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Programs in Utility Technologies

***SOLAR THERMAL ENERGY
CONTRACT LIST
FISCAL YEAR 1990***

MASTER

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Introduction

The federal government has conducted the national Solar Thermal Technology Program since 1975. Its purpose is to provide focus, direction, and funding for the development of solar thermal technology as an energy option for the United States.

More than a decade of research and development has brought solar thermal systems to a point at which they have proven useful for generating electricity and process heat. Improvements to these systems during the 1980s led to significant reductions in capital and energy costs and increased reliability. Parabolic trough systems are now considered technically mature and are being used in the world's largest solar electric systems; each of these large systems generates 80 megawatts of electricity (MW_e). Central receiver and dish technologies have also been demonstrated in several plants throughout the world. The cost of electricity generation has dropped to about 10¢ per kilowatt hour. The total installed capacity of solar thermal electric systems is now 354 MW_e . Solar thermal technology has also shown strong potential for advanced applications, such as water detoxification, destroying hazardous wastes, and solar processing of materials and chemicals.

In the past, a summary was prepared each year to provide an overview of the government-funded activities within the national Solar Thermal Technology Program. Tasks conducted in-house by participating national laboratories or under contract by industrial, academic, and other research institutes were highlighted.

This year's document is more concise than the summaries of previous years. The FY 1990 contract overview comprises a list of all subcontracts begun, ongoing, or completed during FY 1990 (October 1, 1989, through September 30, 1990). Under each managing laboratory, projects are listed alphabetically by project area and then by subcontractor name.

For additional information on the national Solar Thermal Technology Program, the reader is encouraged to consult the *Solar Thermal Energy Program Overview, Fiscal Years 1990–1991* (DOE/CH10093-97); *Focusing on the Future*; *Progress in Parabolic Dish Technology*; *Central Receiver Technology*; *Status and Assessment*; and *Shedding a New Light on Hazardous Waste*. Copies of these documents and this contract list may be obtained by writing the Solar Energy Research Institute, Technical Inquiry Service, 1617 Cole Boulevard, Golden, Colorado 80401-3393.

Organizational Relationships

The national Solar Thermal Technology Program is conducted by the U.S. Department of Energy (DOE) and is assigned to the Assistant Secretary for Conservation and Renewable Energy. Day-to-day research activities are managed by Sandia National Laboratories (SNL) in Albuquerque, New Mexico, and the Solar Energy Research Institute (SERI) in Golden, Colorado.

FY 1990 Contract List

Sandia National Laboratories

Sandia National Laboratories

Contract No. Contract Period Title	Contractor (Principal Investigator) Sandia Contact	Funding \$ (Source)	Selected FY 1991 Milestones (Sandia contact has more information)
Dish Converter Solarization			
DE-AT04-85AL33408 10/01/85-12/31/93 Advanced Stirling Conversion System	NASA/Lewis Research Center (R. Shaltens) Cleveland, OH 44135 K. Linker	Total Funding \$3,334,000 (DOE) FY 90 Funding \$1,050,000 (DOE)	Complete Stirling Technology Company final design (February 1991). Complete Cummins Engine Company preliminary design remediation (April 1991).
SNL 78-8096 08/06/90-12/31/90 Heater Assembly Fabrication	Stirling Thermal Motors (T. Godett) 2841 Boardwalk Ann Arbor, MI 48104 K. Linker	Total Funding \$48,000 (DOE) FY 90 Funding \$48,000 (DOE)	Deliver five gas-fired evaporator/heat transport assemblies (December 1990).
Dish Receiver Technology			
33-3036 04/07/87-12/31/90 Screen-Wick Reflux Heat-Pipe Solar Receiver	Stirling Thermal Motors (T. Godett) 2841 Boardwalk Ann Arbor, MI 48104 R. Diver	Total Funding \$225,000 (DOE) FY 90 Funding -0-	Contract resources have been exhausted with no deliverable provided. Stirling Thermal Motors continues development and fabrication with its own resources. Receiver scheduled for delivery to Sandia for test (May 1991).
Heliostats			
66-2095 11/89-11/90 Heliostat Control Support	Advanced Thermal Systems (D. Gorman) 6201 South Clarkson Street Littleton, CO 80121 R.M. Houser	Total Funding \$27,000 (DOE) FY 90 Funding \$27,000 (DOE)	None.
High-Temperature Solar Destruction of Hazardous Wastes/Toxic Chemicals			
DE-AC04-76-DP00789 10/88-09/90 Catalytically Enhanced Solar Absorption Receiver (CAESAR)	Sandia National Laboratories (J.F. Muir) P.O. Box 5800 Albuquerque, NM 87185 J.F. Muir	Total Funding \$285,000 (DOE) FY 90 Funding \$75,000 (DOE)	None.

Contract No. Contract Period Title	Contractor (Principal Investigator) Sandia Contact	Funding \$ (Source)	Selected FY 1991 Milestones (Sandia contact has more information)
National Solar Thermal Test Facility Operations and Maintenance			
05-4912 12/88-12/93 Technician/Engineering Services	EG&G (V.E. Dudley) 2450 Alamo SE Albuquerque, NM 87119 K.S. Rawlinson	Total Funding \$305,000 (DOE) FY 90 Funding \$115,478 (DOE)	Provide engineer and technician to support National Solar Thermal Test Facility Operations and Maintenance (ongoing).
63-5487 04/89-04/92 Technician Services	Ewing Technical Design (P. Best) 1709 Moon Street NE, Suite 205 Albuquerque, NM 87112 E.E. Rush	Total Funding \$1,305,000 (DOE) FY 90 Funding \$188,649 (DOE)	Supply technicians to support operation and maintenance of National Solar Thermal Test Facility (ongoing).
75-7415 03/89-03/92 Electrician Services	J&S Electric Company, Inc. (F.R. Webb) 10000 Trumbull Avenue SE Albuquerque, NM 87123 J.M. Stomp	Total Funding \$184,200 (DOE) FY 90 Funding \$59,734 (DOE)	Provide journeyman electrician to support National Solar Thermal Test Facility Operations and Maintenance (ongoing).
National Solar Thermal Test Facility Reimbursable Test Programs			
54-5875 12/89-12/92 Electrical/Mechanical Technical Support	IOTA Technologies (P.M. Brooks) 4221 Hannett NE Albuquerque, NM 87110 M.E. Ralph	Total Funding \$150,000 (DOE) FY 90 Funding \$24,224 (DOE)	Provide electrical/mechanical technician in support of National Solar Thermal Test Facility Reimbursable Programs (ongoing).
54-3952 10/89-09/90 Part-Time Engineering Services	Technadyne (C.M. Ghanbari) 300 Virginia SE Albuquerque, NM 87108 M.E. Ralph	Total Funding \$46,000 (DOE) FY 90 Funding \$38,560 (DOE)	None.
Photochemical Systems/High Temperature Solar Destruction of Toxic Chemicals			
75-6779 10/89-09/90 Determination of SOLTOX Reaction Products	Delphi Research, Inc. (P.M. Dhooge) 701 Haines Avenue NW Albuquerque, NM 87102 J.L. Sprung	Total Funding \$34,000 (Sandia) FY 90 Funding \$34,000 (Sandia)	None.

Sandia National Laboratories

Contract No. Contract Period Title	Contractor (Principal Investigator) Sandia Contact	Funding \$ (Source)	Selected FY 1991 Milestones (Sandia contact has more information)
DE-AC04-76-DP00789 10/88-09/90 High-Temperature Solar Destruction of Toxic Chemicals	Sandia National Laboratories (J.L. Sprung) P.O. Box 5800 Albuquerque, NM 87185 J.L. Sprung	Total Funding \$497,000 (DOE) FY 90 Funding \$438,000 (DOE)	None.
SNL 55-4032 10/01/89-09/30/90 Catalyst Studies and Reaction Kinetics	University of Houston (J.T. Richardson) 4800 Calhoun Street Houston, TX 77004 J.L. Sprung	Total Funding \$75,000 (Sandia) FY 90 Funding \$75,000 (Sandia)	None.
Solar Processing of Dilute Aqueous Chemical Wastes			
66-8697 07/90-02/91 Conceptual Design of a Solar Water Detox- ification Facility	Bechtel National, Inc. (B. Kelly) P.O. Box 3965 San Francisco, CA 94119 D.J. Alpert	Total Funding \$86,100 (Sandia) FY 90 Funding \$86,100 (Sandia)	Complete the final report (September 1991).
DE-AC04-76-DP00789 10/88-09/90 Solar Detoxification of Water Project	Sandia National Laboratories (J.E. Pacheco) P.O. Box 5800 Albuquerque, NM 81785 D.J. Alpert	Total Funding \$562,000 (DOE) FY 90 Funding \$494,000 (DOE)	Complete the contract for Lawrence Livermore National Laboratory test troughs (July 1991). Complete and document the engineering scale test (September 1991).

FY 1990 Contract List

Solar Energy Research Institute

Solar Energy Research Institute

Contract No. Contract Period Title	Contractor (Principal Investigator) SERI Contact	Funding \$ (Source)	Selected FY 1991 Milestones (SERI contact has more information)
Advanced Industrial Processes			
DE-AC02-83CH10093 Ongoing Multiyear Research Materials Treatment and Advanced Industrial Processes	Solar Energy Research Institute (M. Carasso) 1617 Cole Boulevard Golden, CO 80401 M Carasso	FY 90 Funding \$575,000 (DOE)	Milestones completed in FY1990.
Gas-Phase Solar Destruction of Hazardous Wastes			
TC-0-10070-01 04/90-03/91 Photo-Thermal Destruction Studies of Hazardous Waste	TDA Research Inc. (C. Brockman) 12421 West 47th Avenue Wheatridge, CO 80033 T. Milne	Total Funding \$33,000 (DOE) FY 90 Funding \$33,000 (DOE)	None.
XX-6-06082-01 09/84-11/30/90 Process Chemistry for Gas-Phase Reactions	University of Dayton Research Institute (B. Dellinger) 300 College Park Dayton, OH 45469 G. Glatzmaier	Total Funding \$688,594 (DOE) FY 90 Funding \$170,000 (DOE)	None.
10032-01 06/90-07/91 Process Chemistry for Gas-Phase Reactions	University of Dayton Research Institute (B. Dellinger) 300 College Park Dayton, OH 45469 G. Glatzmaier	Total Funding \$25,000 (DOE) \$29,713 (University of Dayton Research Institute) FY 90 Funding \$25,000 (DOE) \$29,713 (University of Dayton Research Institute)	Complete the final report (July 1991).

Contract No. Contract Period Title	Contractor (Principal Investigator) SERI Contact	Funding \$ (Source)	Selected FY 1991 Milestones (SERI contact has more information)
High-Flux Photon Processes			
10081-01 06/18/90–12/18/90 Design, Fabrication, and Installation of a Turning Mirror for the High-Flux Solar Furnace	Dan-Ka Products, Inc. (D. Sallis) 3905 South Mariposa Englewood, CO 80110 A. Lewandowski	Total Funding \$31,000 (DOE) FY 90 Funding \$31,000 (DOE)	Complete an operations manual that describes the detailed design and methods of safe operation of the turning mirror system, including detailed specifications and drawings of hardware and individual component parts (December 1990).
XX-9-19012-1 07/05/89–06/30/91 Solar Thermal Technology: Nonelectric Research Needs	National Academy of Sciences National Research Council (K. Araj) 2101 Constitution Avenue, NW Washington, DC 20418 M. Carasso	Total Funding \$268,910 (DOE) FY 90 Funding -0-	None.
XN-0-10113-1 08/90–03/91 High-Flux Solar Photon Processes: Opportunities for Applications	SRI International (D. Lorents) 333 Ravenswood Avenue Menlo Park, CA 94025 M. Carasso	Total Funding \$100,000 (DOE) FY 90 Funding \$100,000 (DOE)	Complete a draft report, summarizing the entire study, its findings, and recommendations (March 1991).
XX-6-06019-02 08/86–07/91 Methods for Achieving Extremely High Solar Flux Concentrations	University of Chicago Office of Research Administration (R. Winston, J. O'Gallagher) 970 East 58th Street Chicago, IL 60637 M. Carasso	Total Funding \$374,410 (DOE) FY 90 Funding \$100,000 (DOE)	Complete the final technical report (July 1991).
XX-7-07028-01 03/87–03/01/90 Solar-Enhanced Chemical Reactions	University of Houston Sponsored Program (L. Vant-Hull) 4800 Calhoun Road Houston, TX 77004 M. Carasso	Total Funding \$520,998 (DOE) FY 90 Funding \$75,000 (DOE)	Contract completed in FY 1990.

Solar Energy Research Institute

Contract No. Contract Period Title	Contractor (Principal Investigator) SERI Contact	Funding \$ (Source)	Selected FY 1991 Milestones (SERI contact has more information)
Solar Detoxification of Water			
DE-AC02-83CH10093 Ongoing Multiyear Research Solar Photochemical Systems	Solar Energy Research Institute (J. Anderson) 1617 Cole Boulevard Golden, CO 80401 J. Anderson	FY 90 Funding \$1,345,000 (DOE)	Milestones completed in FY 1990.
10035-01 01/10/90-02/28/91 Solar Detoxification of Water Research and Development	University of Arizona Board of Regents (R. Sierka) Engineering Experiment Station Civil Engineering Building 72 Tucson, AZ 85121 H. Link	Total Funding \$54,000 (DOE) FY 90 Funding \$54,000 (DOE)	Contract completed in FY 1990.
Solar Thermal Electric Technology			
DE-AC02-83CH10093 Ongoing Multiyear Research Concentrators, Receivers, and Systems Development	Solar Energy Research Institute (B. Gupta) 1617 Cole Boulevard Golden, CO 80401 B. Gupta	FY 90 Funding \$1,395,000 (DOE)	Milestones completed in FY 1990.

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This contract list is one of a series of documents on programs in utility technologies sponsored by the U.S. Department of Energy. Individual contract lists are available for each of the following programs:

Geothermal Energy
Ocean Energy
Photovoltaic Energy
Solar Thermal Energy
Wind Energy

Copies of any of these documents can be obtained by writing:

Solar Energy Research Institute
Technical Inquiry Service
1617 Cole Boulevard
Golden, CO 80401-3393

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