ACTION SHEET 3

Joint Development of Nondestructive Assay Techniques for the Nuclear Fuel Cycle Safety Engineering Research Facility (NUCEF)

Pursuant to the DOE/JAERI Agreement on R&D in Material Control,Accountancy, Verification, Authentication, and Physical Protection.

A. Objective

DOE and JAERI undertake to carry out a cooperative effort on development and application of integrated technique of hybrid-type nondestructive assay (NDA) of K-edge densitometer with X-ray fluorescence for safeguards system of NUCEF.

B. Current Activities Relevant to Nondestructive Assay (NDA) Safeguards Techniques at NUCEF Facility.

1. DOE activities

Los Alamos National Laboratory (LANL) has performed nondestructive assay techniques which includes the following activities:

- Development and installation of K-edge densitometer assay systems.

- Development of X-ray fluorescence technique for safeguards of special nuclear material.

2. JAERI activities

JAERI is installing an NDA system at NUCEF for its Nuclear Material Control.

C. Cooperative Activities

1. DOE through LANL is to design, fabricate, and deliver the hybrid-type NDA system of K-edge densitometer with X-ray fluorescence technique for safeguards of the special nuclear material (SNM) at NUCEF. A provisional schedule for activities covered under this action sheet is attached. The system to be supplied by LANL is described in the document:

<u>Specification for Design and Fabrication of Hybrid-Type NDA System,</u> April 1990.

2. JAERI is to install the system at NUCEF with assistance from LANL.

3. LANL is to verify proper installation of the system and make training available to users of the system.

4. Data obtained during the evaluation of the system at NUCEF will be exchanged between JAERI and LANL.

5. JAERI shall provide DOE with funding to carry out the work at LANL. The amount of the payment shall be 350,000 in U.S. dollars. Payment shall be made in the following manner:

   A contribution of 175,000 in U.S. dollars shall be due and payable upon receipt of an invoice to be issued upon or shortly after the date of approval by the PCG of this action sheet.

   A contribution of 140,000 in U.S. dollars shall be due and payable upon receipt of an invoice to be issued in June 1991.

   A contribution of 35,000 in U.S. dollars shall be due and payable upon receipt of an invoice to be issued in June 1992.

Approvals:

JAERI PCG Member	JAERI PCG Member
DOE PCG Member	DOE PCG Member

16 November 1990

Date

Provisonal Schedule of Activities

	Activity	Responsibility	Schedule/Status
1.	Order detector, x-ray generator and other electoronic components	LANL	March, 1991
2.	Mechanical design; conceptual and sufficient detail for the glove box design to be frozen	LANL	April, 1991
3.	Design review	JAERI/LANL	May, 1991
4.	Detail mechanical design	LANL	June, 1991
5.	Approval for fabrication	LANL	July, 1991
6.	Mechnical fabrication	LANL	August, 1991
7.	Software development	LANL	April-September, 1991
8.	System assemble and testing	LANL	August-October, 1991
9.	Measurement and testing	LANL	November, 1991-February, 1992
10.	Training and acceptance test	JAERI/LANL	March, 1992
11.	Shipping	LANL	April, 1992
12.	Installation	JAERI/LANL	TBD