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Fact Sheet for the Chairman, Environment, Energy and Natural Resources Subcommittee, Committee on Government Operations, House of Representatives

August 1992

DEPARTMENT OF ENERGY

Status of Reporting Compliance for DOE's Major System Acquisitions

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Resources, Community, and
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August 24, 1992

The Honorable Mike Synar
Chairman, Environment, Energy
and Natural Resources Subcommittee
Committee on Government Operations
House of Representatives

Dear Mr. Chairman:

In response to your request, this fact sheet provides information on the status of the Department of Energy's (DOE) compliance with documentation and reporting requirements for its Major System Acquisitions (MSA). An MSA is a project that is critical to fulfilling an agency's mission.[1] As agreed with your office, we focused our review on determining whether certain key documents for each MSA have been approved by senior DOE management. Those documents are a mission needs statement, a project plan, and an independent cost estimate. Approval of these documents are required prior to or at the project's start, which begins upon the completion of conceptual design.[2]

In summary, as of June 1992, there were 37 DOE MSAs, 27 of which had progressed beyond the conceptual design stage and had started. These 27 MSAs had an estimated total project cost of about $35 billion. DOE information showed that 21 MSAs lacked one or more key documents:

-- Seven did not have an approved mission needs statement. This statement provides justification for the project relative to an agency's mission.

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[1]Because of an MSA's importance, the Office of Management and Budget initiated a process in 1976, through the issuance of Circular A-109, to involve senior agency management in all key MSA decision-making. As of March 1991, DOE considers all projects with a total project cost of $100 million or more an MSA.

[2]Conceptual design ensures and/or validates project feasibility.

-- Nine did not have an approved project plan. This plan describes the project and establishes approved cost, schedule, and technical baselines against which overall progress of the project and the effectiveness of its management are to be measured.

-- Ten did not have an independent cost estimate for the entire project's total cost. This estimate is used by DOE as an analytical tool to validate the estimate developed by the office proposing the project.

DOE officials provided us with explanations for those MSAs indicated above as lacking documentation. Generally, DOE officials explained that key documents have not been approved for many of the projects because the projects have been in transition to or from MSA status within the Department, or are being rescoped, revised, or redirected. Notwithstanding the present status of these MSAs, the key documents for these MSAs should have already been approved.

In addition, for the 18 MSAs with an approved project plan, 8 of the plans were not up to date. Several have been out of date for approximately 2 years or more. For each of these MSAs, the current total project cost was either $50 million greater or less than the approved total project cost.[3] DOE officials told us that four of the out-of-date project plans are in the review and concurrence cycle and should be approved in the near future. Others are being updated to reflect changes in the scope of the MSA.

The absence of key approval documents and project plans that were out of date raises questions about the level of involvement DOE's senior management has had in the early stages of many critical projects within the Department. Such involvement is important to identify, react to, and in some cases prevent cost and schedule overruns.

This fact sheet is divided into six sections. Section 1 briefly describes each MSA, its location, and status. Section 2 lists those MSAs that possess all key

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[3]According to DOE staff, a project plan is not up to date if the total project cost has changed by $50 million or greater or the project schedule has changed by 6 months or greater. When this occurs, senior DOE management must approve a revision to the plan.

documentation. Section 3 lists those MSAs without an approved mission needs statement. Section 4 lists those MSAs without an approved project plan. Section 5 lists those MSAs without an independent cost estimate. Section 6 lists those MSAs with an approved project plan that is not up to date.

AGENCY COMMENTS AND ACTIONS

As you requested, we did not obtain written agency comments on this fact sheet. However, we discussed the facts presented with officials within DOE's Office of Program/Project Management and Control and included their comments where appropriate. DOE officials stressed that, although some documentation was not approved when required, they have substantially strengthened the MSA process over the past 2 years. In view of this, the officials were extremely concerned that the improvements made would be overshadowed by the report.

To place the report's findings in perspective, DOE officials requested that we include the following specific improvements:

-- In 1991, DOE reduced the cost threshold for designating a project an MSA from $250 million to $100 million.

-- DOE increased the number of senior DOE management meetings on the Department's MSAs from 2 in 1989 to between 25 to 30 in 1992.[4]

-- Recently, DOE centralized MSA documentation and is developing a computerized MSA management information system.

-- Recently, DOE issued a new order that identifies the Department's MSAs and outlines increased management responsibilities.

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[4]Senior DOE management includes the Deputy Secretary and Under Secretary; the Assistant Secretary for Environment, Safety, and Health; the General Counsel; the Director of Procurement, Assistance and Program Management; the Director of Administration and Human Resource Management; and the Director of Financial Management and Controller.

Finally, the officials said that this report has helped to identify deficiencies in documentation from an individual MSA and systematic perspective, and they have developed specific actions to correct these deficiencies.

SCOPE AND METHODOLOGY

We conducted this review from October 1991 to June 1992. To develop this fact sheet, we obtained data from DOE's Office of Program/Project Management and Control on each existing MSA, including brief descriptions, cost estimates, and status. We did not independently verify all the data obtained. However, we did compare the data with other DOE sources of information, including MSA-related information DOE submitted in support of its fiscal year 1993 budget request. We also interviewed DOE headquarters officials and analyzed selected DOE reports, including the Summary Project Performance Report to Senior Management and the Quarterly Status of DOE Projects. Furthermore, we reviewed DOE Office of Inspector General reports issued in 1986 and 1990 on the Department's procedures and practices for managing MSAs.

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As arranged with your office, unless you publicly announce its contents earlier, we plan no further distribution of this fact sheet until 30 days from the date of this letter. At that time, we will send copies of this fact sheet to appropriate congressional committees and to other interested parties.

Please call me at (202) 275-1441 if you have any additional questions or if we can be of further assistance. Major contributors to this fact sheet are listed in appendix I.

Sincerely yours,

Victor S. Rezendes
Director, Energy and Science Issues

CONTENTS

ABBREVIATIONS

DOE	Department of Energy
GAO	General Accounting Office
MSA	major system acquisition

SECTION 1

DOE's MAJOR SYSTEM ACQUISITIONS, LOCATION, AND STATUS

ADVANCED NEUTRON SOURCE
OAK RIDGE NATIONAL LABORATORY
CONCEPTUAL DESIGN

The project is a research reactor facility to meet national and international needs for an intense, steady-state source of neutrons. Neutrons are used for various research projects such as isotope production and materials irradiation studies.

ATOMIC VAPOR LASER ISOTOPE SEPARATION RESEARCH AND DEVELOPMENT
LAWRENCE LIVERMORE NATIONAL LABORATORY
CONCEPTUAL DESIGN

The project is a low-cost, laser-based method to enrich uranium for use as fuel in nuclear power plants. If successfully developed, this method will replace the aging, energy-intensive, gaseous diffusion process currently used by the Department of Energy (DOE) to enrich uranium.

BATTELLE COLUMBUS LABORATORY DECOMMISSIONING
COLUMBUS, OHIO
CONSTRUCTION

The project will decontaminate all buildings and surrounding areas that have been used for government-sponsored nuclear research at Battelle Memorial Institute. Fifteen buildings and surrounding land areas are included in the project.

CONTINUOUS ELECTRON BEAM ACCELERATOR FACILITY
NEWPORT NEWS, VIRGINIA
CONSTRUCTION

The facility is a new generation superconducting accelerator. It will have the ability to deliver high-energy and high-current electron beams simultaneously. It will be used in high-energy physics research.

DEFENSE WASTE PROCESSING FACILITY
AIKEN, SOUTH CAROLINA
PRE-OPERATIONAL TESTING

The facility is to immobilize, by vitrification, the high-level waste at the Savannah River Site. The vitrification process converts waste into borosilicate glass for disposal in a federal repository.

ENVIRONMENTAL AND MOLECULAR SCIENCES LABORATORY
RICHLAND, WASHINGTON
PRELIMINARY DESIGN

The project is to design, construct, and prepare for operation a new laboratory and office facility with a full complement of research equipment and computer and information systems. When operational, this facility will assist researchers to develop cost-effective solutions to environmental restoration and waste management problems.

ENVIRONMENTAL REMEDIAL ACTION
FERNALD, OHIO
DETAILED DESIGN

The project is a consolidation of projects and other environmental restorative efforts at the Feed Materials Production Center. The project includes remedial actions, safe shutdown operations, waste management activities, long-term monitoring and surveillance, and decontamination and decommissioning activities.

FERMILAB MAIN INJECTOR
BATAVIA, ILLINOIS
PRELIMINARY DESIGN

The project will replace the existing 20-year old accelerator with a new accelerator. It will be used to greatly expand high-energy physics opportunities for the United States while the Superconducting Super Collider is being built.

FORMERLY UTILIZED SITES REMEDIAL ACTION PROJECT
VARIOUS LOCATIONS
CONSTRUCTION

The project is to evaluate and remedy radiological conditions at a number of privately, institutionally, and DOE-owned sites. At these sites, low-level radioactive contamination remains from the early years of the nation's atomic energy programs.

FUEL PROCESSING RESTORATION
IDAHO NATIONAL ENGINEERING LABORATORY
CONSTRUCTION

The project will complement existing facilities for fuel storage and dissolution. It will enhance existing facilities for handling, storage, and disposal of liquid and solid wastes.

1-2 GEV SYNCHROTRON RADIATION SOURCE
LAWRENCE BERKELEY LABORATORY
CONSTRUCTION

The project will modify an existing building to house an electron storage ring, an electron linear accelerator, and related devices. It will be used for science and engineering research.

6-7 GEV SYNCHROTRON RADIATION SOURCE
ARGONNE NATIONAL LABORATORY
CONSTRUCTION

The project will provide state-of-the-art, ultra-brilliant hard x-rays for scientific research. These x-rays are used to serve the needs of virtually all scientific disciplines and many technological fields, including industrial users.

HANFORD ENVIRONMENTAL COMPLIANCE
RICHLAND, WASHINGTON
CONSTRUCTION

The project consists of 14 subprojects that support Hanford's efforts to comply with applicable environmental laws and DOE orders. It includes various environmental remediation efforts.

HANFORD WASTE VITRIFICATION PLANT
RICHLAND, WASHINGTON
DETAILED DESIGN

The project will vitrify pre-treated high-level waste into borosilicate glass, cast the glass into stainless steel canisters, and store the canisters for later shipment to a federal geologic repository.

HIGH-LEVEL WASTE REMOVAL FROM FILLED TANKS
AIKEN, SOUTH CAROLINA
CONCEPTUAL DESIGN

The project will provide agitation removal facilities for six high-level waste tanks. The project will include the construction of various slurry pumps, transfer pumps and transfer jets, among other things.

HIGH-LEVEL WASTE TANK FARM REPLACEMENT PROJECT
IDAHO NATIONAL ENGINEERING LABORATORY
PRELIMINARY DESIGN

The project will provide temporary storage of high-level, liquid, radioactive mixed wastes produced from the reprocessing of irradiated nuclear fuel.

LOW-LEVEL WASTE DISPOSAL FACILITIES
OAK RIDGE, TENNESSEE
CONCEPTUAL DESIGN

This project will provide disposal facilities for low-level waste. It is currently being rescoped because of technical and location uncertainties.

MONITORED RETRIEVABLE STORAGE FACILITY
UNDECIDED
CONCEPTUAL DESIGN

The project consists of siting and constructing a storage facility for high-level nuclear fuel and developing a transportation support system.

NEW PRODUCTION REACTORS
UNDECIDED
CONCEPTUAL DESIGN

The project will provide new production reactor capacity on a schedule for an assured supply of nuclear materials, primarily tritium, to maintain the nation's nuclear deterrent capability.

PLANTWIDE FIRE PROTECTION, PHASES I, II, AND III
AIKEN, SOUTH CAROLINA
CONSTRUCTION

The project will bring the Savannah River Site into compliance with DOE orders and nationally recognized codes and standards for fire protection.

RADIOACTIVE WASTE MANAGEMENT COMPLEX
TRU WASTE TREATMENT AND STORAGE FACILITY
IDAHO NATIONAL ENGINEERING LABORATORY
CONSTRUCTION

The Radioactive Waste Management Complex Transuranic Waste Treatment and Storage Facility will provide for the characterization, sampling, and storage of approximately 2.3 million cubic feet of mixed-TRU waste.

REACTOR SAFETY ASSURANCE (PHASES I AND II)
AIKEN, SOUTH CAROLINA
DETAILED DESIGN

The project is a multiphased effort to enhance the performance and reliability of safety-related structures, systems and components of K- and L-Reactors at the Savannah River Site.

RELATIVISTIC HEAVY ION COLLIDER
BROOKHAVEN NATIONAL LABORATORY
DETAILED DESIGN

The project will construct a facility to study nuclear phenomena in heavy collisions at high-energy intensities. In such collisions, nuclear matter will be studied.

SECURITY ENHANCEMENTS
PANTEX, TEXAS
CONSTRUCTION

This project consists of 12 subprojects, including the replacement and enhancement of electronic systems, construction of a special nuclear materials component storing facility, and construction of a control shipping and receiving facility.

SP-100 GROUND ENGINEERING SYSTEM
RICHLAND, WASHINGTON
DETAILED DESIGN

The project is a joint endeavor between the Department of Defense, DOE, and the National Aeronautics and Space Administration to develop a multi-hundred kilowatt electric space reactor power system for future civil and military purposes.

STRATEGIC PETROLEUM RESERVE
TEXAS AND LOUISIANA
OPERATIONS

The program provides for the construction of underground storage facilities in salt domes along the coasts of Texas and Louisiana to stockpile crude oil, and the acquisition and construction of distribution facilities and services.

SUPERCONDUCTING SUPER COLLIDER
TEXAS
CONSTRUCTION

This project consists of a superconducting system in which beams of protons traveling in opposite directions in two rings of superconducting magnets are made to collide, producing ultra-high energy reactions for physics studies.

TRITIUM LOADING FACILITY REPLACEMENT
AIKEN, SOUTH CAROLINA
CONSTRUCTION

This project provides a replacement for the 30-year old tritium loading and unloading facility. The new facility will include design improvements for earthquake and high winds as well as secondary containment of all process equipment.

UPGRADE F&H CANYON EXHAUST SYSTEMS
AIKEN, SOUTH CAROLINA
CONCEPTUAL DESIGN

The project will replace existing exhaust systems with new fan buildings, exhaust fans, 200-feet high main exhaust stack, 100-feet high auxiliary exhaust stacks, retardant emergency diesel generators, and underground exhaust tunnels.

URANIUM MILL TAILINGS REMEDIAL ACTION PROJECT
VARIOUS LOCATIONS
CONSTRUCTION

The Uranium Mill Tailings Radiation Control Act of 1978 directs DOE, in cooperation with the states, to stabilize, dispose, and control mill tailings in a safe and environmentally sound manner. The project is remediating tailings at 24 designated sites and contaminated vicinity properties in 10 states.

URANIUM MILL TAILINGS GROUND WATER RESTORATION PROJECT
VARIOUS LOCATIONS
CONCEPTUAL DESIGN

The Uranium Mill Tailings Radiation Control Act of 1978 directs DOE, in cooperation with the states, to comply with Environmental Protection Agency groundwater protection standards. This project addresses restoring, as necessary, the aquifers at 24 designated sites.

WASTE ANALYTICAL LABORATORY
UNDECIDED
CONCEPTUAL DESIGN

The project is to provide DOE with in-house support to analyze mixed transuranic waste samples for the environmental restoration and waste management program.

WASTE ISOLATION PILOT PLANT
NEW MEXICO
PENDING PERFORMANCE ASSESSMENT

The plant was authorized by the Congress in 1979 as a research and development facility to demonstrate the safe disposal of radioactive transuranic wastes resulting from the defense activities and programs.

WASTE RECEIVING AND PROCESSING FACILITY, MODULE II
RICHLAND, WASHINGTON
CONCEPTUAL DESIGN

The facility scope is currently being redefined because of technical uncertainties associated with the Waste Isolation Pilot

Plant project. The facility was to perform waste receipt, storage, repackaging, volume reduction, certification, and treatment of solid transuranic wastes and mixed wastes generated, stored, and received at the Hanford site.

WELDON SPRING REMEDIAL ACTION PROJECT
MISSOURI
CONSTRUCTION

The area to be remediated consists of a 9-acre abandoned quarry, a 51-acre sludge disposal area, and a 166-acre mothballed uranium feed materials plant.

WEST VALLEY DEMONSTRATION PROJECT
WEST VALLEY, NEW YORK
CONSTRUCTION

The facility is the implementation of an integrated production-scale development and demonstration project for treating the 660,000 gallons of alkaline and acidic liquid high-level waste stored at the Western New York Nuclear Service Center, near West Valley, New York.

YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
NEVADA
DETAILED DESIGN

The project will determine if Yucca Mountain is suitable for a high-level nuclear waste repository.

SECTION 2

MSAs THAT HAVE COMPLIED WITH APPLICABLE DEPARTMENTAL DOCUMENTATION AND REPORTING REQUIREMENTS

MSA title	Status	Total project cost[a]
Fuel Processing Restoration	Construction	$ 497.4
1-2 GEV Synchrotron Radiation Source	Construction	146.0
6-7 GEV Synchrotron Radiation Source	Construction	791.9
Relativistic Heavy Ion Collider	Detailed Design	499.1
Strategic Petroleum Reserve	Operations	2,499.5
Superconducting Super Collider	Construction	8,249.0

Note: Data are as of June 1992.

[a]Dollars in millions.

SECTION 3

MSAS WITHOUT AN APPROVED MISSION NEEDS STATEMENT

MSA title	Status	Total project cost[a]
Battelle Columbus Labs Decommissioning Project[b]	Construction	$ 147.9
Environmental Remedial Action, Fernald	Detailed design	3,300.0
Hanford Environmental Compliance[b]	Construction	262.3
High-Level Waste Tank Farm Replacement Project	Preliminary design	296.0
Radioactive Waste Management Complex TRU Waste Treatment and Storage Facility, Idaho Falls	Construction	146.0
Reactor Safety Assurance (Phases I and II), Savannah River	Detailed design	60.8
Security Enhancements, Pantex, TX[b]	Construction	111.9

Note: A mission needs statement is approved or disapproved before a new start. Data are as of June 1992.

[a]Dollars in millions.

[b]According to DOE officials, these projects were major projects and had a mission needs statement approved by lower-level officials before becoming MSAs. Major projects have a lower total project cost than MSAs and are not generally reviewed by senior DOE management. When major projects become MSAs, senior management must approve the mission need, particularly if significant cost, scope, or schedule changes had occurred, as had happened with these projects.

SECTION 4

MSAS WITHOUT AN APPROVED PROJECT PLAN

MSA title	Status	Total project cost[a]
Battelle Columbus Labs Decommissioning Project[b]	Construction	$ 147.9
Environmental and Molecular Science Lab	Preliminary design	217.8
Environmental Remedial Action, Fernald	Detailed design	3,300.0
Fermilab Main Injector	Preliminary design	215.2
Hanford Environmental Compliance[b]	Construction	262.3
High-Level Waste Tank Farm Replacement Project	Preliminary design	296.0
Reactor Safety Assurance (Phases I and II), Savannah River	Detailed design	60.8
Security Enhancements, Pantex, TX	Construction	111.9
SP-100 Ground Engineering System (GES)	Detailed design	1,989.5

Note: A project plan is to be first approved at the time an approval is given for a new start. Data are as of June 1992.

[a]Dollars in millions.

[b]According to DOE officials, these projects were major projects and had a project plan approved by lower-level officials before becoming MSAs. Major projects have a lower total project cost than MSAs and are not generally reviewed by senior DOE management. When major projects become MSAs, senior management must approve the project plan, particularly if significant cost, scope, or schedule changes had occurred, as had happened with these projects.

SECTION 5

MSAs WITHOUT AN INDEPENDENT COST ESTIMATE

MSA title	Status	Total project cost[a]
Battelle Columbus Labs Decommissioning Project[b]	Construction	$ 147.9
Environmental and Molecular Science Lab	Preliminary design	217.8
Environmental Remedial Action, Fernald[b]	Detailed design	3,300.0
Fermilab Main Injector	Preliminary design	215.2
Hanford Environmental Compliance[b]	Construction	262.3
Plant-Wide Fire Protection (Phases I, II, and III)	Construction	458.0
Reactor Safety Assurance (Phases I and II), Savannah River	Detailed design	60.8
Waste Isolation Pilot Plant	Pending performance assessment	711.6
Weldon Spring Remedial Action Project[b]	Construction	537.0
Yucca Mountain Site Characterization Project[b]	Detailed design	6,319.3

Note: An independent cost estimate is required at specific points throughout a project, with the first estimate required before the approval of a new start. Data are as of June 1992.

[a]Dollars in millions.

[b]An independent cost review has been conducted on segments of each of these MSAs.

SECTION 6

MSAs THAT DO NOT HAVE AN UP-TO-DATE APPROVED PROJECT PLAN

MSA title	Status	Total project cost[a]	Comments[a]
Continuous Electron Beam Accelerator Facility	Construction	$ 514.9	Baseline in project plan is $210.4 less.
Defense Waste Processing Facility	Pre-operational testing	1,873.3	Current operating baseline is $226.7 greater.
Formerly Utilized Sites Remedial Action Project[b]	Construction	960.0	Current operating baseline is $1.14 billion greater.
Hanford Waste Vitrification Plant	Detailed design	1,435.5	Current operating baseline is $192.5 greater.
Tritium Loading Facility	Construction	384.8	Baseline in project plan is $223.5 less.
Uranium Mill Tailings Remedial Action Project[b]	Construction	992.0[c]	Current operating baseline is $354 greater.
Weldon Spring Remedial Action Project[b]	Construction	537.0	Current operating baseline is $316 greater.

West Valley Demonstration Project[b]	Construction	1,413.0	Current operating baseline is $172 greater.

Note: A project plan is not up to date, requiring senior DOE management approval of a revised plan, if the total project cost has changed by $50 millon or greater or if the project schedule has changed by 6 months or greater. Data are as of June 1992.

[a]Dollars in millions. The total project cost shown is the approved baseline for the project.

[b]A revised project plan for each of these MSAs is currently in the DOE review and approval cycle.

[c]This is the total estimated cost for this project because total project cost information was not available.

MAJOR CONTRIBUTORS TO THIS FACT SHEET

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