PIT 9 PROJECT: A PRIVATE SECTOR INITIATIVE

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ABSTRACT. The Pit 9 Comprehensive Demonstration is intended to demonstrate a cost-effective approach to remediate an Idaho National Engineering Laboratory (INEL) waste disposal pit through a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Interim Action. The remediation will include additional requirements, if needed, to provide high confidence that only minor additional work would be necessary to accomplish the final closure as part of the overall final closure strategy for the INEL's Subsurface Disposal Area (SDA).

Pit 9 is an inactive waste disposal pit located in the northeastern corner of the SDA at the INEL's Radioactive Waste Management Complex (RWMC). It covers approximately 1 acre. The waste within Pit 9 is primarily transuranic waste generated at the Rocky Flats Plant and additional wastes, both hazardous and low-level radioactive, from generators at the INEL.

The project mission is to remove, treat and dispose of all wastes in Pit 9 identified as risk drivers at a minimum cost to DOE using a private sector, turnkey, "grave-to-grave" solution while complying with all laws and regulations. The overall project objective is to find a "faster, better, cheaper" approach to cleanup at a DOE waste site. Other objectives include the establishment of a transuranic/radionuclide cleanup level and determining actual private sector capabilities.

Technical, financial and contractual information and lessons learned from the Pit 9 project will be factored into the planning for remediation of other DOE waste sites and be used to determine the feasibility of obtaining private sector participation in DOE/M&O environmental restoration activities.

INTRODUCTION

The Pit 9 Comprehensive Demonstration Project is a U.S. Department of Energy (DOE) initiative and pilot project supporting remediation of the Idaho National Engineering Laboratory (INEL) Radioactive Waste Management Complex (RWMC) Subsurface Disposal Area (SDA) and obtaining private sector participation in DOE Environmental Restoration Programs. The project would be the first large-scale remediation of a transuranic-contaminated hazardous waste burial site.

The purpose of the Pit 9 cleanup is to expedite the overall cleanup at the RWMC and to reduce the risks associated with the potential migration of Pit 9 wastes to the Snake River Plain Aquifer. The project will achieve the following technical goals:

- Effect a near-term remediation of plutonium, americium, and identified risk drivers (hazardous waste) in Pit 9 at a minimum cost to DOE such that minimal or no future remediation is required

- Eliminate Pit 9 as a potential source of environmental contamination thereby protecting human health and the environment from possible future exposure to contaminants located within Pit 9

- Demonstrate private industry's capabilities for remediating transuranic-contaminated mixed waste sites

In accordance with the INEL Federal Facility Agreement and Consent Order (FFA/CO) between the Idaho Department of Health and Welfare (IDHW), the Environmental Protection Agency (EPA), and the U.S. Department of Energy (DOE), activities at Pit 9 would be conducted within interim action guidelines under the 40 Code of Federal Regulations (CFR) Part 300 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)(1). After screening the existing remedial technologies that could be used to clean up a mixed waste site such as Pit 9, the Agencies determined that the preferred alternative for cleanup of Pit 9 is a combination of physical separation, chemical extraction, and stabilization technologies.

SITE BACKGROUND

Pit 9 is located in the northeast corner of the SDA at the RWMC. Waste was placed in Pit 9 from November 1967 to June 1969. It presently has an overburden that averages about 1.8 meters thick. There was approximately 7,000 m^3 of overburden, 4,200 m^3 of packaged waste, and 9,800 m^3 of soil between and below the buried waste at the time of Pit 9 closure. The depth of the pit from ground surface to bedrock is approximately 5 meters and the horizontal dimensions are approximately 39 by 116 meters.

The inventory of wastes buried in Pit 9 was estimated from available shipping records and the Radioactive Waste Management Information System (RWMIS). The waste in Pit 9 is primarily transuranic (TRU) waste generated at the Rocky Flats Plant and additional wastes (primarily low-level waste) from waste generators at the INEL. Approximately 3,080 m^3 of waste buried in Pit 9 was generated at the Rocky Flats Plant, and consisted of drums of sludge (contaminated with a mixture of transuranic and organic solvents), drums of assorted solid waste, and cardboard boxes containing empty contaminated drums. Approximately 4,000 drums: 2.500 boxes (approximately 1,500 contained empty contaminated drums); and 80 unspecified containers of waste were buried in Pit 9. In general, the boxes were disposed at the north end of the pit and the drums were dumped in the south end, although intermixing of containers in the pit did occur due to flooding in 1969.

REGULATORY BACKGROUND

In addition to the preferred alternative, four remedial alternatives were presented for public review and comment in the ***Revised Proposed Plan for a Cleanup of Pit 9 at the Radioactive Waste Management Complex, Idaho National Engineering Laboratory***: No Action, In-Situ Vitrification, Ex-Situ Vitrification, and Complete Removal, Storage, and Off-Site Disposal (2). The proposed use of chemical extraction/physical separation/stabilization technologies for Pit 9 remediation was generally supported by the public, and a draft Record of Decision (ROD) is scheduled for regulatory approval in May 1993[a].

In accordance with the U.S. Department of Energy orders, the National Environmental Policy Act (NEPA) and CERCLA processes are being integrated for the project. The CERCLA proposed plan for the Pit 9 interim action incorporated appropriate NEPA values and served, in conjunction with a supplementary document, as the environmental assessment.

Pit 9 was designated Operable Unit (OU) 7-10 in Waste Area Group (WAG) 7 in the INEL FFA/CO. The Pit 9 interim action is intended to reduce the risks associated with waste materials within Pit 9 only. Contaminants in the vadose zone and their effect on the Snake River Plain Aquifer in the vicinity of the SDA will be evaluated in the OU 7-08 Remedial Investigation/Feasibility Study (RI/FS), and remedial action will be undertaken as necessary. A complete evaluation of all risks associated with CERCLA actions for all TRU contaminated pits and trenches, including a re-evaluation of Pit 9, will be conducted as part of the TRU-Contaminated Pits and Trenches OU 7-13, RI/FS. A complete evaluation of all risks associated with CERCLA actions at WAG 7 will be conducted as part of the final comprehensive OU 7-14 RI/FS.

The regulatory approach in the draft ROD supports a near term remediation of major risk drivers in the pit such that minimal or no future remediation is required. Where proof-of-process and limited production testing do not achieve cleanup or cost effectiveness goals, Pit 9 contamination will be addressed in an amendment to the ROD or in the RI/FS for the TRU Contaminated Pits and Trenches (OU 7-13).

PROJECT DESCRIPTION

Procurement History

Over the last several years, private industry has been lobbying the U.S. Department of Energy (DOE) to include them in environmental restoration activities. They cited readily available technology which could be used to rapidly remediate hazardous mixed-waste sites. In response, DOE took the initiative to establish the cleanup of Pit 9 as an innovative project, with one of the goals to include private industry participation.

EG&G Idaho, Inc. is tasked by DOE with coordinating the remediation of Pit 9. The strategy developed and implemented to carry out that remediation involves a three-phase project. The phases: (1) Proof-of-Process (POP) test, (2) Limited Production Test (LPT), and (3) full-scale remediation, are designed to allow demonstration of proposed technologies and correction of problems in controlled environments such that remediation is done in a safe, cost-effective, and rapid manner.

With that precept as the foundation of the project, Request for Proposal (RFP) No. C91-133136 was issued November 19, 1991, to qualified respondents to the Commerce Business Daily (CBD) advertisements of March 14, 1991; March 28, 1991; May 2, 1991; and any other prospective firms as

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a. INEL Environmental Restoration Program. Draft Record of Decision For Pit 9 at the Radioactive Waste Management Complex Subsurface Disposal Area At the Idaho National Engineering Laboratory. Idaho National Engineering Laboratory, Idaho Falls, ID (1993).

a result of a procurement survey[b]. Three teams responded to the RFP and submitted technical proposals on January 20, 1992. A Source Evaluation Board (SEB) consisting of technical experts throughout EG&G Idaho reviewed each proposal for the next six weeks and evaluated their technical adequacy based on criteria contained in the RFP. Technical clarifications with each team were also conducted on location. At the end of February, the SEB concluded that the Waste Management Environmental Services (WMES) and Lockheed Corporation proposals were essentially equivalent but technical questions needed to be addressed[c,d]. The third team was dropped from further consideration. A request for discussion of technical issues was sent in March, and responses received in April 1992. The SEB evaluated the revised proposals and concluded again that both the WMES and Lockheed proposed processes were technically equal, but with reservations associated with the degree of technological development and process integration. The decision was made to revise the project strategy and have both teams conduct an expanded POP test, at the conclusion of which one team would be selected to continue the project as originally planned.

The expanded POP scope was explained to both subcontractors and upon acceptance extensive negotiations conducted. During negotiations, a detailed Scope of Work (SOW) was developed, terms and conditions agreed to, and a schedule for project deliverables finalized. The agreements reached were formalized into letter subcontracts executed by EG&G Idaho on November 12, 1992, specifying a SOW that could be performed under an $8 million, fixed-price, lump-sum, pay-for-performance, one year contract[e].

Project Strategy

The individual processes for this action are proven technologies, but the integration of the process systems has not been demonstrated on waste forms such as those found in Pit 9. The test phases will be performed within the interim action for Pit 9 before full-scale remediation to confirm that treatment standards can be met and to identify the most cost effective technique or combination of techniques for use in the remedial design. Both test phases must be successfully completed before full-scale remediation. Decontaminating and demobilizing the facility is part of the proposed action.

The proof-of-process tests will demonstrate critical aspects of the preferred alternative and prove that the integrated processes to be used are effective in achieving cleanup goals. The POP tests include design, fabrication, and operation of pilot scale and demonstration equipment and systems, and laboratory analyses. Surrogates of plutonium and americium will be used for the tests which will be conducted at subcontractor facilities not located on the INEL site.

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b. EG&G Idaho, Inc. Request for Proposal (RFP) No. C91-133136 - Radioactive Waste Management Complex (RWMC) - Pit 9 Comprehensive Demonstration. Idaho National Engineering Laboratory, Idaho Falls, ID (1991).

c. Waste Management Environmental Services, Inc. A Proposal to EG&G Idaho, Inc. Radioactive Waste Management Complex (RWMC) Pit 9 Comprehensive Demonstration. Washington, D.C. (1992).

d. Lockheed Corporation. A Proposal in Response to RFP No. C91-133136, Submitted for Idaho National Engineering Laboratory Radioactive Waste Management Complex Pit 9 Comprehensive Demonstration. Las Vegas, NV (1992).

e. EG&G Idaho, Inc. EG&G Idaho, Inc. Letter Subcontract No(s). C93-170221 and 170222 For the Proof of Process Tests (POP). Idaho National Engineering Laboratory, Idaho Falls, ID (1992).

The major phases of the WMES POP test program include the following:

- Radiological instrumentation demonstration performed at Pajarito Scientific Corporation facility in Los Alamos, New Mexico

- Off-site laboratory demonstration performed at the WMES Clemson Technical Center (CTC) in Clemson, South Carolina

- Treatment process demonstration performed at the CTC

- Product waste form demonstration performed at CTC.

The key element of the WMES POP, the treatment process demonstration, will demonstrate the ability of the chemical separation process(es) to perform as an integrated system at pilot or engineering scale for a minimum of 100 hours on a schedule that would be used for actual remediation.

The Lockheed POP test program includes:

- Soil processing and off-site laboratory demonstration performed at Lockheed's remediation testing laboratory in Las Vegas, Nevada

- Plasma waste processing demonstration performed at the Component Development and Integration Facility (CDIF) in Butte, Montana

- Plasma melter remote maintenance demonstration at Ukiah, California

- Instrumentation demonstration performed at the Pajarito Scientific Corporation facility in Los Alamos, New Mexico.

The key element of the Lockheed POP, the plasma waste processing demonstration, must demonstrate the ability of the thermal stabilization system and off-gas exhaust system to operate for a minimum of 100 hours on a schedule that would be used for actual remediation at a minimum feed rate of 136 to 227 kilograms per hour.

The limited production test is intended to demonstrate that all integrated systems will function as proposed and demonstrate reliability of the systems before starting full-scale remediation. The limited production test will involve the same processes, area, and impacts as the remediation phase but on a smaller scale. Surrogates of plutonium and americium would be used initially in the test before materials from Pit 9 are processed through the system.

The final phase will be full-scale remediation after successfully completing the limited production tests. Under the criteria for residuals returned to Pit 9, or for waste left in place in the pit, the concentration of contaminants will be reduced based on an industrial risk scenario of 1 in 10,000 for carcinogenic risk or <1 hazard index for noncarcinogenic health effects. To attain the performance goal, the treatment standards for contaminants in Pit 9 are:

1. Average concentrations of transuranic isotopes in residuals (i.e., treated waste streams) being returned to Pit 9 would be <10 nanocuries per gram (nCi/g)

2. Wastes and/or materials in Pit 9 containing >10 nCi/g transuranics will be treated to reduce the volume by >90% (in addition to meeting the treatment standard in 1 above) before being returned to the pit

3. For materials being treated and returned to Pit 9, all Applicable or Relevant and Appropriate Requirements (including land disposal restrictions or LDRs) will be met.

During full-scale remediation an estimated 14,000 m^3 of soil and other materials contaminated with hazardous materials and TRU wastes would be excavated from the pit. The entire pit would be excavated, with materials being segregated for treatment at the dig face by using radiation monitoring equipment for identifying materials containing >10 nCi/g. The amount of material containing >10 nCi/g that would be treated is estimated to be 7,000 m^3. The concentrated waste product requiring long term storage would be stored in a module that meets requirements of the Resource Conservation and Recovery Act (RCRA) and other Applicable or Relevant and Appropriate Requirements (ARARS).

DESCRIPTION OF REMEDIAL TECHNOLOGIES

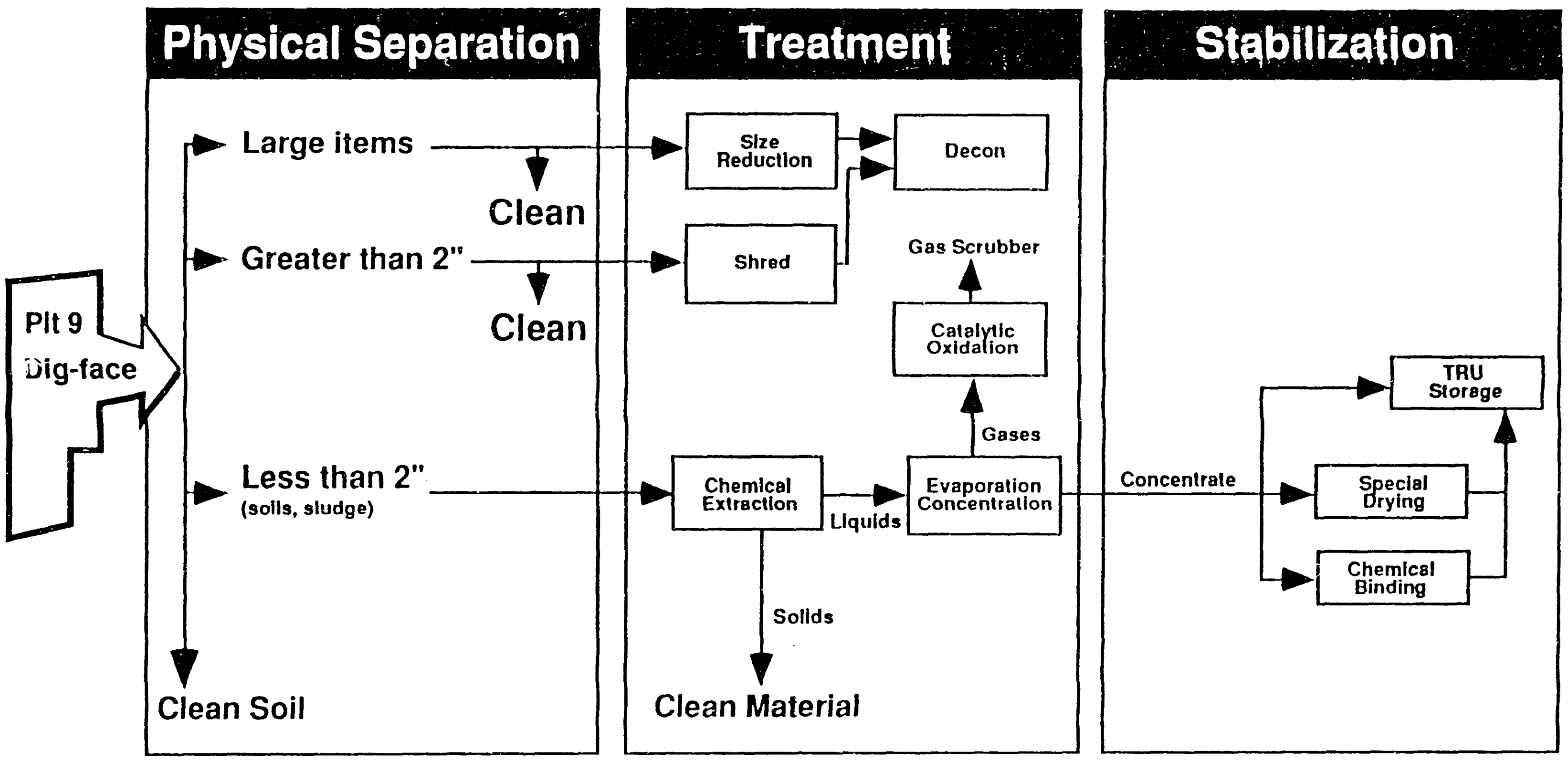
The processes proposed by the two teams include technologies used in other applications. Lockheed's TRUclean process, used for decontamination of soils, has been successfully demonstrated on a pilot and full-scale basis in various applications including operation on plutonium contaminated soils surrounding the LE-1 facility on Johnston Atoll. In addition, Lockheed's B.E.S.T. process is the best demonstrated available technology (BDAT) for removal of hazardous organics from soils and sludge, and will be adapted for application on plutonium contaminated soils through the Pit 9 POP. WMES' ACT*DE*CON process, used for removal of actinides from soils, was successfully demonstrated for the DOE in 1991 and WMES' PO*WW*ER system is proven technology involving evaporation and catalytic oxidation technologies. In sum, each of the proposals consist of unique combinations of chemical extraction, physical separation, and stabilization technologies for treatment of transuranic contaminated waste as described in the following section.

WMES Process Description

Figure 1 depicts the simplified WMES process system.

Retrieval/Physical Separation System. Under this approach, hazardous substances would be retrieved in a fixed, concrete, double-containment structure under negative pressure built over the entire pit at the start of the project. The pit would be worked using remotely operated excavating equipment enclosed in a curtained area to separate the excavation area from the rest of the pit. The curtained area enclosure would confine contaminated dust and volatile organic contaminants at the dig site. The excavator and associated manipulating equipment would perform an initial segregation of waste materials in the pit into five waste streams: combustibles (paper, plastics, and rags), wood, drums and metals, soil and sludge, and non-soils and large items. This initial segregation would simplify the overall material handling and processing systems downstream.

A dig face radiation monitor would be used to make a gross radioactivity level assessment of the waste at the dig face during excavation activities. The radiation monitor would have sufficient mobility to allow placement within a few inches of any area of the dig face. The readings would determine how the material would be handled as it is excavated. If readings are high, the material would be mixed with scoops of lower reading material. In this way, overall treatability of the material would be enhanced and chance of criticality minimized.


Physical Separation
Treatment
Stabilization
Pit 9
Dig-face
Large items
Greater than 2"
Less than 2"
(soils, sludge)
Clean
Clean
Clean Soil
Size Reduction
Shred
Decon
Gas Scrubber
Catalytic Oxidation
Gases
Chemical Extraction
Liquids
Evaporation Concentration
Solids
Clean Material
Concentrate
TRU Storage
Special Drying
Chemical Binding

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Following initial segregation, wastes would be placed in specialized, color-coded tram containers. The containers would then enter the waste transport system, which includes a conveyer system for transporting the trams to the material handling facility from the dig site. Additional retrieval system process equipment includes a compactor to compact drums, a specialized grapple to pick up drums and drum remnants, and teleoperated manipulators to perform waste handling and segregation tasks in the pit such as cutting and drilling. Once wastes arrive in the material handling facility they would be segregated (using remotely controlled equipment) into separate waste streams at multiple handling stations. Operations performed include:

- Segregation of the waste for processing or storage
- Size-segregation of the soil and sludge wastes (to less than 2 inches) for processing in the treatment system described below
- Delivery of treatable soils to the processing facility for treatment
- Compaction of appropriate waste to minimize volume
- Shredding and sizing of large items and combustibles (including wood, metals, rags, paper and plastic) prior to decontamination in a specialized washing process

Materials contaminated with polychlorinated biphenyls (PCBs) would be segregated and accumulated until a sufficient volume is collected to permit cost effective treatment. The PCBs would then be destroyed in a proprietary dechlorination process which chemically converts the PCBs to a non-hazardous form.

Treatment System. Waste materials that are less than 2 inches in size (including contaminated soil, sludge, and non-soil wastes) would be sent to the treatment system for processing. The proposed treatment involves three principal subsystems. The extraction subsystem includes a proprietary carbonate/EDTA chemical leach system for removing actinides (plutonium and americium) and heavy metals from the soil. Dissolution effectiveness is affected by soil size, feed makeup, and contact time. This subsystem also includes a surfactant-enhanced soil wash system for organics removal. The primary function of the extraction subsystem is to move the contaminants from a solid to aqueous phase.

Extraction system overflows and slurries would be routed to the filtration subsystem consisting of a clarifier, filter tank, and filter press. Clarifier sludges would be sent to the filter tank for preparation before entering the filter press. After processing in the filter press, the solids would be separated from the liquids, and a high solids (60% or greater) filter cake would be produced. Near the end of the filtration cycle, cleaned process water would be used for a final wash of the pressed cake prior to discharge. The dried solids from the filter press should meet cleanup standards of <10 nCi/g TRU. If not, they would be recycled for additional extraction. The filtrate from the filter press would be returned to the extraction subsystem.

Clarifier overflow, which should contain plutonium, americium, heavy metals and organics, would be sent to a final proprietary subsystem consisting of an evaporator, a catalytic oxidizer and a scrubber/condenser. The evaporator concentrates and volume-reduces the process water (from the clarifier feed) into volatilized and non-volatilized fractions. The organics in the volatilized fraction would be destructively oxidized resulting in a "pure" water stream which could be reused in the process, or eventually discharged along with some CO_2 gas. Off-gases from the oxidizer would be wet scrubbed. The nonvolatilized fraction, referred to as "waste product," contains nonvolatile organics, concentrated salts, heavy metals and radionuclides. The waste product would contain a solids fraction around 65% depending on the nature of the feed. If necessary, the waste product would undergo a stabilization process prior to packaging in drums for TRU storage. The waste product would meet the RWMC waste acceptance criteria, or, in the event that the hazardous waste materials are present, the waste product would meet ARARs.

Chemicals and liquids used in remediation would be recycled, thereby minimizing wastes from the process itself. Chemicals, liquids, filters, and other contaminated material left after the Pit 9 action is completed would be processed through the treatment system as a waste stream. The resulting waste would be stored as TRU contaminated waste. No liquids would be left from the process.

Lockheed Process Description

Figure 2 depicts the simplified Lockheed process system.

Retrieval/Physical Separation System. Under this remedial process, retrieval would be performed inside a movable, redundant containment structure with a flexible skirt and a remote teleoperated bridge crane system to prevent dispersion of contaminants into the environment and to protect operators/workers from exposure to radiation, hazardous substances and other hazards associated with excavating the pit. Separated materials would be transported from the pit to the processing building via an enclosed track in sealed containers on wheeled carts.

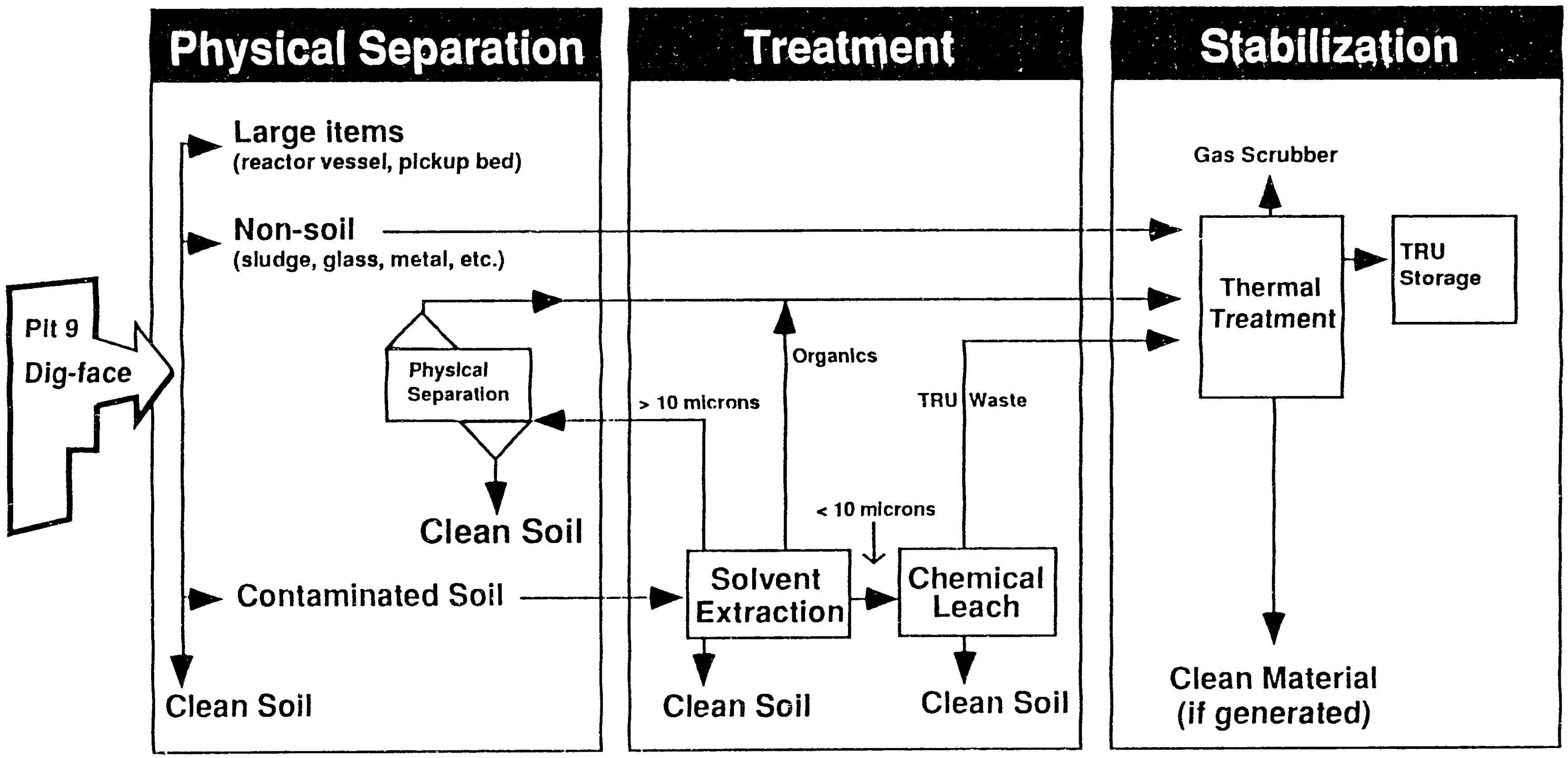
Inside the process building, the containers would be stockpiled awaiting processing in an area served by a bridge crane for handling. Contaminated soil would be separated from non-soil wastes and inventory tracking would be maintained using codes on the containers which identify the content of fissile material and all special handling requirements.

Treatment System. Soil processing would begin with removal of volatile organic compounds (VOCs) using a low temperature solvent extraction with triethylamine (TEA) followed by gravimetric and physical removal of particulate plutonium and americium from the coarse soil fraction. The fine fraction which exits the gravimetric system in the tailings would be leached with nitric acid to dissolve the contained plutonium and other hazardous materials. The metal nitrates in the resultant solution would be removed using a countercurrent ion exchange system.

The "clean" soil would be transferred from the leach circuit after dewatering to a rotary kiln to remove residual nitrates. Nitrate-bearing liquid process wastes would be treated by electrodialysis for recovery of nitric acid, sodium hydroxide, and cleaned water. These materials would be returned to the process. The concentrated residues from this system would be transferred to the plasma melter for stabilization as a cast slag. After denitrification, the soil would be sampled, stockpiled until analysis verifies clean up criteria are met, and then redeposited in the pit.

The non-soil wastes and the residual concentrates from the soil treatment system would be sent directly to the plasma melter, which would destroy the organics and produce a virtually non-leachable cast slag that immobilizes both the heavy metals and transuranics. To prevent the possibility of plutonium release with the process off-gases, the melter would be equipped with an emissions control system that employs high-temperature cross flow sintered metal or ceramic filters to capture plutonium particles after condensation, scrubbers to abate acid gases, and HEPA filters. All of the plant emissions would meet the requirements of the Clean Air Act. A final radioactive/non-radioactive sort would then be made on the plasma furnace slag to determine whether to return it to Pit 9 or to store it as a TRU waste.

Chemicals and liquids used in remediation would be recycled, thereby minimizing wastes from the process itself. Chemicals, liquids, filters, and other contaminated material left after the Pit 9 action is completed would be processed through the treatment system as a waste stream. The resulting waste


Physical Separation
Treatment
Stabilization
Pit 9
Dig-face
Large items
(reactor vessel, pickup bed)
Non-soil
(sludge, glass, metal, etc.)
Physical
Separation
Clean Soil
Contaminated Soil
Clean Soil
> 10 microns
Organics
< 10 microns
TRU Waste
Solvent
Extraction
Chemical
Leach
Clean Soil
Clean Soil
Gas Scrubber
Thermal
Treatment
TRU
Storage
Clean Material
(if generated)

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would be stored as TRU contaminated waste. No liquids would be left from the process.

RELATIONSHIP TO EARLIER INEL RETRIEVAL EFFORTS

During the late 1970s, waste was retrieved and stored at the SDA in association with the Initial Drum Retrieval (IDR) and Early Waste Retrieval (EWR) Projects (3)(4). The IDR program was initiated in FY - 1974 to retrieve drums buried between 1968 and 1970. IDR efforts led to the retrieval of 20,262 drums with a TRU waste volume of 4391 m^3 and 1 m^3 of contaminated soil. IDR retrieval operations were limited to SDA Pits 11 and 12, which contained drums of good integrity and only limited external contamination. Most of the retrieved waste was repackaged and stored on 20-year interim storage pads.

The EWR project began operations in FY 1976 to investigate methods, risks, and hazards associated with the retrieval of 65,000 m^3 of transuranic contaminated waste in below grade storage. The EWR retrieval efforts were conducted in SDA Pits 1 and 2 and in trenches 5, 7, 8, 9, and 10. Waste retrieved during EWR included drums, loose waste, and contaminated soil. Approximately 67% of the drums retrieved were severely breached.

The early retrieval efforts were conducted using only limited confinement systems and involved direct handling and excavation of the waste by workers. Both retrieval operations used Air Support Weather Shield (ASWS) structures to protect workers, retrieval equipment, and instrumentation from weather. The EWR project also used a negatively pressurized Operating Area Confinement (OAC) structure to prevent contamination spread to the environment. Personnel protective clothing used for IDR was limited to anticontamination (anti-C) equipment including coveralls, shoe covers, and gloves. Workers carried respirators in the advent of an airborne contamination release. EWR retrieval personnel wore full anti-C clothing and a totally enclosed bubble suit that incorporated a fresh air supply. Neither of the early retrieval projects included monitoring for organic chemicals.

Also associated with the IDR project was limited excavation and probing of Pits 6, 9, and 10. Results of the probes showed wastes in Pit 9 to be in relatively poor condition, associated with high levels of loose alpha contamination, and associated with high risk of contamination spread if retrieved under the IDR program. Lessons learned from the early retrieval projects included:

- Safe retrieval of intermixed waste buried for more than 10 years is not possible using methods similar to those used in the IDR program
- Future retrieval operations should not involve methods requiring direct contact with waste by retrieval personnel
- Future retrieval operations should have the capability of immediate waste encapsulation
- Retrieval equipment/buildings should be designed for ease of decontamination
- Early retrieval efforts support the concept of using mechanized retrieval equipment to achieve necessary retrieval rates and worker isolation

The Pit 9 project has been structured to incorporate many of the design recommendations from the IDR and EWR projects. Wastes in Pit 9 should be similar in condition and contamination levels to those uncovered during the EWR project. The retrieval system in Pit 9 will be designed to be isolated, mechanized, and remotely operated. Safety considerations will address organic chemicals hazards in addition to hazards associated with radioactive materials.

SUMMARY

The Pit 9 Interim Action is being conducted under CERCLA in support of the INEL SDA remediation and will reduce the risks associated with the potential migration of Pit 9 wastes to the nake River Plain Aquifer. The tiered project approach supports demonstration of private industry's capabilities for remediating transuranic-contaminated mixed waste sites while minimizing costs to the DOE. The cost and cleanup effectiveness of the proposed technologies will be demonstrated through proof-of-process and limited production testing of critical and integrated process systems. Information gained from the testing phases will be factored into the final cleanup system which will treat the major risk drivers within Pit 9 sufficiently to minimize or eliminate remediation following the interim action.

The additional approach of two teams competing during the POP test phase allows continued development of two viable remediation technologies. It also allows continued competition on the project and the associated benefits, and enables the original procurement framework to be followed. The project strategy enables public concerns regarding proven technologies to be addressed and to demonstrate that the project will be conducted in a safe, professional, and cost effective manner.

ACKNOWLEDGEMENTS - "EG&G Idaho efforts supported by the U.S. Department of Energy, Assistant Secretary for Environmental Restoration and Waste Management, under DOE Idaho Field Office Contract DE-AC07-76ID01570.

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