the VVER 440 megawatt reactors. According to IAEA's project summaries, the project is designed to provide Cuba's nuclear regulatory body with the technology needed to be effective and self-sufficient and to promote the safe development of nuclear energy as a contribution to meeting Cuba's energy needs.

Quality Assurance Program for Cuba's Nuclear Power Plant Project

According to IAEA's project summaries for the technical cooperation program for 1997 to 1998, the objective of this new project is to improve and revise the structure, integration, and efficiency of the quality assurance program for Cuba's nuclear power plant and to evaluate its effectiveness and propose corrective measures. Cuba requested IAEA's assistance to establish a quality assurance program to conform with IAEA's nuclear safety standards. IAEA's Board of Governors approved this project in December 1996 for a budget of \$103,150 for 1997 through 1998. The aim of this project, as discussed in IAEA's project summaries, is to achieve adequate levels of reliability and efficiency in documentation, including the elaboration and preservation of quality assurance records; to provide practical experience for quality assurance and management personnel; and to improve the training of quality control and inspection staff, including training in nondestructive testing and other modern technologies. According to IAEA's project summaries, this project will provide the nuclear power plant with an effective quality assurance program that will improve the plant's safety and lower construction costs.

Major Contributors to This Report

Resources,
Community, and
Economic
Development
Division, Washington,
D.C.

Gene Aloise, Assistant Director
Sarah E. Veale, Evaluator-in-Charge
Mario Zavala, Senior Evaluator
Daniel Semick, Senior Evaluator
Duane G. Fitzgerald, Ph.D., Nuclear Engineer

Office of General
Counsel

Jackie A. Goff, Senior Attorney

Related GAO Products

Nuclear Safety: Uncertainties About the Implementation and Costs of the Nuclear Safety Convention (GAO/RCED-97-39, Jan. 2, 1997).

Nuclear Safety: Status of U.S. Assistance to Improve the Safety of Soviet-Designed Reactors (GAO/RCED-97-5, Oct. 29, 1996).

Nuclear Safety: Concerns With the Nuclear Power Reactors in Cuba (GAO/T-RCED-95-236, Aug. 1, 1995).

Nuclear Safety: U.S. Assistance to Upgrade Soviet-Designed Nuclear Reactors in the Czech Republic (GAO/RCED-95-157, June 28, 1995).

Nuclear Safety: International Assistance Efforts to Make Soviet-Designed Reactors Safer (GAO/RCED-94-234, Sept. 29, 1994).

Nuclear Safety: Progress Toward International Agreement to Improve Reactor Safety (GAO/RCED-93-153, May 14, 1993).

Nuclear Nonproliferation and Safety: Challenges Facing the International Atomic Energy Agency (GAO/NSIAD/RCED-93-284, Sept. 22, 1993).

Nuclear Safety: Concerns About the Nuclear Power Reactors in Cuba (GAO/RCED-92-262, Sept. 24, 1992).

Nuclear Power Safety: Chernobyl Accident Prompted Worldwide Actions but Further Efforts Needed (GAO/NSIAD-92-28, Nov. 4, 1991).

Nuclear Power Safety: International Measures in Response to Chernobyl Accident (GAO/NSIAD-88-131BR, Apr. 8, 1988).

Nuclear Safety: Comparison of DOE's Hanford N-Reactor With the Chernobyl Reactor (GAO/RCED-86-213BR, Aug. 5, 1986).

Ordering Information

The first copy of each GAO report and testimony is free. Additional copies are \$2 each. Orders should be sent to the following address, accompanied by a check or money order made out to the Superintendent of Documents, when necessary. VISA and MasterCard credit cards are accepted, also. Orders for 100 or more copies to be mailed to a single address are discounted 25 percent.

Orders by mail:

U.S. General Accounting Office
P.O. Box 6015
Gaithersburg, MD 20884-6015

or visit:

Room 1100
700 4th St. NW (corner of 4th and G Sts. NW)
U.S. General Accounting Office
Washington, DC

Orders may also be placed by calling (202) 512-6000 or by using fax number (301) 258-4066, or TDD (301) 413-0006.

Each day, GAO issues a list of newly available reports and testimony. To receive facsimile copies of the daily list or any list from the past 30 days, please call (202) 512-6000 using a touchtone phone. A recorded menu will provide information on how to obtain these lists.

For information on how to access GAO reports on the INTERNET, send an e-mail message with "info" in the body to:

info@www.gao.gov

or visit GAO's World Wide Web Home Page at:

<http://www.gao.gov>

**United States
General Accounting Office
Washington, D.C. 20548-0001**

**Bulk Rate
Postage & Fees Paid
GAO
Permit No. G100**

**Official Business
Penalty for Private Use \$300**

Address Correction Requested

