IG-97-038

AUDIT REPORT

STATUS OF PLUM BROOK STATION NUCLEAR REACTORS

LEWIS RESEARCH CENTER

SEPTEMBER 12, 1997

National Aeronautics and Space Administration

OFFICE OF INSPECTOR GENERAL

National Aeronautics and
Space Administration

Headquarters
Washington, DC 20546-0001

SEP 12 1997

Reply to Attn of: W

TO: J/Associate Administrator for Management Systems and Facilities

R/Associate Administrator of Aeronautics and Space Transportation Technology

Lewis Research Center
Attn: 0100/Director

FROM: W/Acting Assistant Inspector General for Auditing

SUBJECT: Audit of the Status of Plum Brook Station Nuclear Reactors
Assignment Number A-HA-97-001
Report Number IG-97-038

Enclosed is our final report on the Status of Plum Brook Station Nuclear Reactors. We recommend that NASA update the Plum Brook Reactor Facility's (PBRF) radioactive waste inventory and begin the process of decommissioning. Because of the substantial cost involved, we further recommend that NASA consider alternative financing mechanisms. The Office of Inspector General believes that the process of decommissioning the PBRF is an NASA-wide concern, and will require a coordinated effort between the Lewis Research Center, Code J and Code R.

If the Agency decommissioned the PBRF in 2017, which is when NASA's possess-but-not-operate licenses expire, the projected cost to decommission could be about $5.9 billion. With a year needed to update the radioactive waste inventory, and assuming that NASA could complete decommissioning within a 6-year period as it agreed to do back in 1981, the PBRF could be secured by the year 2005. If that were the case, NASA could avoid the expenditure of approximately $5.5 billion by having escalated the decommissioning process.

A draft report was issued July 23, 1997. Management's official response, received September 10th, is summarized after each recommendation and presented in its entirety as Appendix 6. In its response, management has proposed corrective actions that are responsive to the intent of Recommendation 1. Based on the response, we also have reworded Recommendation 2, as suggested, showing Code J as the responsible party. Because the Agency's proposed actions are responsive, we are considering both recommendations closed.

If you have any questions or need additional information, please call Chester Sipsock, Director, Environmental Programs, at (216) 433-8960; or Daniel Samoviski, Acting Director, Audit Division-A, or me at (202) 358-1232.

Robert J. Wesolowski

Enclosure

cc:
B/A. Holz
JE/O. Dominguez
JM/H. Robbins

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BACKGROUND

The Plum Brook Reactor Facility (PBRF) is an area of approximately 27 acres located within the Plum Brook Station, a federal reservation of 6,400 acres, near Sandusky, Ohio (an aerial photograph is included as Appendix 1). The PBRF contains a 60-megawatt (thermal) materials testing and research reactor, a 100-kilowatt mock-up reactor, and other facilities which support the reactors. NASA used the mock-up reactor for dry runs and to check that instruments were reading and working.

Originally built for nuclear irradiation testing of nuclear fueled and unfueled experiments for space applications, NASA shut down and secured the facility in 1973. Although secured, the presence of radioactive materials requires NASA to maintain the PBRF in a safe-storage condition until it can be decommissioned. Decommissioning of a reactor facility involves removing radioactive contamination in buildings, equipment, groundwater, and soils to those levels at which a reactor site can be released for unrestricted use. (Appendix 2 contains the requirements for safe-storage of the facility.)

The day-to-day responsibility for maintaining the PBRF rests with the Lewis Research Center's (LeRC) Plum Brook Management Office. This Office reports to the Director of the Engineering and Technical Services Directorate who, in turn, reports to the LeRC Center Director. All LeRC activities, such as the PBRF, are the ultimate jurisdiction of the Associate Administrator for NASA's Office of Aeronautics & Space Transportation Technology (Code R) in Washington, D.C.

The Associate Administrator for NASA's Office of Management Systems and Facilities (Code J) in Washington, D.C. provides technical expertise and consultation to the NASA Enterprises (e.g., Code R) for all environmental management matters. Code J currently has functional management responsibility for NASA's Environmental Compliance and Restoration Program. This Program funds activities for cleaning up environmental contamination resulting from past operations which are non-discretionary and are classified as an NASA corporate liability. Code J is responsible for providing recommendations to the NASA Capital Investment Council regarding significant environmental management capital investment decisions.

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OBJECTIVES, SCOPE, AND METHODOLOGY

OBJECTIVES

Our overall objective was to determine if NASA management had sufficient information on which to base a decision to decommission the reactors or seek an extension of the current licenses. Specifically, we were to answer the following questions:

- Does NASA have a valid and complete study to help determine the most appropriate time for decommissioning the reactors?

- Has NASA explored if there is a place to put the radioactive waste or when one will become available?

The two specific objectives have been combined into one finding because permanent disposal of the radioactive waste is an integral part of decommissioning.

SCOPE AND METHODOLOGY

To determine if NASA has a valid and complete study to help determine the most appropriate time for decommissioning the reactors, we:

- reviewed the 1984 contractor study NASA used to base its decision to apply for a 20-year extension to its existing "possess-but-not-operate" licenses.

- discussed the 1984 study with NASA and contractor officials who manage the nuclear reactors, LeRC management, and the retired contractor employee who conducted the study.

- reviewed the 1978 study done by the same contractor on further options for disposition of the PBRF.

- reviewed a 1979 environmental assessment report addressing the potential environmental impact of decommissioning the PBRF.

- interviewed Nuclear Regulatory Commission (NRC) officials about decommissioning and safe storage of reactors.

To determine if NASA explored if there is a place to put the radioactive waste or when one will become available, we:

- discussed available radioactive waste disposal facilities with the NASA nuclear reactor manager.
- interviewed a NRC Waste Management Division official.
- reviewed legislation.
- discussed the cost of waste burial and NRC licenses with officials who manage
  --the Barnwell facility in South Carolina.
  --the Envirocare facility in Utah.
- interviewed the executive director of the Midwest Interstate Low-Level Radioactive Waste Compact, a regional compact of which the State of Ohio is a member. Ohio has been designated the host state for the Midwest Compact and will be the first state in the compact to site a disposal facility.
- discussed the Barnwell facility with a representative for the South Carolina State Legislature.
- interviewed a contracting officer with the Army Corps of Engineers in Kansas City, Missouri, who is responsible for developing a federal-wide contract with Envirocare.

AUDIT FIELD WORK

Field work was conducted from October 1996 through February 1997 at LeRC and Plum Brook Station. The audit was performed in accordance with generally accepted government auditing standards.

OBSERVATIONS AND RECOMMENDATIONS

NASA FACES AN IMPORTANT DECISION IN DECOMMISSIONING

NASA chose to keep the PBRF in a safe-storage condition, rather than decommission it as recommended in 1978 and 1984. This decision may be affordable on an annual basis; however, it does not adequately consider the long-term consequences of decommissioning which will ultimately occur. For example, the most significant cost of decommissioning is radioactive waste disposal. This cost is currently increasing faster than the inflation rate. In addition, the continued payment of annual maintenance costs will involve a significant investment with no payback. The longer NASA delays decommissioning the PBRF, the more costly it becomes. If the Agency decommissioned the PBRF in 2017, which is when NASA's possess-but-not-operate licenses expire, the projected cost to decommission could be about $5.9 billion. If NASA were to begin the process of decommissioning now, the agency could save about $5.5 billion.

DELAYS COMPOUND THE PROBLEM

NASA has spent over $24 million to maintain the PBRF in compliance with Nuclear Regulatory Commission (NRC) requirements since January 1973. The Agency's current plans call for maintaining the status quo until the year 2017, if the NRC grants the 20-year extensions to NASA's licenses. Meanwhile, expert studies had recommended 19 years ago that NASA decommission its reactor facility.

The initial reactor study completed in 1978, by Teledyne Isotopes, Inc., evaluated the cost of prompt decommissioning, safe storage, and delayed decommissioning. The study recommended prompt decommissioning as the most economical option at a cost of about $7 million. The NRC licenses were amended to allow decommissioning. Funds for starting the decommissioning process, which NASA estimated would take 6 years, were included in the 1981 agency budget. However, NASA Headquarters diverted this money to other projects and removed the monies from the 1982 budget figures that had been included for decommissioning. According to LeRC officials, these funds were never reallocated to the Center.

Because it was not known when NASA funding would permit execution of the decommissioning activities, the PBRF continued to be kept in a safe-storage condition. In addition, the Facilities Engineering Division of LeRC funded a 1984 study by Teledyne Isotopes, Inc., to document the present condition of the PBRF. The

contractor again recommended prompt decommissioning as the least expensive alternative. However, during the course of this study, the NRC advised NASA to reapply for their possess-but-not-operate licenses if the Agency was not going forward with decommissioning. NASA did reapply and the licenses were received in January 1987. (Appendix 3 contains more information on the two contractor studies.)

Although its two licenses expired in January 1997, NASA applied for 20-year extensions to both licenses. According to LeRC officials, this application is not necessarily indicative of a decision to hold the PBRF for another 20 years. NRC regulations state that, as long as the request for renewal is submitted according to the regulations, the current licenses are effective until the paperwork for the renewal can be reviewed by the responsible NRC official. As of July 1997, the NRC official had not completed the review and had furnished NASA with a list of questions that required additional information and clarification.

NASA cannot postpone decommissioning forever. The PBRF is 37 years old. The 1984 Teledyne Isotopes, Inc., study concluded that the latest possible time for ending safe storage and beginning decommissioning is the year 2073. At that time, the PBRF will be 113 years old and it is not likely that the facility life could be extended beyond 2073 even with a well planned maintenance program.

NASA believes the cost of annual maintenance (over $1.4 million in 1997 dollars) is an affordable alternative compared to the large cost required to decommission. NASA's current estimate for decommissioning is $96.9 million, and this figure will continue to grow if decommissioning continues to be postponed.

The Office of Inspector General estimates that by waiting until the year 2017 to decommission, NASA will:

- have spent about $71.6 million to maintain the facility, and
- need to spend another $157.0 million to dismantle it.

These estimates do not include the most significant decommissioning cost -- the disposal of radioactive waste -- which is increasing at a rate faster than inflation. Assuming that the cost estimates and rates advanced in the 1984 Teledyne Isotopes, Inc., study continue to be

valid, NASA could expect to pay about $5.7 billion in disposal cost alone by waiting until the year 2017 to decommission. In addition, many of the nation's 107 operating commercial nuclear units (i.e., utility power reactors) are expected to shut down by the year 2020 because of expired operating licenses according to the Electric Power Research Institute. With these shut downs, the demands placed on limited disposal facilities could significantly escalate future costs of waste burial. By waiting, NASA runs the risk that disposal costs could become so large that decommissioning will be prohibitive, if not impossible (see Appendix 4 for further details).

ADEQUATE DISPOSAL FACILITIES EXIST

NASA stated in its request for renewal of its two NRC licenses that there is a "lack of a dependably available nuclear low-level waste disposal facility." We found that adequate disposal facilities do exist, and that these facilities will never be more affordable to NASA than at the present time. In addition, the NRC has favored disposal and discouraged long-term storage as a method of managing low-level waste of the type contained at the PBRF. This philosophy is consistent with the national goal of developing new disposal capacity, as embodied in the Low-Level Radioactive Waste Policy Act of 1980 which gave states the responsibility for developing new facilities.

According to the NRC, although no new facility has opened since Congress passed this law, adequate low-level waste disposal and management options exist today for waste generators. South Carolina plans to keep its Barnwell facility open for up to 10 more years, and the Northwest Compact permits certain types of low-level waste from all over the country to be disposed of at the Envirocare facility in Utah. In fact, the Army Corps of Engineers in Kansas City, Missouri, is responsible for developing a federal government-wide contract with Envirocare. The benefit of this contract to federal agencies, like NASA, will be lower disposal costs than if agencies acted on their own.

NASA must have an adequately documented radioactive waste inventory for the PBRF in order to update the cost of disposal and decommissioning. Such an inventory currently does not exist. One of the assumptions made in the 1984 PBRF contractor study was that all waste would be buried in the Barnwell facility. This assumption was understandable at the time because Barnwell was the only facility available to receive NASA's waste. As a result, the radioactive waste inventory for the PBRF lacks the documentation needed to identify

how much of the waste could be accepted by a facility other than Barnwell.

At an exit conference on July 11, 1997, NASA officials agreed that an updated inventory was needed. Officials stated that such an inventory would require about one year to complete at an estimated cost of $750,000.

ALTERNATIVE APPROACHES

Because of the large cost of decommissioning and the shrinking Federal budget, NASA will need to explore alternative approaches to financing the decommissioning. One alternative is to spread the decommissioning over a 12-year period as recommended in the 1984 Teledyne Isotopes, Inc., study. Extending the time period for decommissioning allows a smaller amount to be budgeted each year. In addition, the study presented a prospective schedule of activities for a 12-year configuration which leaves the facility in a safe configuration at the end of each activity in the event funding is temporarily reduced or suspended. Although extending the time period for decommissioning has some advantages, the disadvantage would be the greater overall cost to the Agency.

Another alternative would be to use the Federal Finance Bank (FFB) which is part of the United States Department of Treasury. The FFB financing of obligations issued by Federal agencies is now widely recognized as providing the most efficient, least expensive method of financing such debt. According to a financial economist with the bank, federal agencies presently can qualify for short-term loans at a 5 percent interest rate, and long-term loans at 7 percent. In addition, the FFB can provide informal assistance to agencies seeking financial advice. In this era of tight budgetary resources, the FFB continues to be a necessary and effective debt management tool.

CONCLUSION

The longer NASA continues to delay decommissioning the PBRF, the greater the overall cost will be to the Agency. The past history of disposal costs suggests that these costs will continue to escalate possibly to an unaffordable level. Furthermore, as the PBRF ages, it will be more difficult and expensive to maintain. NASA agreed almost 20 years ago that the Agency's best course of action was to decommission, but did not follow through. Before the Agency can make an informed decision on where to send its reactor waste, it first must update the PBRF radioactive waste inventory. With a year needed to complete the inventory, and assuming that NASA could complete decommissioning within a 6-year period as it agreed to do

back in 1981, the PBRF could be secured by the year 2005. If that were the case, NASA could avoid the expenditure of approximately $5.5 billion by having escalated the decommissioning process. (See Appendix 5 for cost avoidance calculation.)

RECOMMENDATION 1 NASA should ensure that the PBRF radioactive waste inventory is updated to provide the current information needed to best decide where to send the waste. If Envirocare is identified as a disposal alternative, we further recommend that NASA explore the feasibility of using the federal-wide contract for that facility.

Management's Response Concur. It is our understanding that Code JE will task the Lewis Research Center (LeRC) Environmental Management Office to conduct a study that will: 1) update the PBRF radioactive waste inventory; 2) identify potential waste disposal alternatives and associated costs; 3) investigate technological alternatives for reducing waste disposal costs, including volume reduction, waste treatment, or outright destruction; and 4) develop a business case to recommend the best alternative for addressing the Agency's liability associated with the PBRF. LeRC believes the cost of the study to update the radioactive waste inventory, as a precursor to a decision about the possibility of decommissioning, to be $750,000. LeRC and Code JE have agreed that Code JE will provide funding for the study from the Environmental Compliance and Restoration budget. The study will begin as soon as a suitable contractor is selected to perform the work. The study is expected to take approximately 12 months.

Evaluation of Management's Response The Agency's proposed actions are responsive to our recommendation. We continue to believe that decommissioning of the reactors needs to occur as soon as possible, therefore, the selection of a contractor should be a high priority. Also, we would like to reemphasize that if Envirocare is identified as a disposal alternative, NASA should explore the feasibility of using the federal-wide contract for that facility.

RECOMMENDATION 2 Code J should identify the best option for decommissioning the PBRF and present it to the Agency Capital Investment Council for approval.

Management's Response It is our understanding that Code JE, in recent budget discussions with Agency senior management, the Agency Comptroller, and the Capital Investment Council, has determined that the decommissioning of the PBRF is an Agency, not an Enterprise responsibility. The study to be conducted by the LeRC will recommend the best approach to

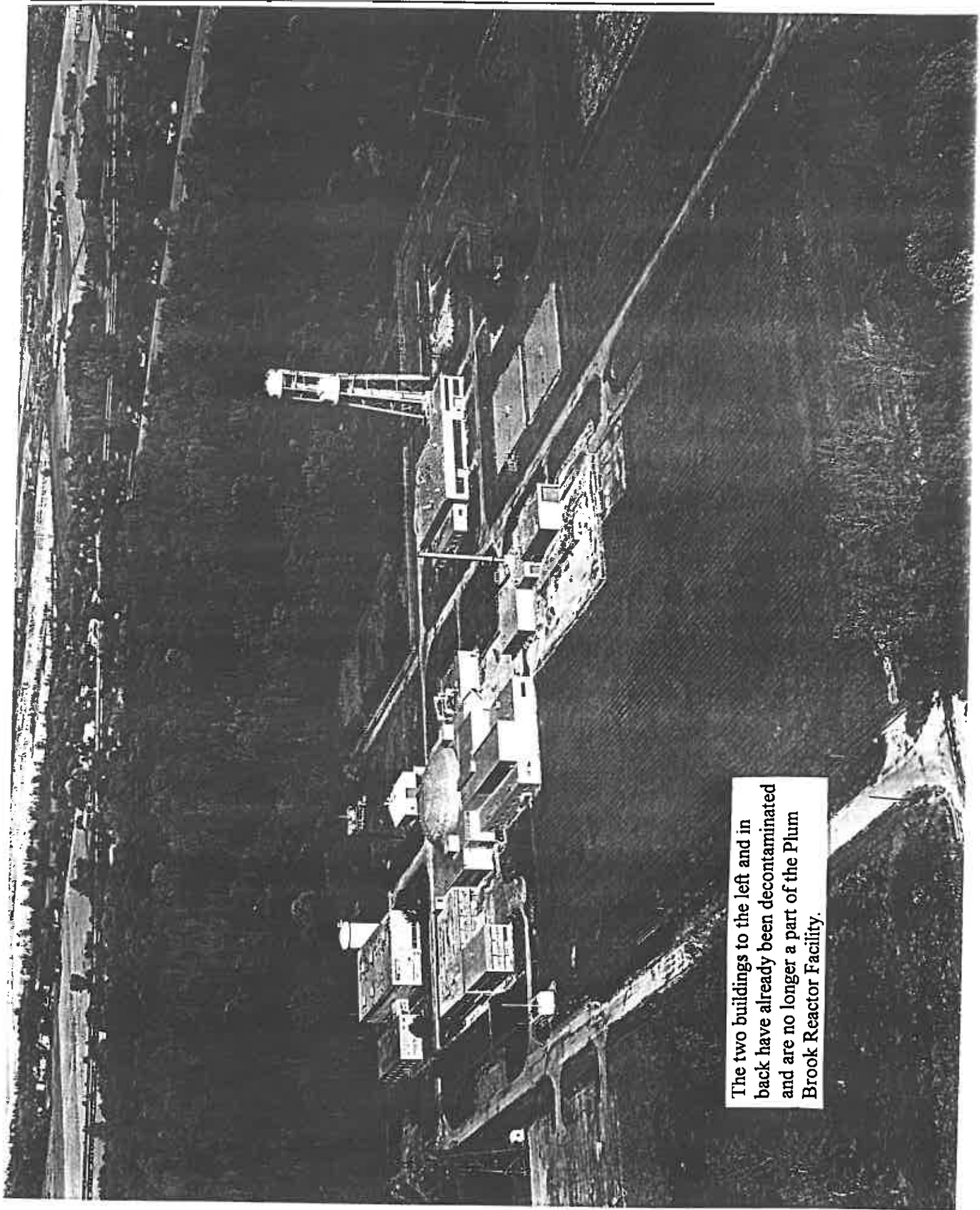
decommissioning, supported by a detailed business case, for approval by the Capital Investment Council. Accordingly, we recommend that in the Final Report, Recommendation 2 be reworded to read: "Code J should identify the best option for decommissioning the PBRF and present it to the Agency Capital Investment Council for approval."

Evaluation of Management's Response

We concur with the proposed change to the recommendation suggested by the Agency and have made the change to the report. The OIG recognizes the substantial cost to decommission but we want to emphasize that the Council act expeditiously because the longer that NASA delays decommissioning the PBRF, the greater the overall cost will be to the Agency.

AERIAL PHOTOGRAPH OF PLUM BROOK REACTOR FACILITY

APPENDIX 1



The two buildings to the left and in back have already been decontaminated and are no longer a part of the Plum Brook Reactor Facility.

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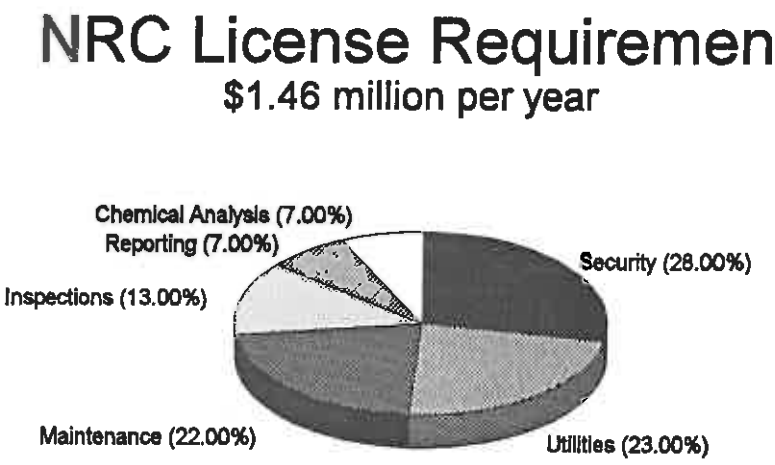
REQUIREMENTS FOR SAFE STORAGE OF THE FACILITY

The PBRF started operations in 1963 and ran for 10 years. In January 1973, NASA shutdown and secured the reactor by removing the fuel from the site and putting the facility in a safe-storage condition. Currently the PBRF is under two "possess-but-not-operate" NRC licenses which expired in January 1997; however, NASA has applied for a 20-year extension. The licenses are for the 60-megawatt test reactor and the 100-kilowatt mock-up reactor. To meet the requirements for these licenses, NASA must maintain the facility, provide adequate security and general surveillance, provide quarterly radiological monitoring and submit an annual report to the NRC. Maintenance includes ensuring the integrity of the buildings, building locks, and fences. It also includes maintaining electrical power, designated temperature levels in the facility, cathodic protection of the reactor containment vessel, a continuous nitrogen gas purge through the reactor vessel, an alarm system, emergency lights, and telephone service. A communication center that is manned 24 hours per day and an administrative staff are required to fulfill all of the NRC requirements. The fiscal year 1996 cost for maintaining this facility in safe storage is $1.46 million per year plus a Construction of Facilities expenditure every 10 years of approximately $900,000 in 1997 dollars.



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CONTRACTOR STUDIES RECOMMENDED PROMPT DECOMMISSIONING

Teledyne Isotopes, Inc., completed a preliminary study in 1978 recommending that prompt decommissioning was the most economical option at a cost of about $7 million. NASA agreed to decommission, and escalated the initial cost estimate to $15 million to (1) include additional costs which NASA would incur and (2) consider inflationary factors as decommissioning would have to be done in phases over approximately a 6-year period. Because NASA did not provide the money needed for decommissioning, the PBRF had to be placed in safe storage.

In 1984, LeRC's Facilities Engineering Division funded a more comprehensive study to document the present condition of the PBRF. This study stated that:

- prompt decommissioning was the most economical option at a cost of $32 million.
- the decay of the radioactive material to extremely low levels, or license-free levels, was not apt to occur for several hundred years because of the presence of isotopes with long half-lives.
- essentially everything that would have to be done for prompt decommissioning would still have to be done a century from now even after a substantial period of decay.

The study states that the major point evident is that the isotopes still present at the PBRF are going to exist for a long time. It also concluded that, by the year 2073, safe storage would no longer be feasible and that dismantling would have to begin. The rationale provided was that the buildings and facilities will be approximately 113 years old at that time, and it is not likely that facility life could be extended beyond 2073 even with a good planned maintenance program. Furthermore, radiation levels from penetrating gamma radiation will have diminished by the year 2073 to a level which will permit more ordinary approaches to removal of the reactor core box.

The study further concluded that some benefits would be realized by delaying decommissioning. For example, occupational radiation exposure would be lower because of reduced radiation levels. However, the benefits were not cost effective when compared to the additional cost to maintain the facility until decommissioning occurred.

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ESCALATING COSTS OF DECOMMISSIONING

In addition to the cost of safe storage which is discussed in Appendix 2, the two cost components to actually decommission the PBRF are dismantling and radioactive waste disposal.

Dismantling is the disassembly of all structures. Complex dismantling techniques are required to prevent radiation exposure. All dismantling tasks necessary for decommissioning will have to be performed regardless of when decommissioning occurs. Therefore, the cost of dismantling increases (if only by inflation) each year decommissioning is delayed.

The most significant cost area--the cost of radioactive waste disposal--is increasing faster than inflation each year. Furthermore, according to the Electric Power Research Institute, Palo Alto, California, virtually all of the nation's 107 operating commercial nuclear units are expected to shut down by 2020 which will increase the demand for disposal sites and we believe could increase the cost.

The following table shows estimated cost figures for safe storage, dismantling and radioactive waste disposal. The first line of the table reflects the figures developed by Teledyne Isotopes, Inc., in its 1984 study. These numbers form the nucleus for OIG projections of the dismantling and radioactive waste disposal costs for the years 1997, 2005 and 2017. In determining our cost estimates, we used figures for safe storage provided to us by the Plum Brook Management Office, in addition to the dismantling and waste disposal costs from the 1984 Teledyne Isotopes, Inc. study, which is the latest information available.

Year	Safe Storage Cost from 1973 (a)	Dismantling Cost (b)	Waste Disposal Cost (c)	TOTAL COST Safe Storage, Dismantling & Waste Disposal
1985	$9,027,435	$29,043,000	$3,100,000	$41,170,435
1997	$24,684,243	$48,965,969	$47,894,054	$121,544,266
2005	$39,207,293	$78,044,315	$324,124,132	$441,375,740
2017	$71,619,113	$157,040,496	$5,706,318,636	$5,934,978,245

a. Escalation factor 4% per year, **does not include civil servants salaries and maintenance**. Maintenance spent in fiscal year 1986 was $325,000, and $900,000 is budgeted for fiscal year 1997.
b. Escalation factor 6% per year as stated in the 1984 Study.
c. Escalation factor 27% per year as stated in the 1984 Study.

NASA assumed a 4 percent escalation factor for the safe storage figures. NASA based this on the rate of inflation. We believe this to be a reasonable estimate.

The 1984 study had a number of assumptions. It assumed a 6 percent escalation factor for dismantling cost. Dismantling cost are mostly labor costs for disassembly of all radioactive structures. We also believe the 6 percent to be a reasonable estimate. The study assumed that all waste would be buried in the Barnwell, South Carolina facility because that was the only facility available to NASA at that time. We use this waste burial figure because even though there are less expensive options such as Envirocare of Utah, NASA's radioactive inventory lacks the documentation needed to identify if the waste could be accepted by this facility. The escalation factor of 27 percent is reasonable because NASA disposed of radioactive waste at Barnwell in 1996, and the cost of that disposal validated this assumption.

COST AVOIDANCE CALCULATION

The following table shows the costs that NASA could avoid if it would begin the decommissioning process on completion of updating the PBRF radioactive waste inventory. At an exit conference on July 11, 1997, NASA officials agreed that an updated inventory was needed. Officials stated that such an inventory would require about one year to complete at an estimated cost of $750,000. With a year needed to complete the inventory, and assuming that NASA could complete decommissioning within a 6-year period as it agreed to do back in 1981, the PBRF could be secured by the year 2005 and NASA could save about $5.5 billion. If the Agency decommissioned the PBRF in 2017, which is when NASA's possess-but-not-operate licenses expire, the projected cost to decommission could be about $5.9 billion. In determining our cost estimates, we used figures for safe storage provided to us by the Plum Brook Management Office, in addition to the dismantling and waste disposal costs from the 1984 Teledyne Isotopes, Inc. study, which is the latest information available. (For a further explanation of the figures see Appendix 4.)

DECOMMISSIONING COST	2005	2017	COST AVOIDANCE
Safe Storage Cost from 1973	$39,207,293	$71,619,113	$32,411,820
Dismantling Cost	$78,044,315	$157,040,496	$78,996,181
Waste Disposal Cost	$324,124,132	$5,706,318,636	$5,382,194,504
TOTAL COST	**$441,375,740**	**$5,934,978,245**	**$5,493,602,505**

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National Aeronautics and
Space Administration

Headquarters
Washington, DC 20546-0001

SEP 11 1997

Reply to Attn of: RB

TO: W/Assistant Inspector General for Auditing

FROM: R/Associate Administrator for Aeronautics and Space Transportation Technology

SUBJECT: Draft Audit Report on the Plumbrook Reactor Facility (PBRF) Assignment Number A-HA-97-001

This responds to Recommendation 1 and 2 of the subject audit.
Recommendation 1: NASA should ensure that the PBRF radioactive waste inventory is updated to provide the current information needed to best decide where to send the waste. If Envirocare is identified as a disposal alternative, we further recommend that NASA explore the feasibility of using the federal-wide contract for that facility. Concur. It is our understanding that Code JE will task the Lewis Research Center (LeRC) Environmental Management Office to conduct a study that will: 1) update the PBRF radioactive waste inventory; 2) identify potential waste disposal alternatives and associated costs; 3) investigate technological alternatives for reducing waste disposal costs, including volume reduction, waste treatment, or outright destruction; and 4) develop a business case to recommend the best alternative for addressing the Agency's liability associated with the PBRF. LeRC believes the cost of the study to update the radioactive waste inventory, as a precursor to a decision about the possibility of decommissioning, to be $750,000. LeRC and Code JE have agreed that Code JE will provide funding for the study from the Environmental Compliance and Restoration budget. The study will begin as soon as a suitable contractor is selected to perform the work. The study is expected to take approximately 12 months.

Recommendation 2: Code R should identify the best option for financing decommissioning and work with the NASA Administrator to secure that financing. It is our understanding that Code JE, in recent budget discussions with Agency senior management, the Agency Comptroller, and the Capital Investment Council, has determined that the decommissioning of the PBRF is an Agency, not an Enterprise responsibility. The study to be conducted by LeRC will recommend the best approach to decommissioning, supported by a detailed business case, for the approval by the Capital Investment Council. Accordingly, we recommend that in the Final Report, Recommendation 2 be reworded to read: "Code J should identify the best option for decommissioning the PBRF and present it to the Agency Capital Investment Council for approval."

Robert E. Whitehead

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