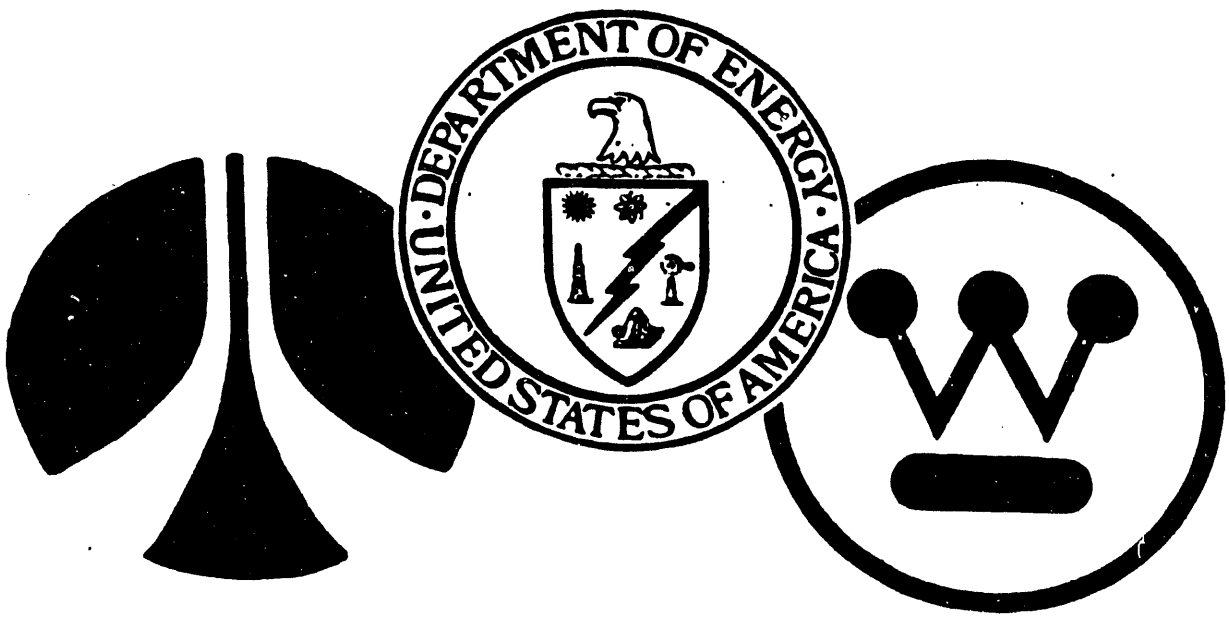
DOE-JIO-011

CENTRALIZED PROCESSING OF CONTACT-HANDLED TRU WASTE FEASIBILITY ANALYSIS



DEPARTMENT OF ENERGY

ROCKWELL INTERNATIONAL

WESTINGHOUSE

JOINT INTEGRATION OFFICE

ALBUQUERQUE, N.M.

DECEMBER 1986

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TRU WASTE MANAGEMENT PROGRAM
CENTRALIZED PROCESSING OF CONTACT-HANDLED TRU WASTE
FEASIBILITY ANALYSIS

Prepared By

Joint Integration Office

FOR

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EXECUTIVE SUMMARY

The Cost/Schedule Optimaization Study Report, October 1985, briefly investigated various scenarios for managing CH-TRU wastes and recommended actions that have cost saving potential. The first scenario in the Report deals with centralized versus decentralized waste processing facilities. The Report concluded that if all CH-TRU wastes were processed at the Idaho, Stored Waste Examination Pilot Plant (SWEPP) and Process Experimental Pilot Plant (PREPP), instead of processing at proposed Richland Waste Receiving and Processing Facility (WRAP) and Savannah River Transuranic Waste Facility (TWF), then a potential cost saving of over $88 million could be realized.

In December 1985, a Department of Energy (DOE) Working Group (DWG) was organized with the charter to study this scenario in detail, addressing all institutional, technical, health and safety, and personnel exposure issues associated with centralized versus decentralized processing of CH-TRU wastes. This report is the result of the study conducted by the DWG.

After compilation and evaluation of the data from each site, used in this study, conflicting comments were received from the DWG membership regarding reported costs and the significance of certain institutional issues. Since resolution of all comments seemed impossible and the membership agreed that resolution would not alter the overall results, it was decided by the DWG chairman to issue the report as is. Therefore, the cost figures, waste volumes and some of the

alternatives have not been modified to express the latest available information.

As a result of this study it has been determined that the original estimate of potential cost saving of over $88 million failed to account for the need for shipping preparation facilities at both Hanford and Savannah River and other costs associated with centralized processing. Based on the approach taken, costs for centralization may actually be higher than decentralization.

The study was able to show that the concept of centralized processing is indeed technically feasible, however, due to institutional constraints, centralized processing of TRU waste is not economically feasible. The major constraint is the inability of Hanford site and SRP to ship the waste without assaying, which will cost approximately $30 Million per site. The resolution of some of these institutional issues is beyond the ability of the DWG members because the decisions will have to be made at very high management levels.

Therefore, it is the conclusion of this study that decentralized processing is the most favorable programmatic direction and that the activities leading to the construction and operation of the WRAP and TWF facilities should resume as soon as practical.

I. INTRODUCTION

In Fiscal Year 1985 a cost/schedule optimization study was conducted to ensure that the Defense Transuranic (TRU) Waste Program (DTWP) goals and plans are optimized from a cost and schedule aspect (Reference: DOE-JIO 004, "TRU Waste Management Program Cost/Schedule Optimization Analysis," October 1985). One of the major findings of the study was that centralized processing of Contact-Handled (CH) TRU waste at the Idaho National Engineering Laboratory (INEL) held promise for reducing system cost. This approach would call for shipping all Hanford and Savannah River Plant (SRP) waste to INEL for processing in the Stored Waste Examination Pilot Plant (SWEPP) and the Process Experimental Pilot Plant (PREPP) facilites. The $88 Million savings estimated by the study, resulted from not having to construct Hanford's Waste Receiving and Processing (WRAP) Facility and SRP's Transuranic Waste Facility (TWF) for processing waste at those sites. However, in conjunction with the analysis it was recommended that technical and institutional uncertainties receive further evaluation before making any program direction changes.

In December of 1985 a Department of Energy Working Group (DWG) was formed with the responsibility of completing assessing the feasibility of utilizing the INEL facilities for centralized processing. This DWG both expanded on the evaluation of the technical and institutional uncertainties identified in the Cost/Optimization Analysis and provided a more detailed cost analysis. Although the costs are strictly a "rough order of magnitude," the results of this assessment now provide the Department of Energy-Head Quarters (DOE-HQ) with

sufficient information with which it can make a determination of the most cost efficient program for the processing of CH-TRU wastes.

II. APPROACH

Four major scenarios for processing CH-TRU waste were evaluated in detail. They are;

- o Scenario 1 Base Case: Process waste at all three sites; INEL waste at INEL in SWEPP and PREPP, Hanford waste in the planned WRAP Facility, SRP waste in the planned TWF.
- o Scenario 2 Transport and process all Hanford and SRP waste at the INEL SWEPP/PREPP facilities.
- o Scenario 3 Transport and process all Hanford waste at the INEL SWEPP/PREPP facilities, SRP waste to be processed in TWF.
- o Scenario 4 Transport and process all SRP waste at the INEL SWEPP/PREPP facilities, Hanford waste to be processed in WRAP facility.

The preliminary step in conducting the study was first to determine if the INEL SWEPP/PREPP facilities (including the planned upgrades; SWEPP-II/ PREPP-II), as designed and constructed, were suitable for processing SRP and Hanford wastes. This was necessary as SRP waste contains large quantities of Pu-238 and due to the general differences between INEL wastes and those at SRP and Hanford. Additionally, it had to be determined if SWEPP/PREPP has the necessary excess capacity to handle the added waste volume. If SWEPP/PREPP were unable to handle the waste one or more of the options might have been precluded. However, INEL determined that there would be no operational difficulties in processing either the SRP or Hanford wastes provided the wastes could be shipped to Idaho (some Hanford waste boxes are too large for SWEPP/PREPP, however they will require

size reduction to allow for shipping and processing at INEL.) Appendix A contains a copy of the PREPP waste evaluations.

During the second step of the study, SRP and Hanford sites compiled their requirements and costs for any facilities or equipment necessary to support shipping and processing of the wastes at INEL. These requirements included needs for container venting/purging, overpacking, NDA/NDE, shipping and size reduction at SRP and Hanford in addition to the needs for upgrades or improvements to SWEPP/PREPP. Additionally, a breakdown of SRP and Hanford wastes, based on which waste could be transported in what type of shipping container, was made to assist in the later shipping cost calculations.

During the study it was determined that small modifications to the original scenarios might provide viable alternatives. These modifications are detailed, along with a full description of the major scenarios, in the section III.

Each new scenario was broken down to determine an overall rough order of magnitude system costs (facility construction and operation, shipping, etc.) for comparison to the system costs for the base case scenario.

A listing of pertinent institutional issues related to centralized processing is included in this report. These issues were provided by the DWG members, based on the procedures established at the various operational offices.

III. DISCUSSION OF SCENARIOS

Scenario 1 (Process Waste at all Three Sites)

This "base case" scenario reflects the strategy in the Defense Waste Management Plan and calls for the construction of the TWF at SRP and the WRAP Facility at Hanford, in addition to the already constructed SWEPP/PREPP facilities at INEL. Each of the three major sites will process waste on-site, so it can be disposed of either as LLW at their own facility or certified and shipped to the Waste Isolation Pilot Plant (WIPP) for permanent storage.

Scenario 2 (Centralized Processing Of All Waste)

This scenario calls for shipping all SRP and Hanford non-certifiable TRU waste to INEL for processing in SWEPP/PREPP. SRP and Hanford will be responsible for providing what ever minimal facilities are necessary to retrieve waste and perform the minimum actions necessary to ship the waste to INEL for processing. Two major options to this scenario are available; a) to not provide assay capability for the stored waste and b) to provide assay capability for the stored waste.

Option a;

Without assay capability all stored waste will be retrieved, the containers will be vented/purged of explosive gases, overpacked if container integrity is suspect and shipped to INEL for processing. In addition, the non certifiable portion of newly-generated wastes will be sent to INEL for processing.

Option b;

With assay capability on stored waste, the stored waste will be

retrieved, the containers will be vented/purged of explosive gases, assayed to separate the TRU and LLW constituents, overpacked if container integrity is suspect and shipped to INEL for processing. As before, the non certifiable portion of newly-generated wastes will be sent to INEL for processing.

The difference between not assaying and assaying lies in the separation of the TRU waste from the LLW. Therefore, each site would bury it's own LLW and save on shipping costs. However, assaying increases the site facility and operating costs significantly. There are no differences in the handling of newly generated wastes.

A further modification applicable to this scenario is the different options that might be available for handling of the Hanford "size reduction" waste (i.e. waste containers too large to ship to INEL without size reduction.) Options of both size reducing the waste and shipping it to INEL (Options a & b) and utilizing Greater Confinement Disposal (GCD) practices on the waste without size reduction (Options c & d) were examined.

Scenario 3 (Only Hanford Waste to INEL)

This scenario is a combination of Scenarios 1 and 2, it calls for construction of TWF at SRP in addition to the already constructed SWEPP/PREPP facilities at INEL. SRP will maintain responsibility for on-site processing, so all waste can be disposed of either as LLW at their own facility or certified and shipped to the Waste Isolation Pilot Plant (WIPP) for permanent storage. Hanford will be responsible for providing minimal facilities to retrieve waste and perform the

minimum actions necessary to ship the waste to INEL for processing. All modifications to Scenario 2 also apply to this scenario.

Scenario 4 (Only SRP Waste to INEL)

This scenario is a combination of Scenarios 1 and 2 but is opposite to Scenario 3; it calls for construction of WRAP at Hanford in addition to the already constructed SWEPP/PREPP facilities at INEL. Hanford will maintain responsibility for processing in-house so all waste can be disposed of either as LLW at their own facility or certified and shipped to the Waste Isolation Pilot Plant (WIPP) for permanent storage. SRP will be responsible for providing minimal facilities to retrieve waste and perform the minimum actions necessary to ship the waste to INEL for processing. The without assay/with assay modifications to Scenario 2 also apply to this scenario.

IV. TRANSPORTATION OPTIONS

Three shipping containers were identified for possible use in shipping waste from Hanford and SRP to INEL, the TRUPACT, ATMX railcar and Super Tiger.

USABLE INTERIOR DIMENSIONS OF SHIPPING CONTAINERS

	Length	Width	Height
TRUPACT	230"	74"	86"
TRUPACT-II	218"	80"	80"
ATMX Railcar	264"	105"	105"
Super Tiger	172"	76"	76"

All three containers require the inner waste packages to meet DOT Type A requirements. Consequently waste packages retrieved from interim storage facilities will have to be inspected to verify that the container meets these requirements. If the retrieved package does

not meet the requirements, then it will require overpacking in a Type A container.

Specific requirements for each package are:

TRUPACT - The TRUPACT-I SARP is in draft form. Consequently the requirements that will be imposed when the Certificate of Compliance (COC) is issued can only be projected. Some sections of the SARP (undated draft) infer that the requirements of the Super Tiger with respect to waste form and packaging will be applicable to the TRUPACT. If this is the case, a very small percentage of the retrieved interim stored waste packages can be shipped in the TRUPACT.

Other sections in Chapter 1 of the SARP imply some lesser criteria:

- waste to be bagged in 5 to 12 mil thick polyethelene, PVC or equivalent material
- bagged waste to be in lined waste containers (80 to 90 mil rigid liners)
- particulate content same as WIPP WAC
- nonliquid form (WIPP Waste Acceptance Criteria (WAC) permits residual liquid)
- gas generation per DOT Regulations 49CFR173.24(a)(3)
- hard waste to have coating to fix contaminants or decontaminated
- sharp edges or pointed features blunted

Either of the above interpretations of the SARP will restrict the amount of waste certified to the WIPP WAC. A significantly smaller percentage of the uncertified waste retrieved from interim storage could be shipped in the TRUPACT.

ATMX - The ATMX-600 SARP provides a general description of waste forms that must be contained within the Rocky Flats Plant (RFP) waste packaging materials. If the waste container can be inspected to verify that it still meets DOT-7A requirements and were procured to the RFP or Mound Laboratory specifications, then the waste package should be able to be shipped in the ATMX-600 railcar without overpacking. However, if the waste package does not meat the DOT 7A requirements it will require overpacking.

Super Tiger - The requirements for packaging waste to be shipped in the Super Tiger are very restrictive. If the waste were packaged to meet these requirements it would be either less than 100 nCi/g (non-transuranic) or meet the WIPP-WAC criteria (thereby making shipment to INEL unnecessary.)
In short, the Super Tiger should not be considered for shipping the subject waste.

Current status of the three containers is:

TRUPACT-I SARP is currently being written. It must be reviewed and approved by DOE/AL and DOE/HQ before DOE/HQ will issue a COC. Receipt of the COC for TRUPACT-I is not anticipated before the end of 1986. A COC for TRUPACT-II is currently scheduled for October 1987.

Shipments in the ATMX railcars is authorized by Special Permit No. 5948. When the TRUPACT COC is obtained it is possible that this special permit would no longer be renewed. The current permit authorizes shipments only from Mound and RFP.

Shipments in the Super Tiger are authorized under NRC Certificate Number 6400. The package identification number is USA/6400/B()F.

Further evaluation for this study assumes only the TRUPACT and ATMX railcar are acceptable shipping containers. In computing shipping costs for these containers (Appendix B) it was necessary to assume the

waste packages would not require overpacking, although a great number will. This assumption was made because it is unknown how much of the waste would require the overpacks and how much would not. Therefore, the reported shipping costs will be lower than the actual shipping costs because expenses for the overpacks themselves and the necessary additional shipments (packing efficiencies will be reduced.) The difference in cost is not considered significant enough to impact the decision of this study.

V. SUMMARY OF COST ESTIMATES

A comparison chart of total system costs for each scenario evaluated by this study is shown on the following page. The cost figures are rough order of magnitude only and error bands may increase the actual cost by as much as 50% in some scenarios. The data used in computing the costs may be found in the appendicies of the report.

Scenario 1: Process Waste at all Three Sites

TOTAL COST $498M.

This is the base case scenario.

Scenario 2: Centralized Processing Of All Waste

Option a; No assay capibility, size reduce Hanford oversize boxes

TOTAL COST $448M.

Shipping all waste to INEL for processing (without assay capability on stored waste) has a positive cost impact when compared to the base scenario. Savings estimated at $50Million.

SUMMARY OF COSTS FOR STUDY SCENARIOS

TOTAL SYSTEM COST FOR EACH SCENARIO (MILLIONS OF DOLLARS)							DIFFERENCE
SCENARIO	SITE FACILITY COSTS	SITE OPERATING COSTS	SITE SHIPPING COSTS	INEL PROCESSING COSTS	ADD LLW BURIAL COSTS	TOTAL COSTS	VERSIS SCENARIO 1 () = LOST
1) Process at all three sites	$95	$403	$0	$0	$0	$498	n/a
--Hanford	$46	$120	$0	$0	$0	$166	
--SRP	$49	$283	$0	$0	$0	$332	
2) Process all waste at INEL							
a) No site assay	$77	$274	$9	$83	$6	$447	$51
--Hanford	$35	$40	$5	$41	$2	$123	
--SRP	$42	$234	$4	$41	$4	$324	
b) Site assay	$86	$329	$5	$83	$0	$502	($4)
--Hanford	$43	$96	$4	$41	$0	$183	
--SRP	$43	$234	$1	$41	$0	$319	
c) GCD Hanf over-size, no assay	$63	$254	$8	$83	$6	$413	$85
--Hanford	$21	$20	$4	$41	$2	$88	
--SRP	$42	$234	$4	$41	$4	$324	
d) GCD Hanf over-size, no assay	$72	$309	$4	$83	$0	$468	$30
--Hanford	$29	$76	$3	$41	$0	$149	
--SRP	$43	$234	$1	$41	$0	$319	
3) Process only Hanford waste at INEL							
a) No site assay	$84	$323	$5	$83	$2	$496	$2
--Hanford	$35	$40	$5	$83	$2	$164	
--SRP	$49	$283	$0	$0	$0	$332	
b) Site assay	$92	$379	$4	$83	$0	$556	($58)
--Hanford	$43	$96	$4	$83	$0	$224	
--SRP	$49	$283	$0	$0	$0	$332	
c) GCD Hanf over-size, no assay	$70	$303	$4	$83	$2	$462	$36
--Hanford	$21	$20	$4	$83	$2	$130	
--SRP	$49	$283	$0	$0	$0	$332	
d) GCD Hanf over-size, assay	$78	$359	$3	$83	$0	$522	($24)
--Hanford	$29	$76	$3	$83	$0	$190	
--SRP	$49	$283	$0	$0	$0	$332	
4) Process only SRP waste at INEL							
a) No site assay	$88	$354	$4	$83	$4	$532	($34)
--Hanford	$46	$120	$0	$0	$0	$166	
--SRP	$42	$234	$4	$83	$4	$366	
b) Site assay	$89	$354	$1	$83	$0	$527	($29)
--Hanford	$46	$120	$0	$0	$0	$166	
--SRP	$43	$234	$1	$83	$0	$361	

Option b; Assay capibility, size reduce Hanford oversize boxes

TOTAL COST $502M.

Shipping of only TRU waste to INEL for processing (with assay capability on stored waste) has essentially the same cost as the base case.

Option c; No assay capibility, GCD Hanford oversize boxes

TOTAL COST $413M.

Utilizing greater confinement disposal on Hanford waste that will not fit in the ATMX (vs. size reduction) and shipping all remaining waste to INEL for processing (without assay capability on stored waste) has a positive cost impact when compared to the base case. Savings estimated at $85Million.

Option d; Assay capibility, GCD Hanford oversize boxes

TOTAL COST $468M.

Utilizing greater confinement disposal on Hanford waste that will not fit in the ATMX (vs. size reduction) and shipping only TRU waste to INEL for processing (with assay capability on stored waste) has a positive cost impact when compared to the base case. Savings estimated at $30Million.

Scenario 3: Only Hanford Waste to INEL

Option a; No assay capibility, size reduce Hanford oversize boxes

TOTAL COST $497M.

Shipping all Hanford waste to INEL for processing (without assay capability on stored waste) and proceeding with TWF at SRP has essentially the same cost as the base case.

Option b; Assay capibility, size reduce Hanford oversize boxes

TOTAL COST $556M.

Shipping of only Hanford TRU waste to INEL for processing (with assay capability on stored waste) and proceeding with TWF at SRP has a negative cost impact when compared to the base scenario. Added cost is estimated at $58Million. Primarily due to Hanford accepting the full added SWEPP/PREPP costs instead of splitting them with SRP (i.e., SWEPP and PREPP will require one added shift to handle one or both of the other sites waste, therefore, if only one site ships to INEL for processing added costs at SWEPP/PREPP are the same if both sites ship to INEL for processing.)

Option c; No assay capibility, GCD Hanford oversize boxes

TOTAL COST $462M.

Utilizing greater confinement disposal on Hanford waste that will not fit in the ATMX (vs. size reduction) and shipping all remaining Hanford waste to INEL for processing (without assay capability on stored waste) and proceeding with TWF at SRP has a positive cost impact when compared to the base case. Savings estimated at $36Million.

Option d; Assay capibility, GCD Hanford oversize waste

TOTAL COST $522M.

Utilizing greater confinement disposal on Hanford waste that will not fit in the ATMX (vs. size reduction) and shipping only TRU Hanford waste to INEL for processing (with assay capability on stored waste) and proceeding with TWF at SRP has a negative cost impact when compared to the base case. Added cost is estimated at $24Million.

Scenario 4 (Only SRP Waste to INEL)

Option a: No assay capibility

TOTAL COST $532M.

Shipping all SRP waste to INEL for processing (without assay capability on stored waste) and proceeding with WRAP at Hanford is cost detrimental compared to the base scenario. Added cost estimated at $34Million. Primarily due to SRP accepting the full added SWEPP/PREPP costs instead of splitting them with Hanford.

Option b: Assay capibility

TOTAL COST $526M.

Shipping of only Hanford TRU waste to INEL for processing (with assay capability on stored waste) and proceeding with WRAP at Hanford is cost detrimental compared to the base scenario. Added cost estimated at $29Million. Primarily due to SRP accepting the full added SWEPP/PREPP costs instead of splitting them with Hanford.

VI. INSTITUTIONAL ISSUES

There exists numerous institutional issues that should be addressed while forming any decision to change the current program direction for processing TRU waste. It is beyond the scope of this study to analyse each issue and make a determination as to their validity. However, those issues identified during the study are presented below for consideration by DOE/HQ during the decision process.

General Issues:

- Cost estimates presented are rough order of magnitude only and may increase as much as 50%.

- What are the chances of Congress approving two facilities which will cost more than $40Million each? As a correlary, both sites will still need capital facilities even with centralized processing for preparing waste for shipment to INEL.

- What is the potential impact on the program if centralized processing at INEL is pursued and the reliability and capacity of the SWEPP and PREPP fail to meet projections?

- How will the State of Idaho react to the shipment of large quantities of TRU waste into their state for processing?

- If assay capability is not provided at Hanford and SRP what will the State of Idaho's reaction be to the burial of over 350,000 cubic feet of waste, waste that used to be called TRU and is now classified as LLW, in their state?

- Some Hanford boxes contain up to 1,000 grams of TRU which may exceed the PREPP incinerator limits.

- Centralized processing is contrary to ALARA goals as it increases handling of waste.

- SWEPP and PREPP are not currently scheduled to handle classified waste such as that currently in storage at Hanford.

- What additional NEPA documentation is required to implement the concept of centralized processing?

- The Greater Confinement Disposal of the large boxes at Hanford may not be acceptable to the State of Washington if any alternative except "in-place stabilization and disposal" is chosen.

Transportation Issues:

- Will DOT allow shipments of materials that may not have accurate or complete inventories of contents?

- Considerations such as routing, pre-notification, emergency response, public liability, etc., should not be significantly different than those for WIPP certified waste shipments in TRUPACT. The term "uncertified" should be well explained so that it does not connote that the waste form is "unknown."

- Rail shipments are regulated by federal agencies and are conducted on private right-of-ways. Therefore, such shipments would involve less state oversight, but not less concern with issues such as routing and emergency response.

- Regarding use of the ATMX railcar;

  Will Washington, Idaho, South Carolina, and all states in between, allow use of the ATMX on a long term basis for shipments that might be considered to be less than critical to the national defense?

The ATMX is not a certified Type B packaging and is operating under a DOT exemption. Although these cars have a good track record, states and the media could see this as a public health and safety issue, particularly if shipments have to pass through high population areas.

The ATMX has the advantage of operating on private right-of-ways and some of the problems associated with highway travel do not exist for this mode. Although the states recognize that they have less regulatory control over rail than highway, they have almost the same institutional concerns as for highway, and are very concerned about the condition of roadbeds and track.

It would be difficult to rationalize use of the ATMX when the "official" packaging for TRU waste shipments is TRUPACT. Use of ATMX could be viewed as an admission that TRUPACT is not suitable for this application.

- Regarding use of the TRUPACT;

  When TRUPACT is certified as a Type B packaging, it represents the best option for transporting uncertified CH-TRU waste since the "uncertified packaging" argument is no longer valid.

  Assuming that TRUPACT is certified and the waste forms comply with the COC content restrictions, shipments should not present any incremental institutional challenges above and beyond those for TRUPACT shipments to WIPP.

- In summary, use of certified packagings will present lesser institutional challenges than the use of uncertified packagings. However, predicting what the actual institutional implications of shipping uncertified waste in either of these packagings cannot be predicted with any certainty.

VII. FINDINGS AND RECOMMENDATIONS

The overall findings of this study are:

- CH-TRU waste from the Hanford Site and Savannah River Plant can be processed at INEL's Stored Waste Examination Pilot Plant and Process Experimental Pilot Plant, if these wastes can be shipped.

- Operating procedures at the Hanford Site and at Savannah River Plant will require that the waste be examined/assayed prior to shipment to INEL, which will offset potential cost savings from centralized processing of the wastes.

The overall recommendation of this study is:

The Waste Receiving and Processing Facility at the Hanford site and the Transuranic Waste Facility at the Savannah River Plant should be constructed and operated.

APPENDICIES

APPENDIX A: PREPP Waste Evaluations

APPENDIX B: Hanford and Savannah River Plant TRU Waste Volumes

APPENDIX C: Transportation Costs

APPENDIX D: Hanford and Savannah River Plant Facility Descriptions

APPENDIX E: Hanford and Savannah River Plant Facility Costs

APPENDIX F: Independant Review Committee Comments to Final Draft

APPENDIX G: DOE Savannah River Comments to Final Draft

APPENDIX H: DOE Hanford Comments to Final Draft

APPENDIX I: DOE Idaho Comments to Final Draft

APPENDIX A: PREPP WASTE EVALUATIONS

January 28, 1988

PREPP
Waste Evaluation

Waste Generator: Richland Operations Office
Richland, Washington

General Description: Contact-Handled Transuranic Waste

Metal Drums (Possibly 45% is LLW)
- o Combustible: 70-80% of the 36,000 drums
- o Noncombustible: 20-30% of the total volume
- o Security Classified: ~1000 drums

Boxes (Possibly 20% is LLW)
- o Noncombustible: 80-90% of the 7500 cubic meters
- o 600 boxes ranging in size from 2 ft x 2 ft x 2 ft to 20 ft x 9 ft x 13 ft

Evaluation:

1. Types and Quantities of Isotopes:
   Defense related waste containing approximately 400 Kg of transuranium nuclides.

   The isotopic content of this waste is simliar to that generated by Rocky Flats which was used as the basis for the PREPP design consequently, no problems are anticipated.

2. Surface Radiation Levels and Curie Content:
   - o Alpha Radioactivity: ~46,000 Ci
   - o Exterior surface dose: <200 mr/hr

   Assuming the 46,000 Ci of Alpha radioactivity was evenly distributed in the transuranic waste (27.3% of the total), this equates to approximately 6 Ci per cubic meter or ~0.2 Ci per cubic ft. This level of alpha activity is no higher than that found in the Rocky Flats waste currently stored at the INEL and scheduled to be processed in PREPP.

   The 200 mr/hr exterior surface dose limit meets the requirements for handing the waste containers within PREPP.

3. Waste Container Size:
   30 Gallon Metal Drums
   55 Gallon Metal Drums
   80 Gallon Metal Drums
   Dot 7A Steel Boxes
   Concrete Boxes
   Fiberglass reinforced plywood boxes

All drums identified above and boxes smaller than 60 in. wide x 87 in. long x 57 in. high can be processed in PREPP.

4. Waste Container Weight: The maximum container weight which can be handled in PREPP is 5600 lbs. This weight limit is adequate to handle fully loaded waste containers identified in 3 above.

5. Liquids: The waste contains liter size containers of oils, cleaning agents, and solvents packed in drums with absorbent. PREPP was designed to process drums/boxes which contain one 1 gallon (3.7 liter) quantities of flammable liquids. Drums/boxes which contain more than 1 gallon cannot currently be processed at PREPP. However, due to the existing need to process INEL waste containing higher quantities of liquids, work is currently underway to make the necessary changes to PREPP. Capability <u>will</u> exist in the outyears to handle this category of waste.

6. Nature of Waste: The general nature of the waste appears similar to the Rocky Flats waste currently stored at the INEL.

January 29, 1986

PREPP
Waste Evaluation

Waste Generator: Savannah River Operations Office
Aiken, South Carolina

General Description: Contact-Handled Transuranic Waste
110,848 ft³ of waste by 1991

Evaluation:

1. Types and Quantities of Isotopes:
   - o Pu-238 is 60 volume percent of the total. Most of this waste is contained in drums. Twenty percent of these drums contain between 10 and 32 g of Pu-238. It is assumed that the remaining waste contains lower quantities of Pu-238.
   - o Pu-239 (from defense related processes) is contained in the remaining 80% of the waste.

The foregoing analysis is based on the data and discussion of Chapter 25 of the Plutonium Handbook. (Ref. 1) and Guide For Fabricating and Handling CF-252 Sources (Ref. 2).

Assuming that a drum contains waste of a compactible nature, but has not been compacted, a drum should weigh 250 to 300 pounds. Therefore, the density of the material in the drums is assumed to be in the range of 0.6 to 0.7 g/cc. With 30 grams of Pu-238 in each drum, the curie content is calculated to be 522 curies/drum and the curie density is calculated to be 4.3×10^{-3} to 3.8×10^{-3} Ci/g. From Reference 1, Pg. 851, and based on a curie density of 1 curie/gram the surface doserate due to gammas and x-rays for unclad material containing Pu-238 is calculated to be 960 Rads/hr. At the above-calculated densities the doserates at the surface of the waste are calculated to be 3.7 to 4.4 Rads/hr. At the surface of DOT 17H drum, with a sidewall thickness of 0.06 inches, this doserate would be attenuated to <0.1 mr/hr due to the attenuation of the 17 kev γ and x-ray component.

The neutron emission rate taken from Table 25.2, pg. 848 of Ref. 1 is 3.4×10^{3} n/sec-g for Pu-238. With a drum containing 30 grams of this isotope the neutron generation rate would be 1.02×10^{5} n/sec. Considering as was considered in Ref. 1 that these neutrons are thermal neutrons, the maximum neutron fluence at the surface of the drum is calculated to be 9 n/cm²/sec which gives the neutron doserate to be

1 mr/hr. As a check of this value, the methodology of Ref. 2 was used. Ref. 2, page 9, states that at 1 meter from a 10-milligram Cf-252 source,

Unshielded Neutron Dose Equivalent Rate =

$$9.7 \times 10^{-7} \frac{\text{mrem/hr}}{\text{neutron/sec}} \times$$

$$2.3 \times 10^{12} \frac{\text{neutrons}}{\text{gram-sec}} \frac{10^{-3}\ \text{gram}}{}$$

$$= 2.2 \times 10^{4} \text{ mrem/hour.}$$

Ratioing this value to the 1.0×10^{6} n/s generated in the drum and calculating the doserate for a distance of 1 ft., rather than 1 meter, gives 1 mr/hr.

Therefore, from a radiological standpoint, handling drummed quantities of SRP Pu-238 waste is not expected to create any inordinate radiological problems that can not be handled at the PREPP facility. Although the calculations performed above were applicable to one drum containing 30 grams or 520 curies of Pu-238, the radiological assessment for material to be handled in the drum-fill area of PREPP are estimated to be roughly the same. With an estimated consolidation factor of three for material in the drum-fill area, the addition of concrete to the waste at this point will provide considerable self-shielding for both neutrons and γ and x-rays.

As presently envisioned, the greatest radiological impact to PREPP personnel is seen to be in the event of an operational upset which requires personnel entry into the process stream for maintenance. This condition would be handled by an appropriate ALARA review and appropriately constructed and approved Detailed Operating Procedure (DOPs).

2. Surface Radiation Levels and Curie Content:
   - o Alpha Radioactivity: See item 1. above.
   - o Exterior surface dose: <200 mr/hr

   The 200 mr/hr exterior surface dose limit meets the requirements for handing the waste containers within PREPP.

3. Waste Container Size: All drums identified above and boxes smaller than 60 in. wide x 87 in. long x 57 in. high can be processed in PREPP.

4. Waste Container Weight: The maximum container weight which can be handled in PREPP is 5800 lbs. This weight limit is adequate to handle fully loaded waste containers identified in 3 above.

5. Liquids: No free liquids have been identified in the waste. However, PREPP was designed to process drums/boxes which contain one 1 gallon (3.7 liter) quantities of flammable liquids. Drums/boxes which contain more than 1 gallon cannot currently be processed at PREPP. However, due to the existing need to process INEL waste containing higher quantities of liquids, work is currently underway to make the necessary changes to PREPP. Capability <u>will</u> exist in the outyears to handle this category of waste.

6. Nature of Waste: Seventy percent of the waste is categorized as "job control waste" which consists of glass, anti-C's, blotter paper, gloves, etc. The remaining waste consists of sludges, HEPA filters, and other miscellaneous items. The general nature of the waste appears similar to the Rocky Flats waste currently stored at the INEL that will be processed in PREPP.

APPENDIX B: HANFORD AND SAVANNAH RIVER PLANT TRU WASTE VOLUMES

In order to evaluate facility requirements and costs for scenarios 2 - 4 Hanford and SRP waste inventories were separated into catagories based on handling, shipping and processing requirements.

- Wastes shippable in the Transuranic Package Transporter (TRUPACT), consisting of drums and smaller (5'X5'X7') boxes. These wastes containers are processable in SWEPP and PREPP.
- Waste boxes too large for the TRUPACT but shippable in the ATMX. These boxes will be processable in SWEPP-II and PREPP-II.
- Waste boxes too large for the ATMX. These boxes will require size reduction prior to shipment.

Stored and Newly-Generated waste volumes and the handling catagory breakdowns used in this study are shown on the following pages.

TABLE B-1: HANFORD SITE TRU WASTE INVENTORIES

CLASSIFICATION	STORED VOLUME	STORED # DRUMS	STORED # BOXES	NEWLY GENERATED VOLUME	NEWLY GENERATED # DRUMS	NEWLY GENERATED #BOXES
SWEPP/PREPP	238,343	32,284	178	609,098	86,250	0
SWEPP-II/PREPP-II	90,747	2,618	319	598,999	0	2,200
SIZE REDUCE	112,215	0	80	0	0	0
TOTALS	441,305	34,902	577	1,208,097	86,250	2,200

ASSUMPTIONS:
1. 55% of drummed waste and 80% of boxed waste is TRU (stored and newly-gen)
2. 5% of newly generated waste will be non-certifiable
3. Only non-certifiable TRU portion of newly-generated waste will go to INEL
4. If assay/RTR is not available all Stored Waste will go to INEL
5. If assay/RTR is available Certifiable and LLW Stored Waste will not go to INEL (based on percentages in #1)
6. Assay capibility will be available for the 'size reduce' boxes and waste will be reduced to fit in ATMX (i.e. only 80% shipped)

WASTE TO BE SENT TO INEL FOR PROCESSING IN SWEPP/PREPP (OR SWEPP-II/PREPP-II)

> WITHOUT ASSAY CAPACITY FOR STORED WASTE — TOTAL VOLUME 459,572; TOTAL CONTAINERS 35,305

		VOLUME	# CONT.			VOLUME	# CONT.
Shippable in TRUPACT*	STORED	238,343	32,462	Ship in ATMXonly**	STORED	180,519	383
	NEWLY GEN	16,750	2,372		NEWLY GEN	23,960	88
	TOTAL	255,093	34,834		TOTAL	204,479	471

> WITH ASSAY CAPACITY FOR STORED WASTE — TOTAL VOLUME 350,424; TOTAL CONTAINERS 20,678

		VOLUME	# CONT.			VOLUME	# CONT.
Shippable in TRUPACT*	STORED	147,345	17,899	Ship in ATMXonly**	STORED	162,370	319
	NEWLY GEN	16,750	2,372		NEWLY GEN	23,960	88
	TOTAL	164,095	20,270		TOTAL	186,330	407

* SWEPP/PREPP size waste
** SWEPP-II/PREPP-II size waste plus TRU portion of size reduce waste
SOURCE: provided by DOE-RL as part of Working Group

TABLE B-2: SAVANNAH RIVER PLANT TRU WASTE INVENTORIES

CLASSIFICATION	STORED VOLUME	STORED # DRUMS	STORED # BOXES	NEWLY GENERATED VOLUME	NEWLY GENERATED # DRUMS	NEWLY GENERATED #BOXES
CERTIFIABLE	173,456	16,266	474	325,061	34,680	611
NON-CERTIFIABLE	35,371	3,115	110	36,108	3,850	68
LOW-LEVEL WASTE	67,613	5,293	254	154,710	18,712	145
BULK	22,396	0	200	0	0	0
TOTALS	298,836	24,674	1,038	515,879	57,242	824

ASSUMPTIONS:
1. All Newly-Generated boxes will fit in TRUPACT
2. 50% of stored boxes (by volume and number) will fit in TRUPACT
3. Only Non-certifiable and Bulk newly generated waste will go to INEL
4. All stored bulk waste is non-certifiable TRU (conservative)
5. If assay/RTR is not available all Stored Waste will go to INEL
6. If assay/RTR is available Certifiable and LLW Stored Waste will not go to INEL
7. Average box volume = 112 cubic feet, drum volume = 7.4 cubic feet

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WASTE TO BE SENT TO INEL FOR PROCESSING IN SWEPP/PREPP (OR SWEPP-II/PREPP-II)

> WITHOUT ASSAY CAPACITY FOR STORED WASTE — TOTAL VOLUME 334,948; TOTAL CONTAINERS 29,630

		VOLUME	# CONT.			VOLUME	# CONT.
Shippable in TRUPACT*	STORED	229,516	25,093	Ship in ATMXonly**	STORED	69,324	619
	NEWLY GEN	36,108	3,918		NEWLY GEN	0	0
	TOTAL	265,624	29,011		TOTAL	69,324	619

> WITH ASSAY CAPACITY FOR STORED WASTE — TOTAL VOLUME 93,875; TOTAL CONTAINERS 7,120

		VOLUME	# CONT.			VOLUME	# CONT.
Shippable in TRUPACT*	STORED	29,211	3,170	Ship in ATMXonly**	STORED	28,556	100
	NEWLY GEN	36,108	3,850		NEWLY GEN	0	0
	TOTAL	65,319	7,020		TOTAL	28,556	100

* All drums plus 50% of boxes
** 50% of boxes plus all bulk
SOURCE: "Transuranic Waste Facility Cost Benefit Analysis - Draft", provided by DOE-SR as part of Working Group.

TABLE B-3: COMBINED TRU WASTE INVENTORIES

>WITHOUT ASSAY CAPACITY FOR STORED WASTE

WASTE HANDLING CATAGORY	SITE	STORED VOLUME (CU FT)	STORED NUMBER CONTAINER	NEWLY GENERATED VOLUME (CU FT)	NEWLY GENERATED NUMBER CONTAINERS
SWEPP/PREPP	HANFORD	238,343	32,462	16,750	2,372
	SRP	229,516	25,093	36,108	3,918
SWEPP-II/PREPP-II	HANFORD	90,747	383	23,960	88
	SRP	69,324	619	0	0
SIZE REDUCE	HANFORD	89,772	80	0	0
	SRP	0	0	0	0
	TOTAL	717,702	58,637	76,818	6,378

TOTAL VOLUME	794,520	VOLUME OF HANFORD LLW TO BE BURIED AT INEL	109,148
TOTAL CONTAINERS	65,015	VOLUME OF SRP LLW TO BE BURIED AT INEL	241,073

>WITH ASSAY CAPACITY FOR STORED WASTE

WASTE HANDLING CATAGORY	SITE	STORED VOLUME (CU FT)	STORED NUMBER CONTAINER	NEWLY GENERATED VOLUME (CU FT)	NEWLY GENERATED NUMBER CONTAINERS
SWEPP/PREPP	HANFORD	147,345	17,899	16,750	2,372
	SRP	29,211	3,170	36,108	3,850
SWEPP-II/PREPP-II	HANFORD	72,598	255	23,960	88
	SRP	28,556	100	0	0
SIZE REDUCE	HANFORD	89,772	64	0	0
	SRP	0	0	0	0
	TOTAL	367,481	21,488	76,818	6,310

TOTAL VOLUME	444,299
TOTAL CONTAINERS	27,798

TABLE B-4: PERCENTAGE OF WASTE IN EACH HANDLING CATAGORY

WASTE HANDLING CATAGORY	WITHOUT ASSAY VOLUME (CU FT)	WITHOUT ASSAY NUMBER OF CONTAINERS	WITHOUT ASSAY VOLUME (%)	WITHOUT ASSAY CONTAINERS (%)	WITH ASSAY VOLUME (CU FT)	WITH ASSAY NUMBER OF CONTAINERS	WITH ASSAY VOLUME (%)	WITH ASSAY CONTAINERS (%)
SWEPP/PREPP	520,717	63,845	65.5	98.2	229,414	27,290	51.6	98.2
SWEPP-II/PREPP-II	184,031	1,090	23.2	1.7	125,114	443	28.2	1.6
SIZE REDUCE	89,772	80	11.3	0.1	89,772	64	20.2	0.2
TOTAL	794,520	65,015	100	100	444,299	27,798	100	100

APPENDIX C: TRANSPORTATION COSTS

The primary algorithm for evaluating an effective cost for shipment is stated as:

Total Cost = Capitol Costs + Shipping Costs + Load/Unload Cost
+ Operations/Maintainace Costs

The number of trips was calculated based on waste packages without overpacking. Overpacking would significantly increase the number of required trips but the overall cost per cubic foot would not increase dramatically.

TABLE C-1: TRANSPORTATION COSTS

TOTAL VOLUMES WITHOUT ASSAY: 794,520 CU FT
HANFORD 459,572 CU FT
SRP 334,948 CU FT

	SRP		HANFORD	
	ATMX	TRUPACT	ATMX	TRUPACT
ROUND TRIP COSTS	$4,748	$5,500	$4,748	$5,500
CONVERSION SAVINGS	0.2	0.2	0.4	0.4
ACTUAL RT COSTS	$3,800	$4,400	$2,870	$3,300
CU FT/TRIP	646.94	352.84	646.94	352.84
# OF TRIPS	518	949	710	1,302
SHIPPING COSTS	$1,967,417	$4,176,877	$2,038,786	$4,298,232

TOTAL VOLUMES WITH ASSAY: 444,299 CU FT
HANFORD 350,424 CU FT
SRP 93,875 CU FT

	SRP		HANFORD	
	ATMX	TRUPACT	ATMX	TRUPACT
ROUND TRIP COSTS	$4,748	$5,500	$4,748	$5,500
CONVERSION SAVINGS	0.2	0.2	0.4	0.4
ACTUAL RT COSTS	$3,800	$4,400	$2,870	$3,300
CU FT/TRIP	646.94	352.84	646.94	352.84
# OF TRIPS	145	266	542	993
SHIPPING COSTS	$551,404	$1,170,644	$1,554,577	$3,277,408

	WITHOUT ASSAY	WITH ASSAY
SHIPPING COSTS		
ATMX	$4,006,203	$2,105,981
TRUPACT	$8,475,109	$4,448,052
CAPITOL COSTS		
ATMX	$100,000	$100,000
TRUPACT	$1,200,000	$1,200,000
LOAD/UNLOAD COSTS		
ATMX	$500,000	$500,000
TRUPACT	$1,000,000	$1,000,000
OPERATING/MAINTENANCE COSTS		
-Insignificant-		

TOTAL COSTS	WITHOUT ASSAY	WITH ASSAY
ATMX	$4,606,203	$2,705,981
TRUPACT	$10,675,109	$6,648,052
		$0

COST PER CUBIC FOOT (BASED ON ABOVE TOTAL VOLUMES)

	WITHOUT ASSAY	WITH ASSAY
ATMX	$5.80	$6.09
TRUPACT	$13.44	$14.96

COST PER CUBIC METER (BASED ON ABOVE TOTAL VOLUMES)

	WITHOUT ASSAY	WITH ASSAY
ATMX	$204.71	$215.05
TRUPACT	$474.42	$528.34

APPENDIX D: HANFORD AND SAVANNAH RIVER PLANT FACILITY DESCRIPTIONS

SAVANNAH RIVER PLANT FACILITIES:

	Scenario 1	2	3	4
1) Retrieval Equipment				
-Vacuum Truck	X	X	X	X
-Handling Canisters	X	X	X	X
-Transportation Cask	X	X	X	X
-Trailer	X	X	X	X
-Shielded Backhoe	X	X	X	X
2) Facility				
-Storage and Opening Cell	X	X	X	X
-Hardened Cell	X	X	X	X
-Vent & Purge	X	X	X	X
-Drum Out	X	X	X	X
-Shipping Area	X	X	X	X
-Change Rooms	X	X	X	X
-Maint. Area	X	X	X	X
-Control Room Area	X	X	X	X
-HP Facilities	X	X	X	X
-Sand Filter	X	X	X	X
-Assay System	X	*	X	*
-RTR System	X	*	X	*
-Box Handling	X		X	
-Telerobot	X		X	
-Plasma Torch	X		X	
-Work Table	X		X	
-Process Cell Area	X		X	
-Shredder	X		X	
-Cementation	X		X	
3) Rail Car Loading Facilities	X	X	X	X

* Assay and RTR Systems will only be provided on those sub-scenarios that include assay per the text of the document.

HANFORD FACILITIES:

	Scenario 1	2	3	4

DESCRIPTIONS TO BE ADDED AT A LATER DATE!

APPENDIX E: HANFORD AND SAVANNAH RIVER PLANT FACILITY COSTS

Facility construction costs and operating costs were provided by the respective sites. Shipping costs and total costs have been computed based on the numbers presented in Appendicies B and C.

TABLE E-1: HANFORD COSTS FOR SHIPPING WASTE TO INEL FOR PROCESSING

HANFORD COSTS FOR SHIPPING WASTES TO INEL FOR PROCESSING (MILLIONS OF DOLLARS)

WASTE HANDLING CATAGORY	VOLUME (CU FT)	NUMBER OF CONTAINERS	HANFORD FACILITY COSTS	HANFORD OPERATING COSTS	TRUPACT SHIPPING COSTS	ATMX SHIPPING COSTS
SWEPP/PREPP						
A) WITHOUT ASSAY	255,093	34,834	$5	$20	$3	$1
B) WITH ASSAY	164,095	20,270	$13	$76	$2	$1
SWEPP-II/PREPP-II						
A) WITHOUT ASSAY	114,707	471	*	*	**	$1
B) WITH ASSAY	96,558	343	*	*	**	$1
SIZE REDUCE						
A) WITHOUT ASSAY	89,772	80	$30	$20	**	$1
B) WITH ASSAY	89,772	64	$30	$20	**	$1
TOTALS						
A) WITHOUT ASSAY	459,572	35,385	$35	$40	$3	$3
B) WITH ASSAY	350,424	20,678	$43	$96	$2	$2

* Costs included in above numbers

** Waste is too large for TRUPACT

TOTAL COSTS = SITE FACILITY COSTES + SITE OPERATING COSTS + INEL COSTS +SHIPPING COSTS + INCREASE IN LLW BURIAL COSTS

ALL WASTE SHIPPED IN ATMX		WASTE SHIPPED IN COMBINATION ATMX & TRUPACT	
A) WITHOUT ASSAY	$162 MILLION	A) WITHOUT ASSAY	$164 MILLION
B) WITH ASSAY	$223 MILLION	B) WITH ASSAY	$224 MILLION

TABLE E-2: GREATER CONFINEMENT DISPOSAL VARIATION ON HANFORD WASTE

Assumption: Greater Confinement Disposal (GCD) is an acceptable alternative disposal method for Hanford waste packaged in boxes too large for shipment in the ATMX.

		WITHOUT ASSAY	WITH ASSAY
Costs Reduced:	Facility Costs	$30	$30
	Operating Costs	$20	$20
	Shipping Costs	$1	$1
	LLW Burial Costs	$0	$0
Costs Increased:	GCD Costs	$16	$16
	TOTAL SAVINGS	$35 MILLION	$35 MILLION

TOTAL COSTS FOR SHIPPING ONLY HANFORD WASTE TO INEL

ALL SHIPPED IN ATMX		SHIPPED IN COMB. ATMX & TRUPACT	
A) WITHOUT ASSAY	$128 MILLION	A) WITHOUT ASSAY	$130 MILLION
B) WITH ASSAY	$188 MILLION	B) WITH ASSAY	$190 MILLION

TOTAL COSTS FOR SHIPPING ALL WASTE TO INEL

ALL SHIPPED IN ATMX		SHIPPED IN COMB. ATMX & TRUPACT	
A) WITHOUT ASSAY	$409 MILLION	A) WITHOUT ASSAY	$413 MILLION
B) WITH ASSAY	$466 MILLION	B) WITH ASSAY	$468 MILLION

TABLE E-3: SAVANNAH RIVER PLANT COSTS FOR SHIPPING WASTE TO INEL FOR PROCESSING

SRP COSTS FOR SHIPPING WASTES TO INEL FOR PROCESSING (MILLIONS OF DOLLARS)

WASTE HANDLING CATAGORY	VOLUME SHIPPED (CU FT)	NUMBER OF CONTAINERS SHIPPED	SRP FACILITY COSTS	SRP OPERATING COSTS	TRUPACT SHIPPING COSTS	ATMX SHIPPING COSTS
SWEPP/PREPP						
A) WITHOUT ASSAY	265,624	29,011	$42	$234	$4	$2
B) WITH ASSAY	65,319	7,020	$43	$234	$1	$0
SWEPP-II/PREPP-II						
A) WITHOUT ASSAY	69,324	619	*	*	**	$0 ***
B) WITH ASSAY	28,556	100	*	*	**	$0 ***
TOTALS						
A) WITHOUT ASSAY	334,948	29,630	$42	$234	$4	$2
B) WITH ASSAY	93,875	7,120	$43	$234	$1	$1

* Costs included in above numbers *** Less that $500K

** Waste is too large for TRUPACT

TOTAL COSTS = SITE FACILITY COSTES + SITE OPERATING COSTS + INEL COSTS +SHIPPING COSTS + INCREASE IN LLW BURIAL COSTS

ALL WASTE SHIPPED IN ATMX		WASTE SHIPPED IN COMBINATION ATMX & TRUPACT	
A) WITHOUT ASSAY	$364 MILLION	A) WITHOUT ASSAY	$366 MILLION
B) WITH ASSAY	$360 MILLION	B) WITH ASSAY	$361 MILLION

TABLE E-4: COMBINED SYSTEM COSTS FOR SHIPPING WASTE TO INEL FOR PROCESSING

TOTAL COSTS FOR SHIPPING WASTES TO INEL FOR PROCESSING (MILLIONS OF DOLLARS)

WASTE HANDLING CATAGORY	SITE	VOLUME SHIPPED (CU FT)	NUMBER OF CONTAINERS SHIPPED	SITE FACILITY COSTS	SITE OPERATING COSTS	TRUPACT SHIPPING COSTS	ATMX SHIPPING COSTS	
SWEPP/PREPP								
A) WITHOUT ASSAY	HANFORD	255,093	34,834	$5	$20	$3	$1	
	SRP	265,624	29,011	$42	$234	$4	$2	
B) WITH ASSAY	HANFORD	164,095	20,270	$13	$76	$2	$1	
	SRP	65,319	7,020	$43	$234	$1	$0	
SWEPP-II/PREPP-II								
A) WITHOUT ASSAY	HANFORD	114,707	471	*	*	**	$1	
	SRP	69,324	619	*	*	**	$0	***
B) WITH ASSAY	HANFORD	96,558	343	*	*	**	$1	
	SRP	28,556	100	*	*	**	$0	***
SIZE REDUCE						**		
A) WITHOUT ASSAY	HANFORD	89,772	80	$30	$20	**	$1	
	SRP	0	0	$0	$0	**	$0	
B) WITH ASSAY	HANFORD	89,772	64	$30	$20	**	$1	
	SRP	0	0	$0	$0	**	$0	
TOTALS								
A) WITHOUT ASSAY		794,520	65,015	$77	$274	$7	$5	
B) WITH ASSAY		444,299	27,798	$86	$329	$3	$3	

* Costs included in above numbers *** Less than $500K
** Waste is too large for TRUPACT

SWEPP COSTS WITHOUT ASSAY (1 ADDED SHIFT): $23 MILLION
SWEPP COSTS WITH ASSAY (1 ADDED SHIFT): $23 MILLION
PREPP COSTS (1 ADDED SHIFT): $60 MILLION

TOTAL COSTS = SITE FACILITY COSTS + SITE OPERATING COSTS + INEL COSTS + SHIPPING COSTS + CHANGE IN LLW BURIAL COSTS

ALL WASTE SHIPPED IN ATMX		WASTE SHIPPED IN COMBINATION ATMX & TRUPACT	
A) WITHOUT ASSAY	$443 MILLION	A) WITHOUT ASSAY	$447 MILLION
B) WITH ASSAY	$500 MILLION	B) WITH ASSAY	$502 MILLION

APPENDIX F: INDEPENDANT REVIEW COMMITTEE COMMENTS TO FINAL DRAFT

Attached is the comments of the Defense Waste Management Programs Independant Review Committee (IRC) to the May 1986 draft of this document. These comments have not been incorporated.

S.E. Logan and Associates, Inc.

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(505) 988-2407

for UPS, add: La Tierra 89

September 29, 1986

Mr. Kirk B. McKinley
Joint Integration Office
P.O. Box 1350
Albuquerque, NM 87190-3150

Re: IRC Meeting in Washington, D.C., August 12, 1986

Dear Kirk:

The IRC met in Washington, D.C. on August 12, 1986.

ATTENDEES

Five Members of the IRC attended: William Brobst, Howard Kreider, Stanley Logan, Roy Post, and Robert Ramsey. Bruce Wilson is on sabbatical leave in Scotland, and one position on the committee is vacant. Others attending were John Mathur, DOE/HQ, Dana Beaulieu, JIO/DOE, Lee Morton, JIO/RI, and Drew Detamore, JIO/RI.

MEETING SUMMARY

This was the first meeting of the IRC on the subject of proposed centralized processing of CH TRU waste. The preliminary draft report by the JIO was discussed and suggestions for correcting and clarifying the report were assembled.

DISCUSSION TOPIC

The purpose of this IRC meeting was a preliminary discussion of centralized processing of CH TRU waste. Prior to the meeting, IRC members reviewed the preliminary draft of DOE-JIO-011, "Centralized Processing of Contact-Handled TRU Waste Feasibility Analysis." This report considered four major scenarios with breakdown into a total of eleven options. The base case scenario is processing at all three sites: INEL, Hanford, and SRP. Also reviewed as background information was DOE-JIO-004, "TRU Waste Management Program Cost/Schedule Optimization Analysis."

The IRC recognizes the preliminary nature of the draft centralized processing report and appreciates the opportunity to review it and provide input at this early stage. We understand that a revised version is in process. During IRC discussion with the other attendees, additional clarification on intent of the

study and on contents of the draft report were obtained. As part of this discussion, IRC members provided a number of suggestions for correction and clarification to aid in the immediate revision efforts. In the following paragraphs, items developed during the initial discussion, plus items developed during the IRC caucus are presented. Some elaboration of these items was developed by IRC members subsequent to the August meeting and is included here.

The TRU processing facilities at Idaho have excess capacity as a consequence of relaxation of certain requirements on the handling of TRU contaminated waste from the defense programs. This relaxation to 100 nanocuries per gram as the basis for WIPP disposal means that much material is committed to land burial as LLW that would otherwise have been destined for shipment to and emplacement in the WIPP.

Objectives of Centralized Processing Strategy

The basic premise of the study is to investigate centralized processing as a means to optimize the cost and schedule of the TRU Waste Management Program. The analysis, however, seems to have as its primary objective the avoidance of capital cost for waste treatment facilities. It is notable that the cost differential estimates are in the range of only 10 to 20% of the program for near autonomous processing of waste (base case). Hence, even small set backs in the centralized option could wipe out all economic advantage.

Cost Allocation Assumptions

Some of the assumptions have a large impact on the comparative costs of the various scenario options. For example, the INEL processing costs are assumed to be the same for all centralized processing options, whether Hanford, SRP, or both are processed, and whether with or without assay, even though the volumes to be processed vary by a factor of up to 8.5 (as for option 2a compared to 4b). If INEL processing costs are reapportioned in proportion to volumes handled, the $4M loss for option 2b becomes a $33M gain. Similarly, the range of cost differences for all options tends to narrow and the order changes as more realistic cost apportioning is applied.

Processing of Pu-238 Waste

The question of just how well Pu-238 waste can be handled and treated at INEL is still an open question, and must be resolved before a decision can be made on processing that waste at PREPP. SR's Pu-238 waste had a high Americium content, and just how that would be provided for at PREPP was not discussed in DOE-JIO-011, other than the conclusion that it would be no problem. The justification for the rationale leading to that conclusion needs to be included, in detail, in the report.

The benefit of handling Pu-238 in separate and specifically designed facilities at SRP, because of its pivotal role in production and handling of this material should be considered as an alternative. The complication of handling the higher specific activity of the contamination, combined with the nature of the waste inventory at SRP described as having a high fraction of combustibles, indicates that untreated shipment will entail a higher risk.

Thus, another processing scenario option became apparent during the IRC's discussions: process all Pu-238 waste at Savannah River, and other TRU waste from Hanford and other sites at INEL. SRP may also be able to process some or all of its Pu-239 waste along with Pu-238 waste. This would provide a backup in case of operating or design problems at PREPP. Technically, this makes more sense as well, since PREPP would then be free of the high-activity Pu-238 waste; operations at PREPP would be much simpler and less costly in that option. Also, it would save some transport deadheading, although the cost savings there would be small. Politically, it might be the only acceptable option for handling the Pu-238 waste.

Backup Processing Capability

If centralized processing is adopted, there is a possibility of not having any or at best inadequate processing capability within the Defense Waste complex should the PREPP suffer an operational upset. All the processing eggs are in one basket.

Transportation Costs

DOE-JIO-011 ignores the extra cost of transportation due to the impending redesign of TRUPACT-II-A. That redesign is likely to produce a 50% increase in TRUPACT manufacturing cost, a 20% decrease in payload resulting in a 25% increase in the number of shipments required, and probably a total increase of about 30% in the system transportation cost.

Further, the entire scenario costs for transport seem far too low. Only a portion of the costs seem to have been presented here. Total costs include fabrication and maintenance of TRUPACTs, freight charges, handling and packaging labor and materials, vehicle purchase and maintenance, and administrative overhead. The costs of the extra (spare) TRUPACTs seem to be missing, as well. Listed costs appear to represent only one TRUPACT and one ATMX car. Where are the costs for the same factors as above for ATMX cars (an increaing liklihood)? If more ATMX cars are needed, they will have to be redesigned, since no new cars may be made under those original and now obsolete specifications.

DOE-JIO-011 gives only the extremes in considering the mix of rail and highway shipments. What mix is most likely, particularly in view of the apparent decision to go to a major

redesign of the TRUPACT for double containment? Table C-1 needs to be revised to show some mix ratios, with credible cost figures. Load and unload costs are listed in Table C-1 as being the same whether with or without assay; there is almost a factor of two difference in the volume handled.

Transportation Packaging

WIPP-WAC certification is not a prerequesite to transport of TRU waste to a centralized processing site. Further, the "requirement" that inside drums and boxes meet Type A requirements is a WIPP acceptance criteria, not a DOT or NRC transport criteria. For example, for shipment from MOUND to INEL for processing, the boxes do not need to meet Type A requirements. For shipment from Mound to WIPP for disposal, they do.

The use of the term "container" is inconsistent and confusing. Is the container the TRUPACT itself, the TRUPACT inner liner (if added), or the 55 gallon drum? The terms "container," "packaging," "package," "receptacle," "drum," and "box," should be defined and used consistently. The DOT regulations should be used in making those definitions.

Institutional Issues

The necessity for an expanded shipment program for unprocessed and hence unpassivated and non-volume reduced or non-immobilized waste materials is accompanied by a consequent increased potential for accident and exposure to the handling workers and to the public.

There needs to be a management analysis of both cost-benefit to the autonomous program and cost-risk of the centralized processing case.

Additional IRC Concerns

The IRC has concerns about the accuracy of the estimates used as the basis of the assessment cases in this study. The data presented is in many cases insufficient or inconsistert. Assumptions are not fully supported. The IRC is concerned that the evaluation of the greater issue: a comprehensive and timely program of TRU waste management, integrating generating facilities and disposal facilities, not be compromised by the appeal of near term cost avoidance. The real cost of any lost opportunity to provide needed flexibility and capability must be a factor in the consideration of centralized processing.

There is a need for uniform ground rules for management. What are the minimum requirements for transport to centralized processing? Is there material that would need some processing before shipment and would some processing then justify full processing facilities? How does the proposed plan relate to plans at SRP to incorporate Pu-238 waste in HLW?

The IRC report on the review of double containment and continuous venting issues (April 4, 1986) recommended (page 8): "Increase processing for passivation, immobilization, and volume reduction of combustible waste. Specifically, drums of soft waste in excess of 20 Ci should be considered for processing until processing capacity is fully utilized." This recommendation is also expected to achieve cost reduction. If centralized processing substantially fills the INEL processing capacity, would this then preclude implementing the IRC recommendation? Are cost savings from centralized processing partially offset by lost opportunity for cost reduction through additional processing of INEL TRU wastes?

Because of the relaxation to 100 nanocuries per gram in the definition of TRU, there is the prospect that untreated material having up to 100 nanocuries per gram contamination will now be committed to trench burial in Idaho, where such burial has caused environmental problems in the past. This would be exacerbated by options 2a, 2c, 3a, and 3c (shipment to INEL without assay) which would introduce up to more than 350,000 cubic feet of additional LLW for burial at INEL. This potential increase of LLW is recognized as an issue in DOE-JIO-011. Subsequent to the August 12 IRC meeting, an opinion has been expressed within the IRC that any excess capacity that is available at INEL should also be considered as processing capacity to improve the disposal condition of TRU wastes that are less than the 100 nanocuries per gram but, nevertheless, could constitute an environmental problem if land buried in an untreated situation. Allocation of processing capacity to LLW affects availability for centralized processing and the bases for cost estimates.

Again, the IRC emphasizes that we recognize the preliminary status of the centralized processing study. The IRC believes that the early draft version of the report does not support a decision either way (pro or con) with respect to centralized processing. The IRC does believe that a decision is warranted, and that the matter should not be left to default.

IRC RECOMMENDATIONS

1. The IRC recommends that the DOE not make a decision on centralized processing based on DOE-JIO-011 in its present form.

2. Redo DOE-JIO-011 with better data and fully supported assumptions.

3. Resolve questions surrounding processing of Pu-238 waste at INEL.

4. Examine an additional option to scenarios 2 and 4: process all Pu-238 waste at the SRP and other TRU waste at INEL.

5. Determine whether utilization of INEL processing capacity for

centralized processing precludes additional processing of INEL wastes.

6. Determine needs for INEL processing capacity to improve the disposal condition of LLW.

FUTURE MEETINGS

A revised draft of DOE-JIO-011 is expected to to be available by early December. Prior to that time, revised portions may be made available to the IRC for review. The IRC will meet in conjunction with the TRU Waste Update Meeting #13 in December. If necessary, an additional IRC meeting will be held prior to the update meeting.

Sincerely,

Stanley E. Logan
IRC Chairman

cc: W.A. Brobst, IRC
J.D. Detamore, JIO/RI
H.B. Kreider, Jr., IRC
M.H. McFadden, JIO/DOE
R.L. Morton, JIO/RI
T.H. Nielsen, JIO/RI
R.G. Post, IRC
R.W. Ramsey, IRC
D.B. Wilson, IRC

APPENDIX G: DOE SAVANNAH RIVER COMMENTS TO FINAL DRAFT

Attached is the comments of the DOE Savannah River DWG member to the May 1986 draft of this document. These comments have not been incorporated.

Department of Energy
Savannah River Operations Office
P.O. Box A
Aiken, South Carolina 29802

AUG 19 1986

J. M. McGough, Jr., Director
Waste Management and Transportation
Development Division, AL

DEPARTMENT OF ENERGY (DOE) WORKING GROUP, CENTRALIZED PROCESSING, DRAFT FINAL REPORT (REFERENCE THE MEMORANDUM, BEAULIEU/ADDRESSEES, DATED JULY 9, 1986)

The Savannah River Operations Office (SR) has some concerns with the subject document. Additional information, as required, on the major concerns will be addressed in a memorandum from SR to Albuquerque (AL). However, for the purposes of the meeting between our staffs on August 13, 1986, at DOE-Germantown, here are the main issues of concern to SR. Details of these concerns and full report comments will be provided during this meeting.

- The "without assay" scenario is not a viable option. The Savannah River Plant (SRP) cannot ship unassayed waste to Idaho National Engineering Laboratory (INEL) due to the criticality and safety concerns which may result because the container contents may not be accurately known.

- Some SRP waste will require size reduction prior to shipping to INEL in the Transuranic (TRU) Package Transporter (TRUPACT). The costs for this size reduction are not included in this scenario.

- The cost analysis must include total shipping cost. For SRP waste, the cost to ship waste from SRP to INEL to Waste Isolation Pilot Plant (WIPP) must be compared to the cost to ship SRP to WIPP.

- There are no additional low-level waste (LLW) burial costs as indicated in the cost summary table. Rather, the additional cost would be for transportation of the LLW to INEL.

- $8 M for assay at Hanford seems high.

- Cost tables must specify year of dollars and escalation rates used.

- In cases 3 and 4, one site should not be charged the entire $83 MM INEL operating cost.

- Process Engineering Pilot Plant (PREPP) Waste Evaluation
  - SRP drums weigh 75-100 pounds
  - Decay daughter products must be considered in dose rate calculation

- SRP TRU Waste Inventories table needs further explanation of how the volume numbers were calculated and what years are covered.

In addition, the following major institutional issues are identified as you requested:

- States between South Carolina and Idaho would now also be impacted by the TRU program, where previously only the states between South Carolina and New Mexico were affected. Including these additional states could be significant given the attention recent DOE transportation activities have drawn.

- The protection (and the perception of protection) of worker and citizen health and safety must be provided. The TRU Program has taken a lot of credit with the state of New Mexico for the certification of waste prior to its transportation to and emplacement in WIPP, thereby assuring the politicians and citizens of New Mexico that WIPP poses no hazard to the environment or people of the state. It is doubtful that this perception of protection could be provided to the workers and the citizens of the states exposed to the handling and transportation of the non-x-rayed and non-assayed waste, since we have used the certification of TRU waste to convey the perception of safety in the past.

In conclusion, the non-x-ray/non-assay scenarios are not viable for technical and institutional reasons. In addition, centralized processing does not provide any cost savings if the waste is x-rayed and assayed prior to transporting for centralized processing. Therefore, we recommend that the report conclusion be that for technical and institutional reasons, centralized processing does not provide any cost savings to the national TRU Program.

If your staff would like any additional information prior to the meeting, they may contact Julie D'Ambrosia of my staff on FTS 239-5542.

R. L. Chandler

R. L. Chandler, Acting Director
Process and Weapons Division

OWM:JTD:epm

cc: S. P. Mathur (DP-123), HQ

APPENDIX H: DOE HANFORD COMMENTS TO FINAL DRAFT

Attached is the comments of the DOE Hanford DWG member to the May 1986 draft of this document. These comments have not been incorporated.

Departn.ənt of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

AUG 13 1986

J. M. McGough
Waste Management Transportation
Development Division, AL

DOE WORKING GROUP, CENTRALIZED PROCESSING, DRAFT FINAL REPORT

We have completed review of the subject draft report and based on the enclosed Findings we recommend the following:

1. That the data contained in the draft document be presented to DOE-HQ in an informational briefing.

2. That the document be kept in draft and not issued.

3. That no further work be expended on Centralized Processing but that further consideration should be given to site specific options which could result in cost reduction and/or more effective use of limited funding.

If publication of a final document is deemed necessary we strongly suggest that the scenarios dealing with GCD of Hanford stored TRU waste (oversize boxes) be highly qualified. Also, we believe the scenarios dealing with the shipment of unassayed waste should be deleted as not viable options.

If you have any questions please contact N. T. Karagianes of my staff on FTS 444-6606.

Jerry D. White, Director
Waste Management Division

WMD:NTK

Enclosure

cc w/encl:
S. P. Mathur, HQ/DP-123
M. H. McFadden, DOE/AL
D. H. Beaulieu, DOE/AL
J. D. Ambrosia, DOE/SR
K. Hunter, DOE/ID

Centralized Processing
Draft Final Report
Hanford Findings

1. In the Introduction delete the last sentence on the first page which reads, "Although the costs are strictly a "rough order of magnitude" the results of this assessment now provides DOE-HQ with sufficient information with which it can make a determination of the most cost efficient program for the processing of CH-TRU wastes." First, this is a conclusion not an introduction-type statement and second, it does not agree with Hanford's findings and recommendations.

2. The validity of projected "cost savings" is highly questionable since comparisons are made between reasonably well defined costs (Engineering Studies) in the base case with ROM costs in the options. Hanford costs for example, have an accuracy of +50% to +75%. If Hanford costs, which represent only about 25% of the total costs, were exceeded by only 40% the suggested "cost savings" of $51 million dollars in Option 2(a) would be negated. Further, although the ROM cost estimates are alluded to in the General Issues section, the implication is that all costs could rise equally thereby maintaining the "cost savings difference." This would be extremely unlikely since the more accurate base case dollars would certainly rise by a lower percentage than the ROM figures, thereby reducing or eliminating cost differences ("savings").

3. The document lists a large number of highly sensitive institutional and technical issues not the least of which is the use of GCD for Hanford stored TRU waste (oversize boxes). Currently based on early comments on the HDW-EIS, Hanford sees a regional consensus to move forward with the disposal of three types of waste; one being the shipment of stored TRU waste to WIPP. Final decisions will be made at a later date but it is key to recognize that these decisions should be made on environmentally sound basis rather than on a cost basis alone. From this standpoint the publication of a DOE document at this time alluding to cost savings and suggesting changes in program direction for this reason could do serious harm to DOE credibility.

4. The issue of transportation safety has barely been addressed from the standpoint of moving unassayed materials. Many of Hanford's earlier (early to mid-1970's) measurements and records on stored TRU Wastes are at best minimal. Further, the inventory of potentially mixed wastes complicates the issue even more. The assumption in the report that overpacking would satisfy transportation safety issues is highly simplistic particularly when considering the States' interest in nuclear transport activities and our inability to guarantee waste drum contents.

APPENDIX I: DOE IDAHO COMMENTS TO FINAL DRAFT

Attached is the comments of the DOE Idaho DWG member to the May 1986 draft of this document. These comments have not been incorporated.

United States Government **Department of Energy**

Idaho Operations Office

memorandum

DATE: August 28, 1986

SUBJECT: DOE Working Group Report "Centralized Processing (July 1986)," Review Comments On

TO: Dana Beaulieu
DOE-AL

DOE-ID does not believe that the subject report is substantive in that findings or recommendations based on the data within the report are lacking or minimal. In addition, we question the objectivity of costs provided by SRP and Hanford, and the accuracy of costs detailed for the INEL. SRP and Hanford costs appear excessive and are not supported. The estimate of $83M to process both SRP and Hanford waste at the INEL is excessive. The INEL estimate for this option is $46.1M.

Selection of a strategy for SRP and Hanford wastes will result in significant cost impacts (tens of millions of dollars) to the DOE system. This report does not provide the necessary basis for the rational development of such a strategy. Because of the potential cost savings, we strongly recommend that an independent group be funded and provided with necessary resources and support to complete a thorough, unbiased alternatives evaluation. Detailed comments are attached.

E. K. Hunter

E. Kent Hunter
Waste Management Branch

Attachment

cc: D. L. Uhl, EG&G, w/att.
T. B. Hindman, DOE-HQ, w/att.

INEL COMMENTS ON DOE WORKING GROUP

CENTRALIZED PROCESSING REPORT (July 1986)

Item	Page	Section	Paragraph	Comment
1	2	Second, Cover Page	--	K. E. Hunter should be E. K. Hunter
2	5	Introduction	1	The words "contact-handled" should be added to describe the type of TRU waste that would be processed.
3	"	"	2	It would seem that "rough order of magnitude" costs for a report that impacts the DOE system in terms of tens of millions of dollars reflects the need to have an unbiased alternatives evaluation conducted by an independent group that has the time and resources to put such a report together.
4	6	Approach	1	The statement concerning evaluating the INEL facilities for suitability with Hanford and SRP wastes is not totally accurate. There are not large "general differences" in the waste. The PREPP evaluations for SRP and Hanford conclude the wastes are <u>similar</u> to Rocky Flats (i.e. INEL) wastes.
5	8	Discussion of Scenarios	Scenario 1	Hanford, even with their own facilities, may have some TRU waste not acceptable at WIPP and would require GCD.
6	"	"	"	Last sentence - change "storage" to "disposal" for wastes shipped to WIPP.
7	"	"	Option A	The assumption that a shipping container is available for wastes that contain free liquids, particulates, etc. should be stated.

Item	Page	Section	Paragraph	Comment
8	9	Option 6	1	A statement concerning what will happen to LLW should be added, or clarified by inserting "TRU", where applicable, for wastes sent to INEL for processing.
9	9	"	2	Assaying does not necessarily "significantly" increase the costs at each site. No consideration has been given to use of the mobile systems currently under construction or other less expensive alternatives.
10	10	Transportation Option	1	The table shows four shipping containers, not three. Should TRUPACT II be listed since it doesn't exist?
11	12	"	TRUPACT (1)	The SARP interpretation does not impact certifying waste to the WIPP-WAC. It does impact transportation to WIPP.
12	12	"	ATMX	Last sentence - "meat" should be "meet".
13	14	Summary of Costs		In general, the INEL questions the objectivity of the numbers presented for the various options. Specifically: (1) Option 2 a) and b) - Why does Hanford need $8M for assay and SRP only $1M? Assay systems are not that expensive. (2) Option 2 c) and d) - One of these should say "assay", the other "no assay". (3) The site operating costs for Hanford under Option 2 b) and c) indicate it will cost $56M to assay the waste. This is extremely high ($116/ft^3). By your figures, INEL could

Item	Page	Section	Paragraph	Comment
13	14	Summary of Costs (Cont.)		process the Hanford waste for less ($41M) than Hanford can just assay the waste. Yet, SRP says it costs nothing to assay their waste. This discrepancy should be resolved. (4) Option 3 and 4 - It is not clear why it would cost $83M to process waste at <u>one</u> site vs. $41M at each site under Options 1 and 2. (5) Previous INEL comments have questioned the $41M figure for our processing costs. Our estimate to process both the SRP and Hanford Waste is $46.1M. This includes costs to examine the waste at SWEPP, process in PREPP, and reexamine in SWEPP.
14	15	Scenario 2	Option a, c, & d	The term "positive cost impact" seems contradictory given the context of the sentence. For Option c, do the savings include development costs for GCD?
15	16	Scenario 3	Option a	The cost summary chart indicates savings of $496M. Also, as previously stated, it should not cost twice as much to process one site's waste under one option as compared to another option where both sites' wastes are being processed. "Capibility" should be "capability".
16	18	Institutional Issues	General Issues	(1) Bullet 1 - Couldn't the costs also be less than predicted? (2) Bullet 3 - SWEPP is already operating and PREPP will be operating in 18 months. (3) Bullet 8 SWEPP and PREPP are scheduled to process classified wastes.

Item	Page	Section	Paragraph	Comment
17	19	Institutional Issues	Transportation	Bullet 4 - The TRUPACT SARP restricts free liquids and particulates. The issue of having a shipping container for wastes requiring processing needs to be addressed. Right now, there is not a container in place that will meet this need.
18	29	Appendix C	1	How can the overall cost per cubic foot not increase if you are significantly increasing the number of required trips by using overpacks? The shipping cost is a majority of the transportation costs.
19	31	Appendix D	1	Why does SRP need a shielded backhoe and cask to handle CH-TRU wastes?
20	33	Table E-1	1	The Hanford operating cost, under the SWEPP/PREPP category, shows $20M without assay and $76M with assay. The incremental cost of $56M is unreasonable. SWEPP's operating budget is approximately $4M/year to process 5000-6000 containers/year. Assuming Hanford could only assay 5000 containers/year, this equates to a 7 year campaign, based on 35,000 containers. The maximum cost should be $28M (7 yrs x $4M/year operating). We do not understand the reason for this large discrepancy.
21	34	Table E-3	1	What is the basis for the SRP estimate of $234M for operating costs? With only 29,000 packages to examine, and assuming examination of 5000 packages per year based on SWEPP, this equates to a 6 year campaign. This makes the operating costs almost $40M/year which greatly exceeds the annual combined operating costs for both SWEPP and PREPP.

END

DATE FILMED

11/2/91