

ACTION SHEET 24

**The Power Reactor and Nuclear Fuel Development Corporation of Japan (PNC)
and
The United States Department of Energy (DOE)
for**

**Joint Development of Improved Safeguards Methods for Nondestructive Assay of Nuclear
Materials in Plutonium Canisters**

1. Introduction

Under Article II (Area of Cooperation) of the Agreement between PNC and DOE for Cooperation in Research and Development Concerning Nuclear Material Control and Accounting Measures for Safeguards and Nonproliferation (herein called the "Agreement"), dated September 15, 1993, DOE and PNC undertake to carry out a cooperative effort on the joint development of improved safeguards methods for nondestructive assay of nuclear materials in plutonium canisters.

2. Scope of Work

This Action Sheet provides for the development, installation, and test of a Nondestructive Assay (NDA) system to measure plutonium oxide in canisters being transferred between the feed storage area of PFPF and the process. The canister counter will be designed as an integral part of the remotely controlled transfer cart used for the transfer of canisters and will integrate the signals from two remotely mounted neutron detectors to determine the direction of nuclear material transfers.

The work performed under this Action Sheet shall be performed at the Los Alamos National Laboratory (LANL) and PNC facilities in accordance with the terms and conditions of the Agreement.

3. Program Management

LANL is responsible for joint development of improved safeguards methods for nondestructive assay of nuclear materials in plutonium canisters. Work to be done is identified in Appendix I and is limited to techniques for nuclear safeguards applications. PNC is responsible for providing design information, operating data, and other information required for completion of the joint studies. Appendix II identifies key personnel working on this project.

DOE and LANL shall work directly with PNC in planning tasks and resolving programmatic and technical questions. LANL shall start by developing and circulating separate work plans with projected milestones for each task and update the work plans with PNC concurrence as work progresses.

LANL shall prepare brief quarterly letter progress reports on each task and circulate them to PNC, DOE, and to other pertinent organizations as requested by PNC.

LANL and PNC shall prepare and present written and oral reports at meetings of the Permanent Coordinating Group (PCG).

4. Fiscal Management

PNC shall make a cash contribution with the sum of \$500,000 in United States dollars to conduct the activities related to the completion of joint studies into safeguards techniques at the PFPF line as defined in Appendix I of this Action Sheet in the following manner:

- a.) A contribution of \$500,000 in United States dollars shall be due and payable upon receipt of an invoice to be issued in JFY 1996 (Japanese Fiscal Year) after the date of signature of the Action Sheet.

All contributions by PNC shall be due and payable within thirty days of receipt by PNC of an invoice from DOE, subject to availability of appropriated funds to PNC.

DOE shall be responsible for the budget planning and financial management and shall make best efforts to complete the **PNC-funded** activities in the Appendix I satisfactorily and within the cash contribution by PNC. DOE costs are determined in accordance with DOE's policy for costing work it performs for others as set forth in 10 CFR Part 1009. The total cost to PNC for DOE's performance of work under this Action Sheet shall not, without PNC's prior consent, exceed the contributions set forth above.

DOE shall not begin or carry out work prior to entry into force of the Agreement and Action Sheet and receipt of the required payment in advance. Work shall not be continued after **funds** from PNC have been depleted.

Throughout the duration of work under this Action Sheet, PNC shall provide sufficient funds in advance to reimburse DOE for causing LANL to perform the work described in this Action Sheet, and DOE shall have no obligation to perform in the absence of adequate advance **funds**. Payment in advance from PNC shall be sufficient to cover the expected obligation and cash requirements of the work until a subsequent request for payment in advance can be made, collected, and recorded. In this regard, sufficient advance funds shall be provided to maintain, at a minimum, a continuous 90-days advance of **funds** for expected DOE fund requirements during the life of this Action Sheet. Advances shall be sufficient to cover expected termination costs that DOE would incur on behalf of PNC.

2.

5. Duration and Termination

This Action Sheet shall enter into force upon the later date of signature and shall continue in force for a one year period or until mutually agreed by the parties that all activities under this Action Sheet are completed.

For the Power Reactor and Nuclear Fuel
Development Corporation of Japan

Signature: Masami Katsuragawa

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Name: Masami Katsuragawa

Title: Director
International Division

Date: August 28, 1996

For the United States
Department of Energy

Signature: Kenneth E. Sanders ^{JMS}

Printed

Name: Kenneth E. Sanders

Title: Division Director

Date: 1 June 1996

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APPENDIX I

Joint Development of Improved Safeguards Methods for Nondestructive Assay of Nuclear Materials in Plutonium Canisters

1. Study Outline

This program involves the joint development of improved safeguards methods for nondestructive assay of nuclear materials in plutonium canisters. In this study, LANL will complete the following tasks:

1. Detailed design of PCAS #4 including MCNP measurement performance simulations.
2. Fabrication of the PCAS #4 system.
3. Development of software to integrate signals from two remotely mounted neutron detectors to determine the direction of nuclear material transfers.
4. Measurement performance tests at LANL facilities.
5. Installation and assistance with calibration of PCAS #4 at PFPF.
6. Manuals and system documentation.

2. Site

This work will be conducted at:

Los Alamos National Laboratory
Los Alamos, New Mexico, USA

and

Power Reactor and Nuclear Fuel Development Corporation
Tokai-mura, Japan

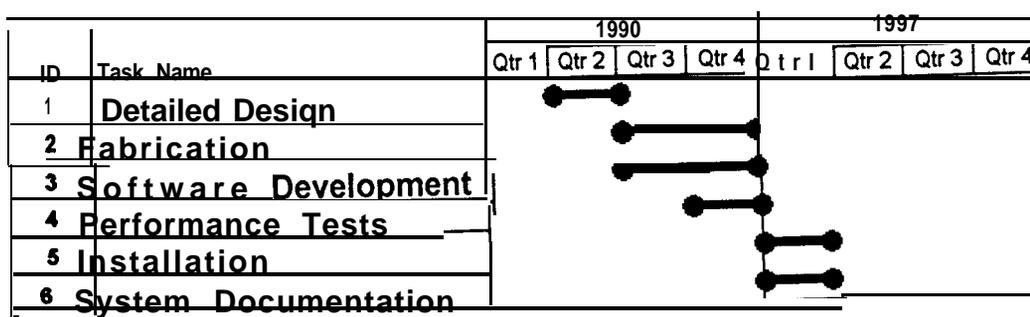
3. Programmatic Responsibilities

- A. LANL will be responsible for providing best efforts within the **funding** and schedule for the fundamental design work. Any tests or technical assistance shall be provided on a non-interference basis with existing LANL programs.
- B. PNC will be responsible for facility specific program direction and equipment installation interface.

As more detailed program plans are developed, specific responsibilities will be better defined and delineated.

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4. Schedule*



- * The schedule will be followed on a best-effort basis commencing on receipt of funding and availability of parts.

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APPENDIX II

Joint Development of Improved Safeguards Methods for Nondestructive Assay of Nuclear Materials in Plutonium Canisters

Power Reactor and Nuclear Fuel Development Corporation

1. PNC Headquarters

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Takeshi Kawamura, General manager
International Cooperation Office
International Division
Power Reactor and Nuclear Fuel Development Corporation
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Department of Energy

1. DOE Headquarters

Kenneth Sanders, Director
International Safeguards Division
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John Capps
International Safeguards Division
Office of Arms Control and Nonproliferation (NN-44, **GA045**)
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2. DOE-Albuquerque Operations Office

James R. Anderson, Director
Science and Technology Transfer Division
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3. Los **Alamos** National Laboratory

Howard O. **Menlove**
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