TECHNICAL WORK PLAN

DOE-JO-008

FY 1986

**SUPPORT OF INTERNATIONAL
WASTE MANAGEMENT AGREEMENTS
IN THE FIELD OF
TRU WASTE MANAGEMENT**

DUPLICATE

**DEPARTMENT OF ENERGY
ROCKWELL INTERNATIONAL
WESTINGHOUSE**

**JOINT INTEGRATION OFFICE
ALBUQUERQUE, N.M.**

JANUARY 1986

DISTRIBUTION OF THIS DOCUMENT IS UNLIMITED

DISCLAIMER

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

DOE/JIO--008

DE92 000879

TECHNICAL WORK PLAN
SUPPORT OF INTERNATIONAL WASTE MANAGEMENT AGREEMENTS
IN THE FIELD OF TRU WASTE MANAGEMENT

FY 1986

Prepared for the TRU Waste Management Programs
Under the Auspices of the USDOE

MASTER

ds
DISTRIBUTION OF THIS DOCUMENT IS UNLIMITED

CONTENTS

INTRODUCTION

FY 1986 TECHNICAL WORK PLAN

1. Status Documentation
 - 1.1 US/UK Agreement
 - 1.2 US/FRG Agreement
 - 1.3 US/PNC-Japan Agreement
 - 1.4 US/CEA-France Agreement
2. Workshops, Seminars, and Meetings
3. Assessments of Foreign Technology

BACKGROUND ON PRIOR YEARS ACTIVITIES

SUMMARY OF BENEFITS

DOCUMENTS PREPARED UNDER SUPPORT OF INTERNATIONAL AGREEMENTS

INTRODUCTION

The USDOE has implemented technical information exchange agreements in the field of TRU waste management with the United Kingdom, Federal Republic of Germany, Japan, and France . This has been done in an effort to minimize research and development costs, and ensure maximum safety to man and the environment during waste handling and disposal.

In support of these agreements, the Joint Integration Office, Albuquerque, New Mexico, has the responsibility for coordinating activities, determining progress, analyzing foreign research and development efforts and waste management practices, and insuring the commitments are met for each of the agreements. In addition, a responsibility exists to determine the benefit and applicability to the Transuranic Waste Management Programs within the United States.

The Technical Work Plan for FY 1986 is intended to aid in this endeavor by providing a plan for activities in the following areas:

1. Status Documentation for Each of the TRU Waste Bilateral Agreements

Status documentation is to be prepared to give an overview of the TRU waste portion of the technical exchange agreements between the USDOE and the UKAEA, FRG-BMFT, CEA-France, and PNC-Japan. The overview is to present the level of activity within each of the topical subjects contained within an agreement, progress, and benefits being derived from the informational exchange. The documentation also contains information on procedures for document transfer, foreign travel and foreign visit requests, and a copy of the exchange agreement and amendments.

2. Implementation and Coordination of Workshops, Seminars, and Meetings

Implementation and coordination of technical meetings are provided to insure information is disseminated to the appropriate technical specialist and community within the USDOE complex.

3. Assessments of Foreign Technology

Assessments are to be made of the different countries research and development efforts and waste management practices to provide an insight on the value and benefits that may be derived from a particular agreement.

1986

TECHNICAL WORK PLAN

1. Status Documentation

Prepare and distribute the status documentation for the U.K., F.R.G., CEA-France, and PNC-Japan agreements. They will be entitled as follows:

1.1 1986 Status and Guidelines, TRU Portion of the Agreement Between the USDOE and PNC-Japan in the Field of Liquid Metal-Cooled Fast Breeder Reactors, 3Q/86

1.2 1986 Status and Guidelines, US/FRG Transuranic Waste Treatment Technology Exchange for the Technical Exchange and Cooperative Arrangement Between the USDOE and FRG/BMFT in the Field of Management of Radioactive Wastes, 3Q/86

1.3 1986 Status and Guidelines, USDOE/CEA-France in the Field of Radioactive Waste Management, 3Q/86

1.4 1986 Status and Guidelines TRU Waste Portion of the Agreement Between the USDOE and UKAEA in the Field of Liquid Metal-Cooled Fast Breeder Reactors, 3Q/86

2. Workshops, Seminars, and Meetings

Implement and coordinate the following workshops and meetings:

2.1 A US/FRG Workshop on Product Specification of TRU Waste Forms was held in Hanau, FRG, October 1985. The purpose of this workshop was to review criteria being developed in the respective countries and the methods being developed to show product conformance to those criteria. In addition to discussions, the facilities at ALKEM/NUKEM were toured.

Workshop Coordinators: US - W. A. Ross (PNL)
FRG - F. W. Lederbrink (ALKEM)
H. Brunner (NUKEM)

2.2 A USDOE/CEA-FRANCE Workshop on Equipment Design, Assay Instrumentation, and Transportation is being proposed to be held in Albuquerque, NM, April 28-30, 1986. The purpose of the workshop will be to exchange technical information within the subject areas--specifically, however, to discuss 1) waste processing facility designs and associated equipment, 2) NDA equipment for waste process control and sorting, and 3) transportation systems for moving the waste from the point of generation to a repository.

Principal coordination will be provided by J. Dieckhoner (USDOE/HQ) and F. Delobbeau (CEA-Paris). Technical Coordination will be provided by P. Hagan (JIO/AL) and J. Cluchet (CEA-Paris).

Petitions will also be made to visit the INEL to review the SWEPP and PREPP facilities, and the LANL to review the NDA equipment.

2.3 A USDOE/UKAEA Workshop on Waste Encapsulation is being proposed to be held at Oxford, England, April 14-16 1986. The purpose of the workshop will be to exchange technical information on encapsulation including pretreatment processes, comparison of matrices, and criteria of selection, gas generation, and packaging and containment.

Principal coordinators will be E. Delaney (USDOE/HQ) and tentatively J. Brammon (UKAEA-Risley), and Technical Coordination will be provided by P. Hagan (JIO/AL) and C. Tanner (BNFL-Risley). The U.S. and U.K. Team Leaders who are responsible for identifying participants and the agenda are L. Dole (ORNL) and G. Matthews (BNFL-Sellafield).

2.4 A USDOE/FRG-BMFT Workshop on Waste Minimization and Processing is being proposed to be held at the SRP, May 20-23 1986. The purpose of the workshop will be to exchange specific technical information on each countries methodologies for waste minimization, processing, i.e. shredding, immobilization, facility design, and issues such as gas generation.

Principal Coordination will be provided by C. Cooley (USDOE/HQ) and R. Randl (FRG-BMFT). Technical Coordination will be provided by P. Hagan (JIO/AL) and V. Schneider (ALKEM).

Site visits are to be petitioned to LANL, ORNL, to review the assay instrumentation facilities .

2.5 A USDOE/CEA-FRANCE Workshop on Tritiated Waste, Immobilization/Packaging, and Incineration is being proposed to be held at the Cadarache Facilities in France, June 25-27 1986. The purpose of the workshop will be to exchange specific technical information on 1) tritiated waste processing and off-gas systems, assaying, containment, packaging, storage, and disposal requirements, 2) Immobilization/Packaging methodologies as is in current practice and ongoing development efforts, and 3) incineration facilities including off-gas system, design, and specific application.

Principal coordination will be provided by J. Dieckhoner (USDOE/HQ) and F. Delobbeau (CEA-Paris). Technical Coordination will be provided by P. Hagan (JIO/AL) and J. Cluchet (CEA-Paris).

2.6 A USDOE/UKAEA Workshop on Overview of Waste Management Processing is being proposed to be held within the US, possibly at Albuquerque, NM, September 8-11, 1986. The purpose of the workshop is to exchange information on waste processing facilities design which would include sorting, assaying, and general processing such as shredding, compaction, incineration, and packaging.

Principal coordinators will be E. Delaney (USDOE/HQ) and tentatively J. Brammon (UKAEA-Risley). Technical Coordination will be provided by P. Hagan (JIO/AL) and C. Tanner (BNFL-Risley).

2.7 A USDOE/UKAEA Workshop on Size Reduction Facilities is being proposed to be held within the U.K. in the Spring of 1987. The purpose of the workshop will be to review current design and operation of size reduction facilities and discuss advances in technology that have potential for impact on the current and proposed facilities.

BACKGROUND ON PRIOR YEARS ACTIVITIES

FY 1982:

During FY 1982 two documents were prepared giving the status of the U.K. and F.R.G. agreements:

1. Guidelines and Status US/FRG Transuranic Waste Treatment Technology Exchange
2. Guidelines and Status Appendix III Waste Management Portion of the USDOE/UKAEA Agreement.

An evaluation was made of the UK and FRG research and development activities for plutonium-contaminated waste.

1. R. Y. Lowrey et.al., Evaluation of the United Kingdom and Federal Republic of Germany Technologies in the Field of Plutonium-Contaminated Nuclear Waste, TWSO 100-80, July 1982

Two workshops were held:

1. US/UK Workshop on Design of Size Reduction and Sorting Facilities, Albuquerque, New Mexico, May 11-14, 1982. The purpose was to exchange ideas and concepts for size reduction and sorting of large TRU waste components. Topics discussed were materials preparation, sectioning techniques, materials handling, sorting, treatment, and facility design.
2. US/FRG Workshop on Design of Gloveboxes, Westminster, Colorado, June 1982. Purpose was to review design criteria and materials of glovebox construction for facilitating a reduction in waste. Topics included physical and chemical characteristics, confinement reliability, environmental safety, supply and service systems, maintenance, and quality assurance.

FY 1983:

During FY 1983 four documents were prepared:

1. 1983 Status, Transuranic Contaminated Materials Portion of the USDOE/UKAEA Fast Breeder Reactor Agreement.
2. 1983 Status and Guidelines Document, US/FRG Transuranic Waste Treatment Technology Exchange and Cooperative Arrangement Between the USDOE AND FRG/BMFT in the Field of Management of Radioactive Wastes, TLO 83-3, April 1983.

3. R. A. Brouns, W. J. Bjorklund, P. G. Hagan, and L. K. Holton, Assessment of International Commercial Waste Treatment Technology for High-Level and Transuranic-Contaminated Nuclear Waste, February 1983.
4. Report from the TRU Contaminated Materials Exchange Group to the Fuel Cycle Steering Committee, November 1981 to July 1983.

Two workshops and four major meetings were held:

1. US/FRG Workshop on Standardization of Methods for Measuring Migration of Radionuclides in Geomedia, Berlin, F.R.G., October 1982. Purpose was to exchange information on mechanistic interactions existing between actinides/fission products and geologic media and also the prediction of movement of radionuclides over long periods of time.
2. US/FRG Workshop on Size Reduction and Decontamination Facilities, Karlsruhe, F.R.G., June 1983. Purpose was to exchange information on waste size reduction, processing, and facility design.
3. TRU Waste Technical Specialist Team Visit to Japan, June 1983. Objectives were to review Japan's waste management technologies and establish a working relationship with the Japanese.
4. Sodium Waste Technical Specialist Team Visit to Japan, June 1983. Objective was to review Japan's treatment of sodium contaminated waste, bulk storage and disposal, and criteria for operation and disposal.
5. US/FRG Meeting on Waste Management Systems and Analysis, F.R.G., June 1983. Purpose was to discuss definitions, inventories, waste arisings, institutional responsibilities, regulatory requirements, strategies, modeling, and future directions.
6. US/UK Meeting on Size Reduction Facilities, Westminster, Colorado, May 1983. Purpose was to review progress on the RFP Advanced Size Reduction Facility and review progress on the U.K. Plutonium Waste Treatment Facility.

FY 1984:

Documents prepared during FY 1984 were as follows:

1. 1984 Status and Guidelines, TRU Portion of the Agreement Between the USDOE and PNC-Japan in the Field of Liquid Metal-Cooled Fast Breeder Reactors, TLO-84-9, Defense Transuranic Waste Program, June 1984.
2. 1984 Status and Guidelines TRU Waste Portion of the Agreement Between the USDOE and UKAEA in the Field of Liquid Metal-Cooled Fast Breeder Reactors, TLO 84-8, Defense Transuranic Waste Program, August 1984.

3. 1984 Status and Guidelines Document, US/FRG Transuranic Waste Treatment Technology Exchange for the Technical Exchange and Cooperative Arrangement Between the USDOE and FRG/BMFT in the Field of Management of Radioactive Wastes, TLO 84-7, TWSO, August 1984.

An evaluation was made of Japanese technology to bring together a more complete understanding of their waste management technologies. The methodology used was to 1) identify specific Japanese objectives and strategies, and 2) detail their research and development activities to determine the relevancy to U.S. objectives.

1. Evaluation of Japanese Technology in the Field of TRU Waste Management, TLO 84-3, June 1984.

Proceedings from two workshops were prepared and distributed to the USDOE and its prime contractors so that the informational transfer would have a wider distribution within the USDOE complex.

1. Proceedings of the US/FRG Bilateral Workshop, Standardization of Methods for Measuring Migration of Radionuclides in Geomedia, Berlin, Munich, West Germany, October 25-29, 1982, TLO 84-4.
2. Proceedings of the US/FRG Workshop on Immobilization of TRU Wastes in Cement, Richland, Washington, October 5-7, 1983, TLO 84-11.

To provide for planning of the international TRU waste management activities for FY 1984, the following document was prepared:

1. Transuranic Waste Management Systems Office, Functional Area Plan for Support of International Waste Management Agreements in the Field of Plutonium-Contaminated Nuclear Waste, FY 1984, TLO 84-2, August 1983.

Two workshops were held to provide for the transfer of specific technical information:

1. US/FRG Workshop on Immobilization of TRU Wastes in Cement, Richland, Washington, October 5-7, 1983. The purpose of the workshop was to discuss the qualification of cement/concrete as a solidification material for TRU waste. Topics included leaching behavior of Pu and actinides, long-term stability for cement products and concrete, solubility of radionuclides in brines, thermal stability of cement products, mechanical impact, alpha radiolysis, cementation processing and quality assurance, and immobilization of spent fuel hulls and dissolver sludge.

2. A US/FRG Workshop was held on Incineration Design and Operational Performance, September 25 to October 3, 1984, at Arnhem, The Netherlands, and additional discussions and plant tours were made at the FLK-incinerator in Mol, Belgium, KfA (Juelich), KfK (Karlsruhe) and NUKEM (Hanau). Workshop topics covered system descriptions for low and high temperature combustion including feed systems, off-gas treatment, materials of construction process control and maintenance.

Meetings Within Foreign Countries

1. Visits to France and the United Kingdom were made by personnel from the USDOE and several prime contractors. The purpose of the trip was to implement working components within the USDOE/France-CEA Waste Management Agreement and to arrange for subsequent activities within the TRU Waste Portion of the USDOE/UKAEA FBR Agreement. The visit to France, June 10-18, 1984, included site visits to Saclay, Marcoule, Valduc, and Centre de la Manche, and the visit to the United Kingdom, June 20-21, 1984, included site visits to BNFL Risley, and Sellafield.
2. A Senior Development Engineer at Battelle-PNL, visited PNC-Japan, November 1983, to investigate Japan's microwave heating and melting. Objectives for the U.S. are 1) waste treatment for volume reduction and immobilization of incineration ash and acid digestion residue, 2) to boost liquid-fed ceramic melters for HLW, and 3) possibly treat cladding hulls.
3. Two RI-RFP specialists visited PNC-Japan, May 14-17, 1984, to exchange information on TRU waste system analysis, i.e. Japanese strategy and planning for waste handling, storage/disposal, and regulatory and licensing requirements. The travelers were L. J. Smith, Associate Program Manager, RI-RFP (also U.S. Technical Representative for the subject area) and R. H. Karlsson, Manager Chemistry Technology, RI-RFP. The itinerary included a visit to the PNC Headquarters in Tokyo and the Tokai Works and O-Arai Engineering Center.
4. A visit to the F.R.G. and U.K. was made February 6-13, 1984 by two design engineers, one from SRL and the other from LANL. Their purpose was to investigate the design and operation of bagless posting systems (ways of taking waste out of glovebox lines without the use of plastic bags).

Meetings Within the U.S.

1. The Fourth Bilateral Planning Meeting between the USDOE and BMFT-FRG for the Technical Exchange and Cooperative Arrangement in the Field of Management of Radioactive Wastes was held in Park City, Utah, August 30-31, 1984. The purpose of this meeting was to review cooperative waste management activities of the past year, review and approve plans for the coming year, and negotiate an extension of the umbrella agreement and new project agreements.

2. A meeting was held between technical representatives of RI-RFP and ALKEM - FRG to discuss waste management technologies and systems issues. The meeting was held at the Holiday Inn, Northglenn, CO, August 28, 1984. The FRG visitors were H. Roepenack (General Manager, ALKEM GmbH) and V. Schneider (Head of Chemical Department, ALKEM GmbH, and also Technical Coordinator for the USDOE/BMFT Waste Management Agreement).
3. Three Japanese nationals visited the RFP area for discussions on waste management issues with personnel from the Rocky Flats Plant. Arrangements were made for informal, nonclassified, and off-site discussions, April 9, 1984, in the technical fields of incineration, size reduction and sorting facilities, and waste minimization. The visitors, who were from the Japan Atomic Energy Research Institute, were T. Tsujino (Chief, Fuel Reprocessing Laboratory), N. Moriyama (Principal Researcher, Low-Level Waste Management Laboratory), and Y. Akutsu.
4. Two French nationals from the Commissariat a l'Energie Atomique (CEA-Cadarache), P. Pottier (Chef du Bureau Evaluation et Contro'le des Confinements) and M. Baudin (Manager, CEA Department for R&D) visited LANL and SNL. Subjects of discussion at LANL were treatment and conditioning of alpha waste, NDA, and Pu chemistry in waste; and the subjects at SNL were seabed disposal and WIPP.
5. A visit to the U.S. was made by three PNC-Japan technical specialists, December 16-21, 1984. Their purpose was to discuss size reduction at SRL, non-destructive assay and size reduction at LANL, and decontamination, size reduction, and wet/dry incineration at RFP.
6. Two PNC-Japan managers, K. Uematsu and M. Katsuragawa, visited HEDL to discuss the BRET and SAF, BNWL to discuss vitrification and criticality experiment, and RFP to discuss TRU waste handling.

FY 1985

Documents prepared during FY 1985 were as follows:

1. Proceedings of the US/UK Workshop on Reduction in Waste Arisings, Oak Ridge National Laboratory, Oak Ridge, Tennessee, May 13-15, 1985, Compiled by S. Wrobel, JIO-RI, October 1985.
2. Transuranic Waste Management Systems Office Functional Area Plan for Support of International Waste Management Agreements in the Field of Plutonium-Contaminated Nuclear Waste, FY 1985.

During FY 1985 three workshops were held:

1. US/UK Workshop on Incineration Design and Operational Performance. The workshop took place at the BNFL facilities, Risley, U.K., October 4-5, 1984. Topics covered system descriptions for low and high temperature combustion including feed systems, off-gas treatment, materials of construction process control and maintenance.

Technical Coordinators: US - D. L. Ziegler (RI-RFP)
UK - D. Kenny (BNFL)

2. A US/FRG Workshop on "Radionuclide Migration Chemistry" was held at ANL, December 3-5, 1984, followed by travel to ORNL for wrap-up sessions, December 6-7, 1984. The purpose of the workshop was to exchange information on the chemistry (solubilities, complex formation, oxidation states, etc.) of radionuclides in geologic environments. This information is to be used in modeling radionuclide transport.

Workshop Coordinators: US - G. S. Barney (RHO), M. Seitz (ANL)
FRG - K. E. Maass (HMI-Berlin), J. Kim (TUM)

3. A US/UK Workshop on Reduction in Waste Arisings was held at ORNL, May 13-15 1985. The purpose was to exchange ideas in ways in which waste generation can be minimized through administrative control, materials substitution, equipment utilization, and process optimization. Organization from the U.S. perspective was through the National Working Group for Reduction in TRU Waste Arisings.

Workshop Coordinators: U.S. P. G. Hagan (RI-RFP)
U.K. L. Johnson (BNFL-Risley)

There was only one meeting held during FY 85 under the auspices of the DTWP.

Meetings within the U.S.

1. A meeting was held with two representatives from France (J. Lewi and J. Gentil) at DOE Headquarters , November 29-30, 1984. Topics discussed were Management of TRU Waste, Management of Low Level Waste, Concentration Limits, and Threshold Quantity Concept.

SUMMARY OF BENEFITS

<u>Country</u>	<u>Technology</u>	<u>Potential Application</u>
Japan	microwave	melting for volume reduction and solidification, i.e. ashes, sludges, and HEPA filters
	electro slag melting	volume reduction of metals
	new decontamination technology	removing waste from the TRU category and refurbishing failed equipment
	denitration	provides for elimination of processing steps for conversion to a solid
FRG	acid digestion	incineration of recoverable scrap and destruction of spent resins
	pyrolysis incinerator	destruction of solvents
	immobilization	ceramic waste forms operational immobilization with cement vitrification, and quality assurance chemistry and studies of actinide migration
	size reduction	operational experience (12 years)
UK	immobilization	fixation in cement followed by glazing pelletization, sintering and vitrification
	electrochemical	in situ decontamination improved resin processing
	laser cutting	RH and CH waste processing
France	transportation	transportation systems and institutional issues similar to U.S.; therefore an exchange on design, testing, etc.
	waste treatment of tritiated waste	assaying, off-gassing, containment packaging and storage, disposal

DOCUMENTS PREPARED UNDER INTERNATIONAL SUPPORT

1. Guidelines and Status, US/FRG Transuranic Waste Treatment Technology Exchange for the Technical Exchange and Cooperative Arrangement Between the USDOE and the FRG/BMFT in the Field of Radioactive Wastes
2. Guidelines and Status, Appendix III, Waste Management Portion of the USDOE/UKAEA Fast Breeder Reactor Agreement
3. US/UK Workshop on Design of Size Reduction and Sorting Facilities
4. R. Y. Lowrey et.al., Evaluation of the United Kingdom and Federal Republic of Germany Technologies in the Field of Plutonium-Contaminated Nuclear Waste, July 1982
5. 1983 Status, Transuranic Contaminated Materials Portion of the USDOE/UKAEA Fast Breeder Reactor Agreement.
6. 1984 Status and Guidelines Document, US/FRG Transuranic Waste Treatment Technology Exchange and Cooperative Arrangement Between the USDOE AND FRG/BMFT in the Field of Management of Radioactive Wastes, April 1983.
7. R. A. Brouns, W. J. Bjorklund, P. G. Hagan, and L. K. Holton, Assessment of International Commercial Waste Treatment Technology for High-Level and Transuranic-Contaminated Nuclear Waste, February 1983.
8. Report from the TRU Contaminated Materials Exchange Group to the Fuel Cycle Steering Committee, November 1981 to July 1983.
9. 1984 Status and Guidelines, TRU Portion of the Agreement Between the USDOE and PNC-Japan in the Field of Liquid Metal-Cooled Fast Breeder Reactors, TLO-84-9, Transuranic Waste Program, June 1984.
10. 1984 Status and Guidelines TRU Waste Portion of the Agreement Between the USDOE and UKAEA in the Field of Liquid Metal-Cooled Fast Breeder Reactors, TLO 84-8, Transuranic Waste Program, August 1984.
11. 1984 Status and Guidelines Document, US/FRG Transuranic Waste Treatment Technology Exchange for the Technical Exchange and Cooperative Arrangement Between the USDOE and FRG/BMFT in the Field of Management of Radioactive Wastes, TLO 84-7, August 1984.
12. Evaluation of Japanese Technology in the Field of TRU Waste Management, TLO 84-3, June 1984.

13. Proceedings of the US/FRG Bilateral Workshop, Standardization of Methods for Measuring Migration of Radionuclides in Geomedia, Berlin, Munich, West Germany, October 25-29, 1982, TLO 84-4.
14. Proceedings of the US/FRG Workshop on Immobilization of TRU Wastes in Cement, Richland, Washington, October 5-7, 1983, TLO 84-11.
15. Transuranic Waste Management Systems Office, Functional Area Plan for Support of International Waste Management Agreements in the Field of Plutonium-Contaminated Nuclear Waste, FY 1984. TLO 84-2, August 1983.
16. Proceedings of the US/UK Workshop on Reduction in Waste Arisings, Oak Ridge National Laboratory, Oak Ridge, Tennessee, May 13-15, 1985, Compiled by S. Wrobel, JIO-RI, October 1985.
20. Transuranic Waste Management Systems Office Functional Area Plan for Support of International Waste Management Agreements in the Field of Plutonium-contaminated Nuclear Waste, FY 1985.
21. Technical Work Plan, Support of International Waste Management Agreements in the field of TRU Waste Management, FY 1986, JIO/AL, January 1986.

END

**DATE
FILMED**

11/20/91

11