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ALTERNATIVES GENERATION ANALYSIS LONG LENGTH CONTAMINATED EQUIPMENT REMOVAL SYSTEM STORAGE

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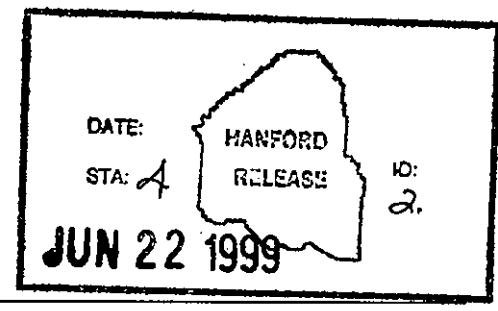
Abstract:

The long length contaminated equipment was designed and built to aid in the remote removal and transport of highly radioactive, contaminated equipment from various locations in the tank farms to disposal. The equipment has been stored in an open lay-down yard area, exposed to the elements for the past year and a half. The possible alternatives available to provide shelter for the equipment are investigated.

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ALTERNATIVES GENERATION AND ANALYSIS REPORT

STORAGE AND MAINTENANCE ACTIVITIES
OF CHARACTERIZATION LONG LENGTH
CONTAMINATED EQUIPMENT
REMOVAL SYSTEM

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ALTERNATIVES GENERATION AND ANALYSIS REPORT

STORAGE AND MAINTENANCE ACTIVITIES OF CHARACTERIZATION LONG LENGTH CONTAMINATED EQUIPMENT REMOVAL SYSTEM

1.0 DECISION ANALYSIS SUMMARY

1.1 STATEMENT OF THE ISSUE

Major pieces of Characterization sampling equipment are currently stored outdoors. This includes the Long Length Contaminated Equipment receiver trailer and transportation trailer. A decision is required to determine the preferred alternative for facilities to store and maintain this equipment.

1.2 DECISION BACKGROUND ITEMS

The Long Length Contaminated Equipment Removal System (LLCERS) consists of many tools, mechanisms, and controllers currently stored in various locations. Much of this equipment should be protected from the elements while being stored. Some of the LLCERS equipment should be protected with some kind of roof cover. This decision analysis is to determine the best alternative for weather protection for the large equipment requiring a cover. Additional details are included in Sections 2.0 and 5.0. Key assumptions used in this analysis are detailed in Section 3.2.

1.3 ALTERNATIVES CONSIDERED

These alternatives were directed into two decisions: The first decision was to determine the kind of facility for storage. With the determination that some new facility would be needed, alternatives for locations of the facility were considered.

The following alternatives were considered. A detailed description of the alternatives is included in Section 6.0:

- use building 337/300 high bay
- use building 335/300 maintenance shop
- use building 167 at WNP-1
- use building 275-EA/200E, old PUREX warehouse
- procure temporary facilities
- construct new facilities
- have separate facilities for non-smearable and non-contaminated

- maintain and store in place
- take no action

1.4 DECISION CRITERIA

A decision criterion is a factor used to select a preferred alternative. The following relevant decision criteria were chosen for the conduct of the decision analysis process. A detailed description of the criteria is included in Section 4.0.

- Cost
- Safety
- Operability
- Equipment Protection
- Accountability
- Programmatic Risk

1.5 ALTERNATIVES EVALUATION

A summary of the analysis results for each of the alternatives is presented in this section. Additional information is contained in Section 6.0. The performance scores for each alternative are summarized in Tables 1, 2, and 3. Since some of the alternatives entailed erecting a new structure and some used existing structures, the evaluation of where to locate any new structure was going to be performed only if one of the new structures was the preferred alternative. This also made the initial evaluation less complicated. Three alternatives did not pass the initial screening and were not evaluated.

During the initial evaluation Alternatives 5, 7, and 8 (fabric structure, pole building, and metal building) received the same score, which tied them for being the preferred alternative. These three alternatives were further evaluated against each other. Three decision criteria (Operability, Equipment Protection, and Accountability) were not used in the evaluation because each alternative was considered to be equal for those criteria. Table 2 summarizes this evaluation.

The evaluation of the location of the new structure is summarized in Table 3. Two decision criteria (Equipment Protection and Programmatic Risk) were not used in the evaluation because each alternative is considered to be equal for those criteria.

2.0 PROBLEM STATEMENT

2.1 LLCERS PROGRAM

Over the next ten years or so the Hanford underground waste tanks are scheduled to be retired. As part of that effort, the long length equipment inserted into the tanks (on the order of 1300 pieces) (Grams 1998, Roach 1995), such as thermocouple trees, pumps, level gages, etc., will have to be removed. These pieces of equipment are highly contaminated, and removing/disposing of them requires special procedures and equipment.

This equipment, known collectively as the Long Length Contaminated Equipment Removal System (LLCERS) Equipment, consists of approximately 150 individual tools/mechanisms/controllers stored at four locations in the 200 Areas. A complete list of these items can be found in Appendix D (Compilation of Long length Contaminated Equipment System Equipment). Along with a description of the equipment, its location and size are given in the table. In addition, comments as to recommended handling methods, storage urgency, and ownership can be found.

Ownership refers to the organization/project "tasked" with the planned LLCE removal effort. Some of the items are owned by Project W-211, which has the overall responsibility of providing feed material to the forthcoming vitrification campaign.

This Alternatives Generation Analysis (AGA) does not concern itself with storage of Project W-211 items. They are included in Appendix D for reference only.

Other LLCE removal efforts will be within the responsibility of the River Protection Project/Characterization Project Operations (RPP/CPO). (The River Protection Project [RPP] was formerly known as the Tank Waste Remediation System [TWRS].) Besides the equipment assigned to RPP/CPO, all of the items associated with the now-completed Project 320 are assumed to be the responsibility of this AGA. In addition, a number of replacement/consumable items (used by Project W-211) will have to be procured by RPP/CPO some time in the future. Consequently, this AGA will arrange for storage space to be in-place when these items are eventually purchased. The items for which storage is required by this AGA are tabulated in Table 4.

It is expected that RPP/CPO will support LLCE removal efforts site-wide. In support of vitrification feed material, RPP/CPO expects to provide Project W-211 with receiver/transportation trailers, high-pressure water washers, and other equipment/services as needed.

2.2 LLCERS

Long Length Contaminated Equipment Removal System (LLCERS) Equipment is intended to remotely remove radioactive, contaminated equipment from underground storage tanks. The LLCERS is designed around the concept of a flexible receiver, which is essentially a heavy-duty (Hypalon®) bag into which the long length in-tank equipment is pulled as it comes out of the tank. Once out of the tank and in the flexible receiver, it is placed in a trailer-mounted "strong back" receiver trailer (Item 43, Table 4) which lowers the LLCE piece to the horizontal position. Another trailer, transportation trailer, (Item 44, Table 4) then inserts the bagged LLCE component into a burial container.

The entire LLCERS is completely remotely operated and automatic. Besides the bagging and handling equipment, the LLCERS includes a large quantity of specialty tooling, which performs functions such as the following:

- assaying the nature of the LLCE component's radioactive contamination
- spray washing equipment
- mating to the various sized tank risers
- storage containers for the used (i.e., contaminated) staging equipment
- remotely viewing equipment
- computer controlling equipment.

Appendix D lists all of the LLCERS equipment. The location of the lay-down areas for each of the LLCERS components is also listed.

The LLCERS receiver trailer and transportation trailer have been stored outside for the past two years. If no action is taken to protect the equipment from prolonged exposure to the elements (wind, rain, snow, sunlight), the more vulnerable components such as electrical wiring, hoses, gaskets, and tires will deteriorate. This condition will require a significant quantity of component replacement and potential re-testing of the LLCERS.

3.0 CONSTRAINTS AND ASSUMPTIONS

3.1 CONSTRAINTS

There are no constraints identified for the purposes of this AGA.

3.2 ASSUMPTIONS

It is assumed that

- the storage effort of the LLCERS components can be financed with expense funds or that expense funds can be reprogrammed to capital funds.
- the LLCERS will be used on a repetitive basis in tank farms as in-tank equipment is to be retrieved.
- the next assignment for the LLCERS equipment will be Project W-211.
- Project W-211 will commence in approximately one year.
- all maintenance and operating procedures will be in place by the initiation of Project W-211. Engineering/design of the LLCERS is (essentially) complete.
- only a small portion of the equipment will be contaminated after use. It is assumed that the contamination will be non-smearable.

4.0 DECISION CRITERIA

4.1 CRITERIA

A decision criterion is a factor used to select a preferred alternative. The following relevant decision criteria were chosen.

4.1.1 COST

The cost of the alternative is the total cost with the assumption that the life cycle is complete within ten years.

4.1.2 SAFETY

Impact on the health and safety of Hanford Site Workers and the off-site population from radiological, toxicological, industrial, and environmental hazards associated with work site activities - Controlling radiation exposure to employees at levels that are as low as reasonably achievable (ALARA) shall be a primary goal.

4.1.3 OPERABILITY

"Ease of Use" operability measures to consider include preparation of equipment for first deployment, preventive maintenance (before deployment and after deployment), storage of contaminated equipment, and availability of equipment for training.

4.1.4 EQUIPMENT PROTECTION

Impact on the condition of the equipment while in storage, including the amount of degradation of parts and systems

4.1.5 ACCOUNTABILITY

Physical security of all equipment

4.1.6 PROGRAMMATIC RISK

Alternatives are evaluated based on the ability to meet current and potential future requirements for removal of long length contaminated equipment from tanks.

4.2 WEIGHTING OF DECISION CRITERIA

The decision criteria described above are weighted according to their relative degree of importance. Assigning numerical values quantifies the criteria and reduces the effect of evaluator bias on the analysis. The sum of the weights of all of the criteria is equal to 1.00. The Decision Plan describes the method of judging the performance level. The performance of each alternative is estimated with respect to each criterion in Section 6 of this analysis. The performance level is judged as poor, average, or good with corresponding scores of 1, 2, or 3, respectively. Among the alternatives compared, at least one alternative must receive a score of 1 and another a 3 if there are differences between the alternatives. If there were no differences among the alternatives for a specific category, that category would be deemed "not applicable" for purposes of evaluating differences among the alternatives. The weighted score is the product

of each weighted criterion and the corresponding performance level score. The total score of each alternative is the sum of the weighted scores. The analysis of the alternatives performed with numerical weighting and performance levels is documented in tabular form in Tables 1, 2, and 3.

Weighting factors for each of the criteria have been determined by the Decision Maker with the support of the Decision Support Board.

5.0 FUNCTIONS AND REQUIREMENTS

5.1 SHELTER TYPES

In Table 4 the clearance dimensions (length, width, height) are given for the LLCERS components that are to be stored by RPP/CPO. Additionally, the required area is given, which is the clearance area plus a foot or so of space around the equipment for access. Other information, such as the recommended type of shelter, handling method, and relative cost estimate is also given.

Most of the LLCERS equipment does not need much more shelter than a tarp (7000 sq ft). However, a smaller amount (5000 sq ft) requires at least roof cover. This area includes access to those items that have to be maintained/exercised while in storage.

Components that have clearance dimensions less than approximately four feet can be stored in Conex boxes. In Table 4 about 1700 sq ft of area is identified as Conex-box storage, which equates to three Conex boxes. The rest of the LLCERS equipment (1200 sq ft) is intended for outdoor use/storage and can continue to be stored in a lay-down yard. The total required square footage in Table 4 is 15,000.

It should be noted that the total "clearance" area for all of the LLCER equipment (Appendix D) is approximately 22,000 sq ft.

5.2 STORED AND CONTAMINATED

Generally, equipment that has been used in a tank farm is considered to be potentially contaminated. However, great effort is normally expended in preventing contamination of most of the LLCE components. Components such as

- receiving/transportation trailers,
- work platforms,
- lift bail extensions,
- equipment used in pits,
- transfer chutes/troughs,
- flexible receiver applicators,
- containers for platforms/receiver applicators,
- and high pressure water washers

would not be expected to be contaminated during LLCERS operation.

The rest of the items either will not enter tank farms and, thus, not be contaminated (e.g., control trailers, conex boxes) or will be buried with the removed LLCERS (e.g., burial containers, tank insertions).

Experience in using the first generation of the LLCERS (Project W-320) has shown that equipment items could be "free released" after deployment in tank farms. The only exception was the flexible receiver that is being stored in boxes at a radiation buffer area (RBA) (see Appendix D). In Appendix D components that could, potentially, become classified as "regulated/non-smearable" are identified.

6.0 ALTERNATIVES DESCRIPTION

The purpose of this Alternatives Generation Analysis is to investigate the possible alternatives available to provide a shelter for the LLCERS equipment to minimize damage from the weather.

6.1 USE EXISTING FACILITIES

6.1.1 ALTERNATIVE 1 - BUILDING 337/300 HIGH BAY

The 337 High Bay is in the 300 Area about 20 miles from tank farms. Most of its floor space (about 10,000 sq ft) is currently available for rent. Some sodium stabilization activity is continuing in the back part of the building, but this activity would not impact storage of the LLCERS equipment. The doorway height is 20 feet. The charge-out rate is \$36/sq ft/yr. Radioactively regulated equipment/material is not allowed.

During the decision analysis meeting, it was observed that the access to this building (driveway) is too restricted for movement of the receiver trailer and the transportation trailer.

6.1.2 ALTERNATIVE 2 - BUILDING 335/300 MAINTENANCE SHOP

The 335 Maintenance Shop is across the street from the 335 building, i.e., approximately 20 miles from tank farms. Currently the building is empty. It has 7200 sq ft plus an office area. However, it has no fire protection. The charge-out rate is \$36/sq ft/yr. The doorway is 20 ft high. Radioactively regulated equipment/material is not allowed.

During the decision analysis meeting, it was observed that the access to this building (driveway) is too restricted for movement of the receiver trailer and the transportation trailer.

6.1.3 ALTERNATIVE 3 - BUILDING 167 AT WNP-1

WNP-1 has a large number of buildings (estimate 50) to be leased--not all of which are warehouses. Most of the buildings that would be suitable for LLCERS storage have been leased or are being used. The 167 building, however, would be suitable for LLCERS equipment, and will be available in 30 days. It has 7200 sq ft of floor space and its doorway height is 13 ft. It

rents for \$2.50/sq ft/yr. It does not have any fire protection. Radioactively regulated equipment/material is not allowed.

6.1.4 ALTERNATIVE 4 - BUILDING 275-EA/200 OLD PUREX WAREHOUSE

The 275-EA warehouse was built before/during PUREX construction to store building material and equipment. According to some points of view, the building was supposed to be torn down after PUREX was complete, but it was used to store jumpers and chemicals during the operational history of PUREX. It is an L-shaped building with a kind of courtyard/parking lot in the space between the legs of the L.

The building is being prepared to be torn down, but structurally it is still sound (roof tight, etc.), but all utilities have been disconnected, especially fire protection. Estimates for re-installing fire protection range up to \$500k.

275-EA has 35,000 sq ft of floor space, but the ceiling is rather low. The door opening is 9 ft-11 in. There is no ramp access--the building is accessed by means of a loading dock that runs the length of both legs of the L. There is a porch over the loading dock. There appears to be plenty of room in the courtyard to build a ramp if it were necessary.

The current owners would like to give the building away. Consequently, they have no impositions as to use with contaminated material/equipment.

During the decision analysis meeting, it was observed that this building has insufficient height for the receiver and transportation trailers.

6.2 PROVIDE TEMPORARY FACILITIES

Fluor Daniel Northwest, Inc. produced a report (Appendix A) on concepts of erecting temporary facilities for the LLCERS equipment. It covers some erection details, site preparation, and costs for tent-type covers and other temporary buildings. Details relating such structures to the Uniform Building Code are also included. The estimates are based on a 7200-sq-ft structure, which would be sufficient to support the storage requirements called out in Table 4.

6.2.1 ALTERNATIVE 5 - PURCHASE PORTABLE FABRIC STRUCTURE

Appendix A recommends a sprung-arched frame support and membrane system as the most versatile shelter type. It represents maximum flexibility and could be located, relocated, or removed as necessary with little effort.

Rough cost estimates were obtained from vendors. For an enclosed structure, the study found an estimate of \$13 to \$17 per sq ft and \$12 per sq ft of a roof only. Prices vary somewhat between steel and aluminum frame arch. These estimates are based on a 7200-sq-foot structure. LLCERS needs 5000 sq ft, as shown in Table 4, which could be provided for between \$60k and \$85k. It is assumed that the structure would be purchased and built, as a commercial building would be outside the Hanford site, by the vendor. Foundation costs are not included in the above

estimates, but are included in Paragraph 6.6.

It is also assumed that non-smearable equipment could be stored in a newly-constructed shelter if necessary permitting were acquired.

6.2.2 ALTERNATIVE 6 - LEASE PORTABLE FABRIC STRUCTURE

Appendix A includes costs for leasing a sprung-arched frame support and membrane system. Based on the assumed life cycle of ten years for the LLCERS (Paragraph 4.1.1), the rental can be seen to be \$2000 to \$2500 per month for a 7200-sq-foot shelter, which amounts to \$ 0.28 to \$0.35/sq ft/month, depending upon construction material and whether the shelter has walls. Considering that RPP/CPO requires 5000 sq ft for 120 months, the rented shelter would cost between \$170k and \$200k.

6.3 CONSTRUCT NEW FACILITIES

Appendix A considers two types of semi-permanent shelters:

- a pole-and-wood-frame structure with metal roof and siding;
- a rigid-frame, steel structure with corrugated metal walls and roof.

6.3.1 ALTERNATIVE 7 - CONSTRUCT POLE BUILDING

Rough cost estimates were obtained from vendors for a pole-type shelter, assuming that the structure would be purchased and built as any commercial building would be outside the Hanford site by the vendor. Based upon a 60 x 120-ft building, the cost is between \$4 and \$7.60/sq ft, depending on whether the shelter needs walls. For the 5000 sq ft required in Table 4, this type of construction is expected to cost \$20k to \$38k.

It assumed that non-smearable equipment could be stored in a newly constructed shelter if appropriate/necessary permitting were acquired.

In addition, certain site improvements may be necessary, based upon existing site conditions, considering the size, weight, and maneuverability of the LLCERS trailers.

During the decision analysis meeting, it was observed that pole buildings are a permanent type structure and, thus, less versatile than some other types of shelter.

6.3.2 ALTERNATIVE 8 - CONSTRUCT METAL BUILDING

As can be seen in Appendix A, cost estimates were obtained from a vendor for a metal building, assuming that the shelter would be purchased and built as any commercial building would be outside the Hanford site by the vendor.

The cost per square foot, given in Appendix A, is between \$11 and \$16, depending upon the need for walls. For the 5000 sq ft required by Table 4, the steel structure would be expected to cost between \$55k and \$80k.

It assumed that non-smearable equipment could be stored in a newly constructed shelter if appropriate/necessary permitting were acquired.

In addition, certain site improvements may be necessary, based upon existing site conditions, considering the size, weight, and maneuverability of the LLCERS trailers.

During the decision analysis, meeting, it was observed that a metal building is essentially a relocatable type of structure and, thus, it would be more versatile than a pole building.

6.4 ALTERNATIVE 9 - MAINTAIN AND STORE IN PLACE

Most of the LLCERS equipment is designed for out-of-doors use and is constructed to be kept outside. For all of the LLCERS, the effect of weather deterioration could be minimized if shelter could be provided.

Outdoor storage of those components designed for outdoor storage would be an acceptable alternative to constructing a building or using an old building. However, this approach would require that regular preventive maintenance (PM) be performed on the equipment. At the present time, the cost of this alternative is difficult to estimate since PM procedures are not available for the LLCERS.

6.5 ALTERNATIVE 10 - NO ACTION

The LLCERS has been stored in several open, lay-down areas, exposed to the elements for the past two years.

If no action is taken to protect the equipment from prolonged exposure to the elements (wind, rain, snow, sunlight), the more vulnerable components such as electrical wiring, hoses, gaskets, hydraulic cylinders, and tires will deteriorate. This condition will require a significant quantity of component replacement and potential re-testing of the LLCERS.

6.6 LOCATION ANALYSIS

In Appendix A three locations are suggested for erection of a temporary/permanent shelter. Two of the three are at the Cold Test Facility (between 200E and 200W areas, across Route 3 from the fire station) and the third is just west of it.

Because the receiving trailer and transportation trailer are so large and difficult to maneuver, the Appendix A report includes a certain amount of road improvements for moving the trailers. In addition, the surface upon which the trailers will be set will have to be specially prepared with crushed stone to support them. The cost of the roadwork including a crushed-stone trailer pad (see Appendix A) is between \$100k and \$180k, depending upon which location near the Cold Test Facility is chosen.

Another location to be considered is the lay-down yard north of 2704HV. Currently, the area is largely vacant, and ground improvements are already in place. Site improvement costs

approaching \$100k to \$180k could be avoided in the 2704HV.

Table 2 (Decision Criteria Matrix) provides a list of shelter types, the shelter providers, and a rough cost estimate for each. The costs for the constructed facilities are primarily based on Appendix A.

7.0 APPENDICES

A-1 - "Determination of Structure Type and Location for a Storage Shelter for the Long-Length Contaminated Equipment (LLCE)" Engineering Study, March 1999

A-2 - "Determination of Structure Type and Location for a Storage Shelter for the Long-Length Contaminated Equipment (LLCE)" Final Report, May 1999

B - Decision Plan

C - Meeting Minutes

D - Compilation of Long Length Contaminated Equipment System Equipment

REFERENCES

Grams, W. H., 1998, "Unreviewed Safety Question Screening, TF-98-0544, "Long Length Equipment Removal Using the Flexible Receiver," dated June 2, 1998.

Roach, H. L., ICF-KH, Letter to P. A. Titzler, WHC, "FY2000 Potential LLCE Retrievals and All LLCE Sorted by Container Size," ETS-W-95-2322, dated August 22, 1995.

TABLES

Table 1 - Decision Criteria Matrix for LLCERS Storage Facility

Table 2 - Decision Criteria Matrix for LLCERS New Storage Building

Table 3 - Decision Criteria Matrix for LLCERS Storage Facility Location

Table 4 - RPP Long Length Contaminated Equipment System Equipment

Table 2. Decision Criteria Matrix for LLCERS New Storage Building

Decision Criteria	Criterion Weight	Alternatives Evaluation					
		Alternative 5 Purchase Fabric/PVC w/metal frame		Alternative 7 Pole/wood Frame Structure		Alternative 8 Metal Building	
		*Score	Weighted Score	*Score	Weighted Score	*Score	Weighted Score
Cost	0.30	2	0.60	3	0.90	1	0.30
Safety	0.05	3	0.15	1	0.05	3	0.15
Operability	0.20	3	0.60	1	0.20	3	0.60
Equipment Protection	0.30		0.00		0.00		0.00
Accountability	0.05		0.00		0.00		0.00
Programmatic Risk	0.10		0.00		0.00		0.00
Total	1.00		1.35		1.15		1.05

* 1= Poor, 2= Average, 3= Good

Table 3. Decision Criteria Matrix for LLCERS Storage Facility Location

Decision Criteria	Criterion Weight	Alternatives Evaluations							
		Alternative 1		Alternative 2		Alternative 3		Alternative 4	
		Cold Test Facility Option 1		Cold Test Facility Option 2		Cold Test Facility Option 3		Laydown Yard North of 2704HV	
		*Score	Weighted Score	*Score	Weighted Score	*Score	Weighted Score	*Score	Weighted Score
Cost	0.30	1	0.30	2	0.60	2	0.60	3	0.90
Safety	0.05	3	0.15	3	0.15	3	0.15	1	0.05
Operability	0.20	2	0.40	3	0.60	3	0.60	1	0.20
Equipment Protection	0.30		0.00		0.00		0.00		0.00
Accountability	0.05	1	0.05	1	0.05	1	0.05	3	0.15
Programmatic Risk	0.10		0.00		0.00		0.00		0.00
Total	1.00		0.90		1.40		1.40		1.30

* 1= Poor, 2= Average, 3= Good

TABLE 4. RPP LONG LENGTH CONTAMINATED EQUIPMENT REMOVAL SYSTEM EQUIPMENT

Item	Description	Belongs to	Comment	Length	Width	Ht	Req'd Ft ²	Importance of storage	Material Concerns	Type (heat, weather)	Replace cost	Handle with
23	High Pressure Water Washer on Trailer	W-320	HO-64-5257 (store contaminated)	224 in	94 in	95 in	198	High	Hyd, elec, automot	roof	high	pickup truck
25	26-in Dia Poly Pipe plus end caps	RPP	3 ea approx 80 ft long	73 ft	28 in DIA		900	Low				fork truck
26	LLCE Long Lift Beam	RPP	30in I-beam, approx 72 ft long (store contaminated)	71 ft	24 in	13 in	296	Moderate	Painted	tarp	moderate	fork truck
27	106-C Pit A Work Platform Large	W-320	WGS-XVV-375234 S/N 189296 (store contaminated)	228 in	112 in	69 in	177	Low				fork truck
28	106-C Pit A Work Platform Medium	W-320	WGS-XVV-375234 S/N 189289 (store contaminated)	144 in	88.5 in	42 in	89	Low				fork truck
29	106-C Pit A Work Platform Small	W-320	WGS-XVV-378234 S/N 189049 (store contaminated)	161 in	168 in	24 in	187	Low				fork truck
30	34 in Dia Pipe with Flange	W-320		130 in	43 in dia		72	Moderate	Rust	roof	low	fork truck
31	72-in Dia Culvert	W-320		99 in	72 in dia		49	Low				fork truck
32	Tower	W-320	approx 50 ft tall (store contaminated)	42 ft	138 in	100 in	675	Moderate	Painted	tarp	moderate	fork truck
33	Rectangular Container	W-320	H-2-820736, S/N 189254 (store contaminated)	227 in	89 in	137 in	140	Low				fork truck
34	Rectangular Container 42-in Flex/ receiver Cartridge 2 each	W-320	H-2-79352/H-2-73359 (numbers on only one) (store contaminated) S/N's 189203 & 4	106 in	146 in	114 in	215	Low				fork truck
35	Rectangular Container Sluicing Pit AY-02B	W-320	H-2-820735 (store contaminated)	169 in	162 in	152 in	190	Low				fork truck
36	Short Tower	W-320	(approx 10 ft tall)	233 in	150 in	136 in	243	Excess				
37	Moveable, Elevated Drum	W-320	(approx 15 ft tall)	112 in	99 in	165 in	76	Excess				
38	Rectangular Container Heel Pit CR-06B W-320	W-320	H-2-820737 S/N 189205 (store contaminated)	150 in	120 in	96 in	125	Low				fork truck
39	Rectangular Container Bag Assembly	W-320	H-2-79297 (store contaminated)	72 in	49 in	52 in	24	Low				fork truck
40	Rectangular Container	W-320	S/N 189288 (store contaminated)	111 in	82 in	53 in	63	Low				fork truck

Item	Description	Belongs to	Comment	Lngh	Width	Ht	Req'd Ft ²	Importance of storage	Material Concerns	Type (heat, weather)	Replace cost	Handle with
41	Rectangular Container 42-in Prototype Leak Containment Bag	W-320	H-2-79362 (store contaminated)	111 in	82 in	53 in	63	Low				fork truck
42	Railings (3) and Plates (2)	W-320	(store contaminated)	170 in	127 in	24 in	150	Low				fork truck
43	LLCE Receiver Trailer	RPP/CPO	HO-64-4283 (store contaminated)	83 ft	154 in	172 in	1800	Moderate	Hyd & elec equ	roof	enormous	semi tractor
44	LLCE Transportation Trailer	RPP/CPO	HO-64-4280 (store contaminated)	77 ft	154 in	163 in	1700	Moderate	Hyd & elec equ	roof	enormous	semi tractor
45	Conex Box 210526-0	RPP/CPO	210526-0	238 in	97 in	105 in	160	Negligible				fork truck
46	Trough	RPP/CPO	(store contaminated)	53 ft	97 in	26 in	550	High	Paint & rust	turn over, refinish and cover w/ tarp	moderate	fork truck
47	Trough	RPP/CPO	containing two smaller troughs (store contaminated)	70 ft	87 in	38 in	666	High	Paint & rust	tarp (see 46)	moderate	fork truck
48	Trough	RPP/CPO	Inverted (store contaminated)	199 in	88 in	17 in	190	High	Paint & rust	tarp (see 46)	moderate	fork truck
49	Ring	RPP/CPO	(store contaminated)	61 in dia		8 in	49	High	Rust	Conex	low	fork truck
50	Trough	RPP/CPO	(store contaminated)	53 in	98 in	42 in	550	High	Paint & rust	tarp (see 46)	moderate	fork truck
51	Trough	RPP/CPO	(store contaminated)	70 ft	19.5 in	22 in	284	High	Paint & rust	tarp (see 46)	moderate	fork truck
52	Trough	RPP/CPO	(store contaminated)	53 ft	98 in	28 in	550	High	Paint & rust	tarp (see 46)	moderate	fork truck
53	Box	RPP/CPO	end caps	60 in	59 in	29 in	25	Negligible		Conex		fork truck
54	Jack Platform	RPP/CPO	(store contaminated)	125 in	96 in	86 in	120	High	Paint	roof	moderate	fork truck
55	Trough	RPP/CPO	(store contaminated)	199 in	89 in	32 in	171	High	Paint & rust	tarp (see 46)	moderate	fork truck
56	Trough	RPP/CPO	Inverted (store contaminated)	199 in	88 in	26 in	171	High	Paint & rust	tarp (see 46)	moderate	
57	Box	RPP/CPO		30 in	44 in	24 in	9	High	Wood	Conex	low	fork truck
58	Cradles (wooden)	RPP/CPO	8 ea	8 ft	10 in	4 ft	53	Low		Conex		
59	Tall Box (wooden)	RPP/CPO		38 in	38 in	69 in	10	Moderate	Wood	Conex	small	fork truck
60	Boxes (wooden)	RPP/CPO	4 ea	49 in	22 in	24 in	29	Moderate	Wood	Conex	small	
COLD TEST FACILITY												
119.1	Conex ¼ full	SY-101	1 ea	40 ft	95 in	102 in	633	Negligible				crane
119.2	Conex, ½ full	W-320	1 ea	40 ft	95 ft	102 in	633	Negligible				crane
IN FENCED YARD NE OF 241-C												
142	Big Yellow Burial Containers H-2-83725	W-320	3 ea	64 ft	43 in	46 in	990	Moderate	Paint		high	fork truck
143	Cover for burial container H-2-83722	W-320	1 ea	66 in	49 in	8.5 in	56	Moderate	Paint		low	fork truck
144	Pallets of Brackets H-2-82073	W-320	3 ea (store contaminated)	40 in	32 in		27	Moderate	Paint	Conex	low	fork truck
145	Yoke H-2-820741	W-320	1 ea (store contaminated)	48 in	34 in	11 in	11	High	Paint & rust	Conex	high	fork truck

Item	Description	Belongs to	Comment	Length	Width	Ht	Reg'd Ft	Importance of storage	Material Concerns	Type (heat, weather)	Replace cost	Handle with
146	Cradles, on 3 pallets	W-320	21 ea (store contaminated)	52 in	14 in	13 in	36	Moderate	Paint	Conex	moderate	fork truck
147	Platform H2-820730	W-320	1 ea	17 ft	14 ft	12 in	320	Moderate	Paint	tarp	moderate	fork truck
ADDITIONAL EQUIPMENT REQUIRING STORAGE												
A	4-to-6 Flexible Receiver	RPP/CPO	2 ea	10 ft	10 ft		288	High		roof	high	fork truck
B	Warning and Hydraulic Harnesses	RPP/CPO	4 Dayton Boxes	3 ft	5 ft		60	Moderate		Conex	high	fork truck
C	42-in Radiation Spool Assy	RPP/CPO	2 ea	6 ft dia			128	High		roof	high	fork truck
D	Guide Pole Assy 42 in	RPP/CPO	2 ea	6 ft dia			128	High		roof	high	fork truck
E	Platform	RPP/CPO	1 ea	15 ft	15 ft		286	High		roof	moderate	fork truck
F	Spool Assy	RPP/CPO	2 ea	6 ft	12 ft		240	Moderate		roof	moderate	fork truck
G	Wash Assy	RPP/CPO	2 ea	6 ft	3 ft		80	Moderate		Conex	moderate	fork truck
TOTAL							15,000					

Total ft² requiring roof-type shelter: 5,000

ENGINEERING STUDY

**DETERMINATION OF STRUCTURE TYPE AND LOCATION
FOR A STORAGE SHELTER
FOR THE
LONG-LENGTH CONTAMINATED EQUIPMENT (LLCE)**

PREPARED FOR

NUMATEC HANFORD CORPORATION

MARCH 1999

PREPARED BY

**Fluor Daniel Northwest, Inc
Richland, Washington**

I. INTRODUCTION

The Long-Length Contaminated Equipment (LLCE) was designed and built to aid in the remote removal and transport of highly radioactive, contaminated equipment from various locations in the tank farms to disposal. The LLCE represents a significant investment in state-of-the-art equipment and was specifically designed to perform all future equipment removals at the Hanford site. The LLCE has been stored in an open, lay-down area, exposed to the elements for the past one and one-half years.

II. PURPOSE

The purpose of this study was to investigate the possible options available to provide a shelter for the LLCE equipment to minimize damage from the weather. In addition, certain site improvements may be necessary, based on the existing site conditions, considering the size, weight, and maneuverability of the LLCE trailers. The options provided in the study include shelter types, locations and site improvements considered necessary to provide adequate access to the shelter.

If no action is taken to protect the equipment from prolonged exposure to the elements (wind, rain, snow and direct sunlight), deterioration of the more venerable components such as electrical wiring, hoses, gaskets and tires will occur. This condition will require a significant quantity of component replacement and potential re-testing of the LLCE systems.

III. SUMMARY

The study involved performing an investigation to: (1) define the type of structure needed and the associated site requirements, applicable to that type structure; (2) identify the types of shelters available and provide recommendations; (3) develop a rough cost estimate for each of the options selected. Specific options provided include three types of shelters, three proposed shelter locations and the selected site improvements to provide adequate access to the shelter site.

IV. DESCRIPTION

The initial action of the study was to define the site design requirements, applicable to a storage type structure. The site requirements are based on the performance categories as defined in HNF-PRO-097. Based on this document, the subject building is considered performance category PC-0, as determined per Figure 1, page 4. Since no other references to specific requirements are provided, the minimum design requirements stated per page 2 of HNF-PRO-097, the Uniform Building Code (ICBO 1994) and

American Society of Civil Engineers (ASCE) 7-95 for PC-0 will be implemented. Based on the categories established in the UBC for Use and Occupancy, the shelter has been categorized per Chapter 3, as a Group S, Division 2 (S-2) occupancy. The LLCE trailers are essentially constructed of noncombustible materials, excluding small quantities of flammable material (i.e hydraulic and lubricating oils) contained in reservoirs inside the equipment, which are normally inaccessible.

Based on the requirements, a listing was developed which sampled the various types of structures available. The search revealed three basic types of shelters which would satisfy the design criteria and the space envelop. The three types shelters consist of: (1) a pole and wood frame structure with metal roof and siding; (2) a steel-arched frame supporting a fabric membrane and (3) a rigid frame, steel structure with corrugated metal walls and roof.

Rough cost estimates were obtained from vendors for each shelter type, assuming the structure would be purchased and built as any commercial building would be outside the Hanford site by the vendor. The cost figures reflect variations in the actual coverage provided by the shelter to better assess needs verses cost.

Cost estimates for the necessary site improvements were developed, based on three options, representing three shelter locations and the proposed routings to each.

Descriptions of conditions at the locations are identified in Figures 3 and 4 (drawings ES-LLCE-01, Sheets 1 and 2) which require site improvements are summarized as follows:

Locations 1 and 2: Area 1 at the intersection of the secondary road and Route 4S will require approximately 300 cubic yards of compacted fill and 50 linear feet of culvert to widened the approach and accommodate the 48'-3" turning radius of the LLCE trailers. In addition, Area 2 will require fill to elevate the general approach area from Route 4S up to the first slope (upgrade) west of Route 4S. The road way from Route 4S to the shelter site will require approximately 8" crushed stone base to provide adequate support for the anticipated 49 lbs/ in² or 7 kips/ft² maximum wheel loads from LLCE trailers.

Locations 3 and 4: The existing turning radius at these areas are acceptable for the LLCE, however grading will be required to provide a level road surface and uniform curvature. These areas will require the 8" of crushed stone as noted at Locations 1 and 2.

Locations 5: The existing cross-site transfer line crosses the secondary road at two locations, based on the routing selected. These crossings will require special evaluation and consideration to assure the integrity of the transfer system is maintained. Further engineering evaluation will be required at these locations.

Locations 6, 7 and 8: Areas 6, 7 and 8 depict the proposed locations for removal of the existing steam line to allow access to the proposed LLCE storage shelter sites (Options 2 and 3).

V. CONCLUSIONS AND RECOMMENDATIONS

The results of the study are summarized in Figures 1 through 5. The study has revealed three types of structures, which satisfies the design criteria requirements for the LLCE storage shelter. Figure 1 provides a listing of shelter types, the shelter manufacturer and a rough estimate for each. The estimated costs provided, include options to purchase either a partially enclosed or totally enclosed shelter. Leasing options were also provided where available

Figure 2 is a cost summary and comparison of the proposed site improvements as determined necessary to provide adequate site access.

Based on the results of the study, the most versatile shelter type is the structural frame and membrane system. This system can be located, relocated or removed as necessary with little effort. The pole type and metal buildings are essentially permanent shelters requiring more substantial foundations. Considering basic cost, the pole structure represents the least costly of all types investigated, however foundation costs are not included in the figures shown. The foundation costs may however, be minimized through the design approach and result in this option being the most attractive.

The recommended shelter types are either, the pole frame w/ metal roof and siding or the steel frame/membrane type structure.

The recommended building location is identified as Option 3, with access to and from the site identified as route 2. This option is the least costly and represents the most functionally useful of the three options presented.

VI. REFERENCES

ICBO – International Conference of Building Officials, Uniform Building Code (1994)

DOE-STD-1020-94, Natural Phenomena Hazards Design and Evaluation Criteria for Department of Energy Facilities, Change 1 (1996)

DOE-STD-1067-94, Guideline to Good Practices for Maintenance Facilities, Equipment and Tools at DOE Nuclear Facilities

PROJECT HANFORD POLICY AND PROCEDURE SYSTEM

HNF-PRO-097, Rev.0, Engineering Design and Evaluation

A rough estimate for each type of shelter is provided in the following table. The comparisons provided, reflect the costs for a roofed shelter and the cost for an enclosed or partially enclosed shelter, considering the type selected. The cost estimates are based on a structure 60 ft x 120 ft with a 20 ft clear ceiling height for the full 60 ft width.

Type of Shelter	Shelter Vendor	Cost w/ Roof only	Cost Enclosed	Rental term Cost/month
Pole Construction/ (Metal Roof/ Walls)	"Quality Steel Buildings", Inc. Spokane, WA.	\$28 k	\$55 k	NA
Metal Building	"Butler Bldg. Systems", Shamrock Construction Richland, WA.	\$79 k	\$115 k (Enclosed one side, \$86.4 k)	NA
Steel Frame w/ Fabric Membrane	"Rubb Building Systems", Satellite Shelters International, Inc. Port Townsend, WA.	\$89 k	\$120 k	2 yr./ \$4.0 k 3 yr./ \$3.0 k 5 yr./ \$2.5 k
Aluminum Arched Frame w/ PVC membrane	Sprung Instant Structures, Inc. Salt Lake City, Utah	\$90 k	\$95 k	2 yr/\$2.6 k (w/roof only) 2 yr/\$2.7 k (enclosed)

Figure 1, Summary Cost Comparison for each type Shelter

The following table provides a summary of cost estimates for site improvements to provide access to each shelter, based on the routing used.

OPTION NO. (Bldg location)	COST (ROUTE 1) (See Note 3)	COST (ROUTE 2) (See Note 4)	COST (ROUTE 3) (See Note 5)
1	\$160 k	\$120 k	\$180 k
2	\$156 k	\$102 k	\$162 k
3	\$163 k	\$102 k	\$165 k

Figure 2, Summary Cost Comparison for each Routing

NOTES:

- 1) Refer to drawing Figures 3 and 4 (ES-LLCE-01, Sheets 1 and 2) for the proposed access routes and locations of recommended site improvements.
- 2) Refer to drawing Figure 5 (ES-LLCE-01, Sheet 3) for the proposed shelter locations.
- 3) Route 1 utilizes the secondary road starting at Route 4 and running parallel to Route 3 to the Cold Test Facility for access into and from the site.
- 4) Route 2 utilizes access from Route 3, adjacent to the Cold Test Facility for access into and from the site.
- 5) Route 3 utilizes the secondary road for access into the site and Route 3 adjacent to the Cold Test Facility for exit from the site.

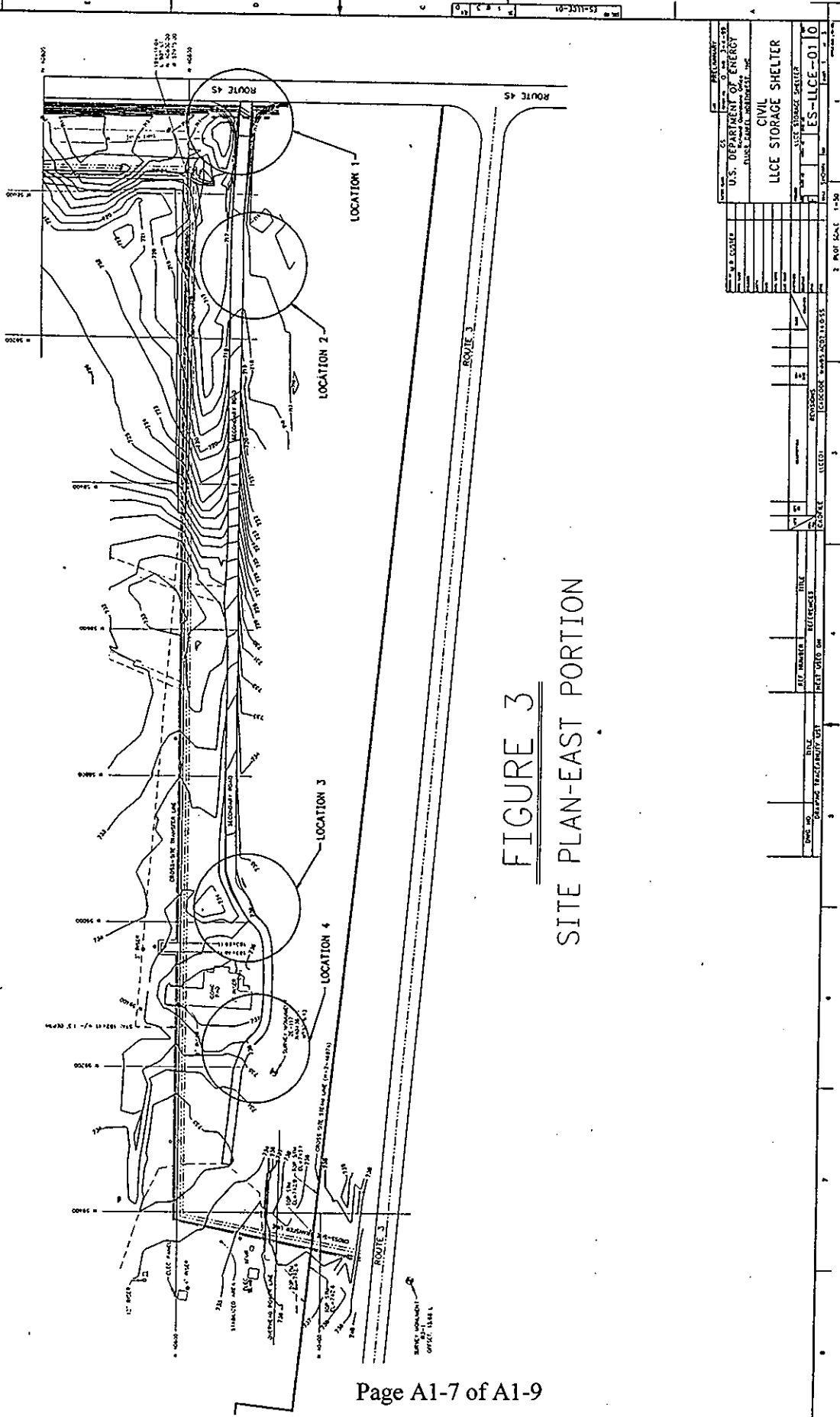


FIGURE 3
SITE PLAN-EAST PORTION

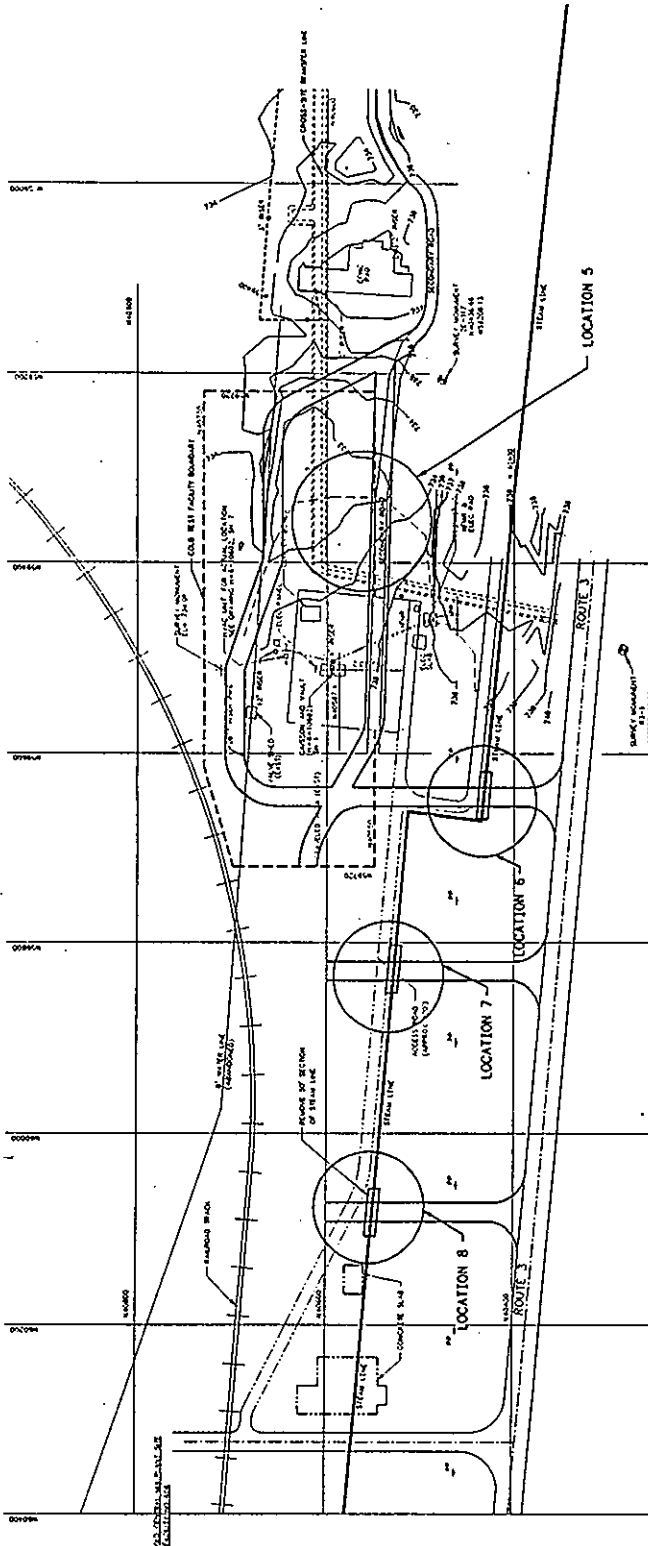


FIGURE 4
SITE PLAN - WEST PORTION

PROJECT NUMBER		DATE	
U.S. DEPARTMENT OF ENERGY		U.S. DEPARTMENT OF ENERGY	
NUCLEAR REGULATORY COMMISSION		NUCLEAR REGULATORY COMMISSION	
PROJECT TITLE		PROJECT TITLE	
CIVIL STORAGE SHELTER		CIVIL STORAGE SHELTER	
PROJECT NUMBER		PROJECT NUMBER	
ES-ILCE-010		ES-ILCE-010	
SCALE		SCALE	
3 INCH SCALE 1:50		3 INCH SCALE 1:50	

NO.	DESCRIPTION	DATE	BY
1	ISSUED FOR CONSTRUCTION	11/15/53	...
2	...	...	...
3	...	...	...
4	...	...	...
5	...	...	...
6	...	...	...
7	...	...	...
8	...	...	...
9	...	...	...
10	...	...	...

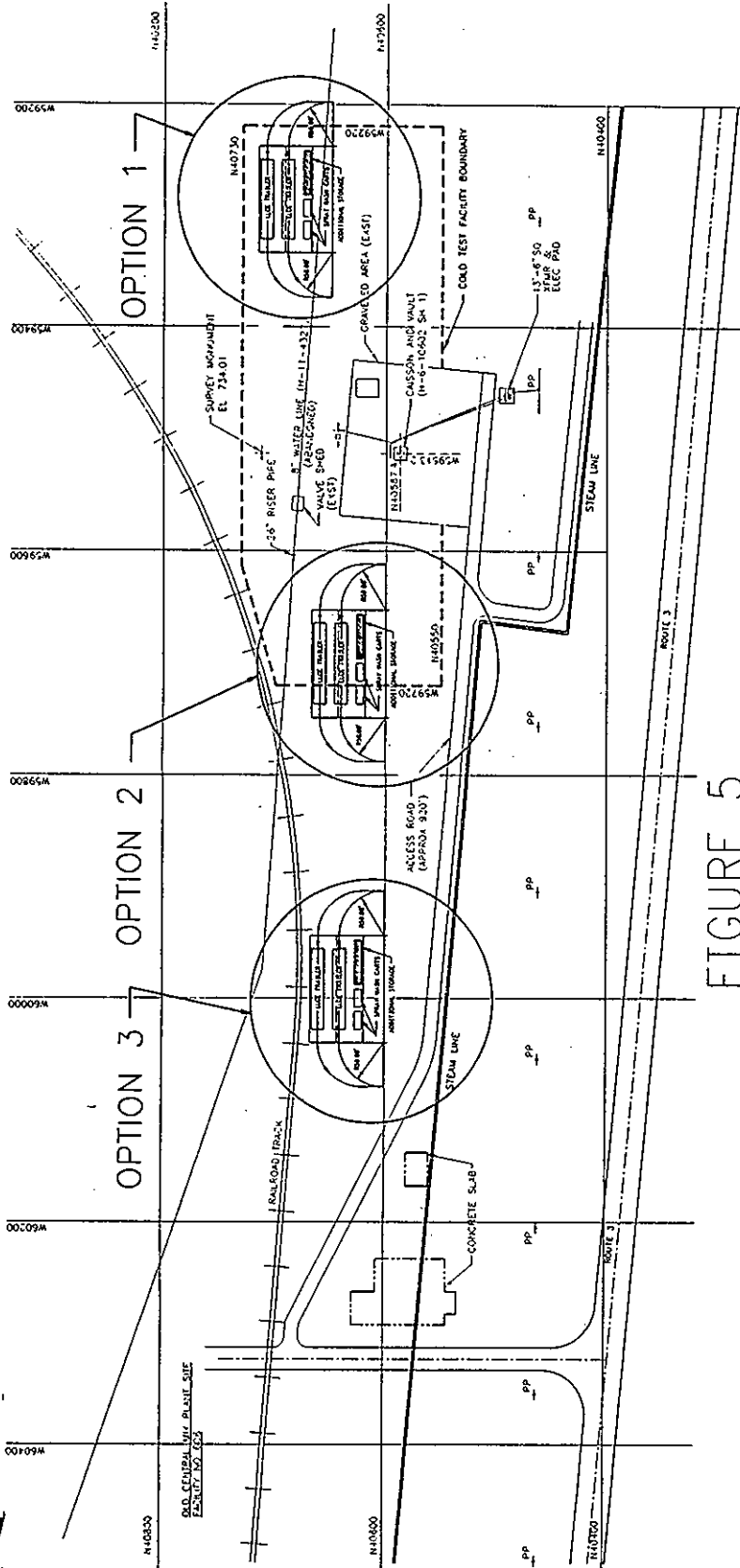


FIGURE 5
STORAGE SHELTER - LOCATION OPTIONS

PROJECT NO. 43		DATE 11-11-69	
U.S. DEPARTMENT OF ENERGY			
PLANT HEALTH AND SAFETY DIVISION			
CIVIL STORAGE SHELTER			
DRAWING NO. ES-LLCE-01		SCALE 1"=20'	
SHEET NO. 1		TOTAL SHEETS 1	
DESIGNED BY		CHECKED BY	
DRAWN BY		APPROVED BY	
DATE		DATE	

FINAL REPORT

**DETERMINATION OF STRUCTURE TYPE AND LOCATION
FOR A STORAGE SHELTER
FOR THE
LONG-LENGTH CONTAMINATED EQUIPMENT (LLCE)**

PREPARED FOR

NUMATEC HANFORD CORPORATION

MAY 1999

PREPARED BY

**Fluor Daniel Northwest, Inc
Richland, Washington**

I. INTRODUCTION

The Long-Length Contaminated Equipment (LLCE) was designed and built to remove and transport highly radioactive, contaminated equipment from various locations in the tank farms to disposal. The LLCE representing a significant investment in equipment has been stored in an open, lay-down area, exposed to the elements for the past one and one-half years. A study completed in March 1999, provides a portion of the background information for the final selection of a LLCE shelter.

II. PURPOSE

The purpose of this report is to summarize the final results of the evaluation performed by the LLCE Decision Board and to describe the final shelter type, location and required site improvements.

III. SUMMARY

The results of the evaluation conclude that the Steel Frame w/ Fabric Membrane shall be the final selection of shelter type. The structure will be located, as shown in Figure 3 and the site improvements implemented, as described in Section IV and shown in Figure 3.

IV. DESCRIPTION

The final selection of structure type, location and site improvements was the results of an evaluation of alternatives, based on a pre-defined selection criteria which reflected the critical attributes necessary to best satisfy all requirements.

The Steel Frame w/ Fabric Membrane structure, located as shown in Figure 3 was the final selection of structure type which best satisfied the selection criteria.

The final location of the shelter is approximately 400 feet west of the riser pit caisson at the Cold Test Facility (CTS), as shown in Figure 3.

A summary of required site improvements at the final shelter location are shown in Figure 3 and as described as follows:

Locations 1 and 2: The entrance and exit at Route 3 will require the installation of approximately 50 linear feet of culvert at each location to widened the approach and accommodate the 48'-3" turning radius of the LLCE trailers. In addition, each location will require the installation of compacted fill and approximately 8" crushed stone base to provide adequate bearing support for the anticipated wheel loads from LLCE trailers.

Locations 3 and 4: The entrance and exit roadways to and from the shelter site shall require grading, compacted fill and 8" of crushed stone base installed up and through the length of the shelter structure.

Locations 5 and 6: Areas 5 and 6 depict the locations for removal of approximately 50 linear feet of the existing steam line to allow access to the LLCE storage shelter site.

V. CONCLUSIONS

The final configuration of the shelter site and access is summarized in Figure 3. Figure 1 and 2 provides the cost summaries for the selected shelter type and required site improvements.

The recommended shelter type is the steel frame/membrane type structure.

A rough estimate for the shelter is provided in the following table. The costs provided are for either a roofed only shelter or totally enclosed. The estimates are based on a structure 60 ft x 120 ft with a 20 ft clear ceiling height for the full 60 ft width.

Type of Shelter	Shelter Vendor	Cost w/ Roof only	Cost Enclosed	Rental term Cost/month
Steel Frame w/ Fabric Membrane	“Rubb Building Systems”, Satellite Shelters International, Inc. Port Townsend, WA.	\$89 k	\$120 k	2 yr./ \$4.0 k 3 yr./ \$3.0 k 5 yr./ \$2.5 k
Aluminum Arched Frame w/ PVC membrane	Sprung Instant Structures, Inc. Salt Lake City, Utah	\$90 k	\$95 k	2 yr./\$2.6 k (w/roof only) 2 yr./\$2.7 k (enclosed)

Figure 1, Cost Summary for the Shelter

The following table provides a cost summary for site improvements to provide access to the shelter, based on the final routing and shelter location selected.

OPTION NO.	COST (ROUTE 1)	COST (ROUTE 2)	COST (ROUTE 3)
3	N/A	\$102 k	N/A

Figure 2, Cost Summary for Site Improvements

NOTES:

- 1) Route 2 utilizes access from Route 3, adjacent to the Cold Test Facility for access into and from the site.

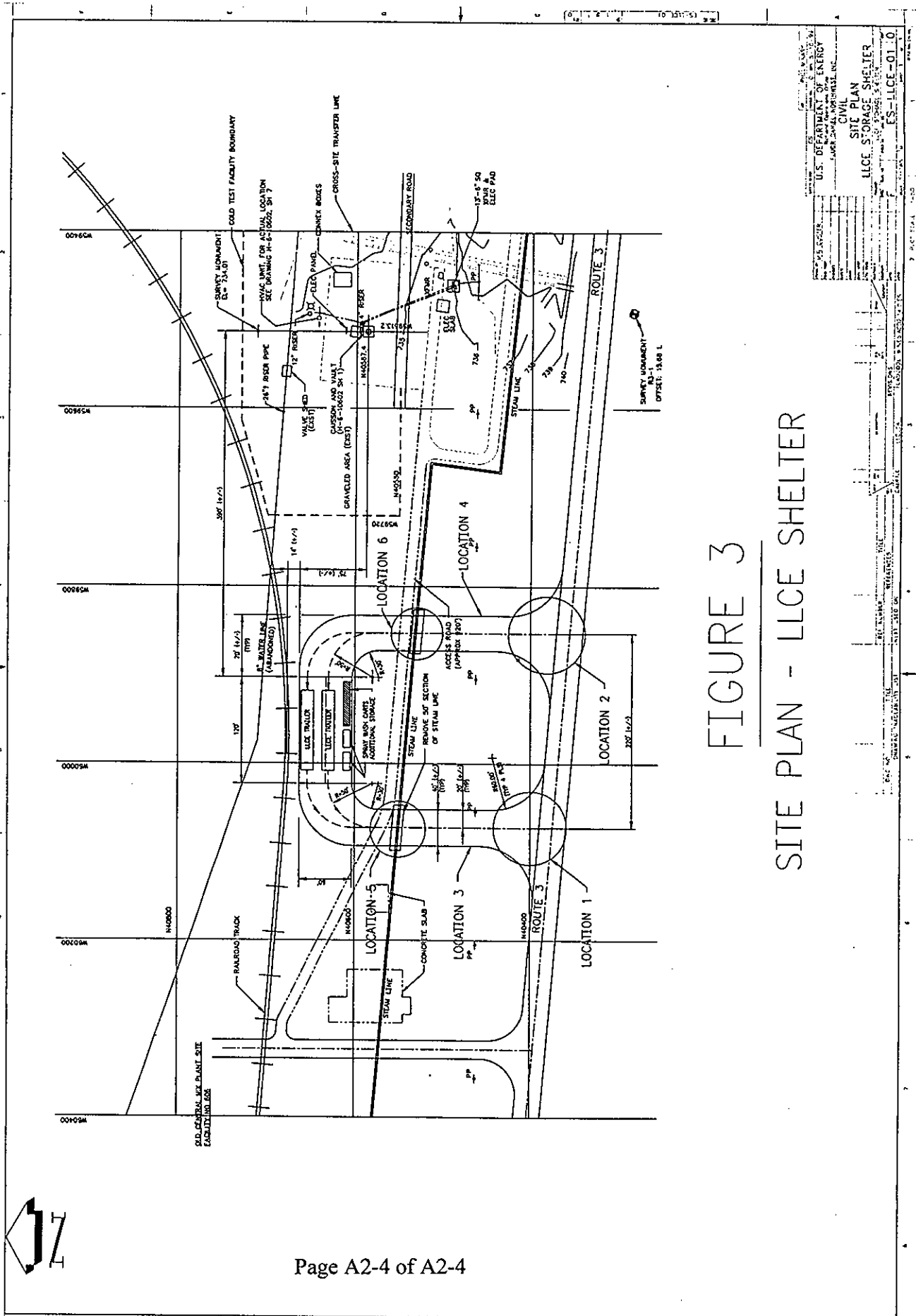


FIGURE 3
SITE PLAN - LLCE SHELTER

DECISION PLAN

FOR THE

STORAGE AND MAINTENANCE ACTIVITIES OF CHARACTERIZATION LONG LENGTH CONTAMINATED EQUIPMENT REMOVAL SYSTEM

1.0 DECISION STATEMENT

Major pieces of Characterization Sampling Equipment are currently stored outdoors. This includes the Long Length Contaminated Equipment Removal System (LLCERS). A decision is required to determine the preferred alternative for facilities to store and maintain this equipment.

The following alternatives shall be considered as a minimum:

- Use existing facilities
- Procure temporary facilities
- Construct new facilities
- Maintain and store in place
- No action

2.0 DECISION CLASS

The storage and maintenance of the LLCERS is a Class IV decision. This decision has cost and program impacts to the Characterization Project.

3.0 RESPONSIBILITIES

3.1 Decision Maker

 4/13/99

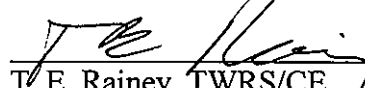
W. E. Ross, TWRS/C&SP Date

3.2 Decision Action Officer

 4/12/99

R. M. Boger, TWRS/CE Date

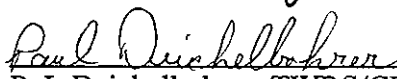
3.3 Decision Support Board

 4/12/99

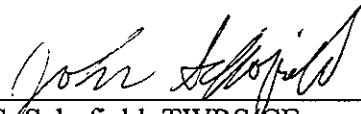
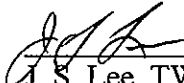
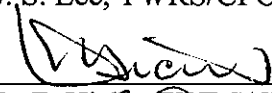
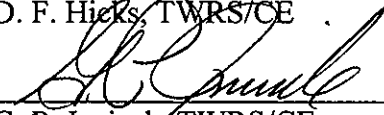
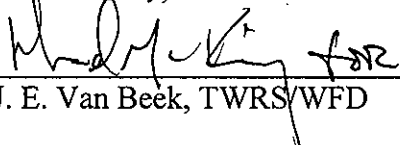
T. E. Rainey, TWRS/CE Date

 4/12/99

J. L. Smalley, TWRS/CE Date

 4/12/99

P. L. Deichelbohrer, TWRS/CE Date

	4/12/99
J. S. Schofield, TWRS/CE	Date
	4.12.99
J. S. Lee, TWRS/CPO	Date
	4/12/99
D. F. Hicks, TWRS/CE	Date
	4/12/99
G. P. Janicek, TWRS/CE	Date
	4/12/99
J. E. Van Beek, TWRS/WFD	Date

4.0 DECISION STRATEGY

The decision strategy will consist of initiating the development of the Alternative Generation and Analysis (AGA) Report with a Decision Analysis Summary for the Decision Maker (DM). The DM, with support of the Decision Support Board, will assign a weighting factor for each criterion establishing its level of importance. The Decision Support Group will review the AGA and/or the Decision Analysis Summary and evaluate alternatives against criteria. Presentations of the alternatives will be given to the DM. The DM will be responsible for the selection of a preferred alternative. The decision Action Officer will transfer the decision information to a formal Decision document.

5.0 DECISION CRITERIA

A decision criterion is a factor used to select a preferred alternative. The following relevant decision criteria were chosen for the conduct of the decision analysis process involved in the preparation of the AGA report and Decision Document.

- Cost: The cost of the alternative is the total cost with the assumption that the life cycle is complete within 10 years.
- Safety: Impact on the health and safety of Hanford Site Workers and the off-site population from radiological, toxicological, industrial, and environmental hazards associated with work site activities. Controlling radiation exposure to employees at levels that are as low as reasonably achievable (ALARA) shall be a primary goal.

- Operability: "Ease of Use" operability measures to consider include preparation of equipment for first deployment, preventive maintenance (before deployment and after deployment), storage of contaminated equipment, and availability of equipment for training.
- Equipment Protection: The impact on the condition of the equipment while in storage, including the amount of degradation of parts and systems.
- Accountability: The physical security of all equipment.
- Programmatic risk: Alternatives are evaluated based on the ability to meet current and potential future requirements for equipment use.

6.0 REQUIRED INFORMATION

Required information includes the current operational location, physical size and condition of the LLCERS. The environmental storage requirements and maintenance required prior to use and during operation are required. An estimate of the current planned and projected level of activity for the future is needed.

7.0 DECISION TIME FRAME

Deliver a draft AGA report to all reviewers by April 8, 1999.

Hold Decision Analysis Board Meeting and deliver draft Decision Analysis Summary by April 20, 1999.

Issue Decision Document by April 29, 1999.

8.0 ANTICIPATED INTERACTIONS WITH OTHER DECISIONS

None

9.0 EXTERNAL CONSTRAINTS


An external constraint is the amount of funding available to implement the decision.

10.0 CURRENT PLANNING BASIS

The current activity provides limited funding for indoor storage of the LLCERS.

MEETING MINUTES

SUBJECT: LLCERS Storage and Maintenance Activities Decision Support Board

TO:		BUILDING		
W. E. Ross		2704HV		
FROM:		CHAIRMAN		
T. R. Rainey 		R. M. Boger		
DEPARTMENT-OPERATION-COMPONENT	AREA	SHIFT	DATE OF MEETING	NUMBER ATTENDING
TWRS Characterization Project	200E		4/12/99	10

The Decision Support Board for the decision to determine the preferred alternative for facilities to store and maintain the Long Length Contaminated Equipment Removal System (LLCERS) met to initiate the decision analysis process.

The Decision Action Officer (Mike Boger) and the Decision Support Board reviewed and approved the "Decision Plan for the Storage and Maintenance of Characterization Long Length Contaminated Equipment Removal System" (attached).

(See Appendix B)

A weighting factor for each criterion was determined relative to their degree of importance. Numerical values were assigned so that the total weight of all the criteria is equal to 1.00. The Criterion Weights are:

Cost	0.30
Safety	0.05
Operability	0.20
Equipment Protection	0.30
Accountability	0.05
Programmatic Risk	0.10

Comments received on the draft Alternatives Generation Analysis include:

Most of the equipment (including the trailers) should not be contaminated after use in tank farms. - Mike McKinney and Don Legare

The burial containers should be protected from sunlight - Don Legare

The equipment procured and owned by Project W-211 should be identified. - Mike McKinney

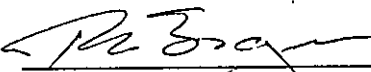
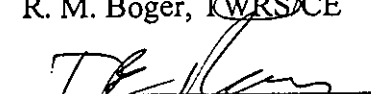
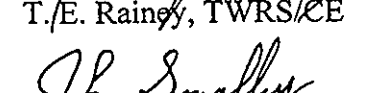
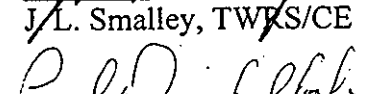
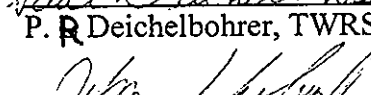
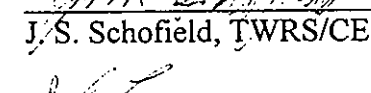
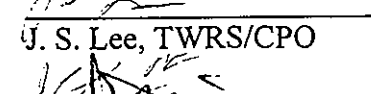
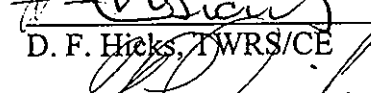
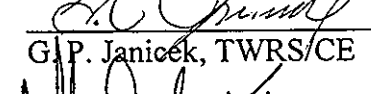
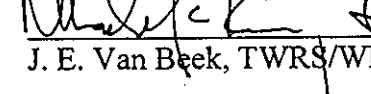

M. R. Custer should Review the AGA and be invited to the next meeting. - Mike Mckinney

The alternatives evaluation should be divided into two parts, type of facility and location (if new facility). - Tom Rainey

Remaining comments on the AGA are due to Paul Deichelbohrer by close of business 4/15/99.

The next meeting to evaluate the alternatives will be set up for Tuesday 4/20/99.

LLCERS Storage and Maintenance Activities
Decision Board Meeting

W. E. Ross, TWRS/C&SP	Date
	4/12/99
R. M. Boger, TWRS/CE	Date
	4/12/99
T. E. Rainey, TWRS/CE	Date
	4/12/99
J. L. Smalley, TWRS/CE	Date
	4/12/99
P. R. Deichelbohrer, TWRS/CE	Date
	4/12/99
J. S. Schofield, TWRS/CE	Date
	4/12/99
J. S. Lee, TWRS/CPO	Date
	4/12/99
D. F. Hicks, TWRS/CE	Date
	4/12/99
G. P. Janicek, TWRS/CE	Date
	4/12/99
J. E. Van Beek, TWRS/WFD	Date
	4/12/99
	4/12/99

MEETING MINUTES

SUBJECT: Decision Board for the Storage of TWRS LLCERS

TO:		BUILDING		
M. D. Hasty		2704HV		
FROM:		CHAIRMAN		
T. E. Rainey <i>T E Rainey 6/3/99</i>		R. M. Boger		
DEPARTMENT-OPERATION-COMPONENT	AREA	SHIFT	DATE OF MEETING	NUMBER ATTENDING
TWRS	200E		4/29/99	8

The decision board for the storage and maintenance activities for the Long Length Contaminated Equipment Removal System (LLCERS) met to analyze the alternatives.

In earlier discussions between Project W-211 (John Van Beek) and Characterization Engineering (Mike Boger) it was determined that W-211 would store the equipment purchased by W-211/W-151 and the scope of this decision would only for equipment "owned" by Characterization Project plus any additional equipment that would be purchased.

An alternative evaluation was completed for the ten alternatives using the approved decision criteria and criterion weights. After this analysis, three alternatives scored the same. These alternatives, Purchase a fabric/PVC structure, Purchase a pole building, and Purchase a metal building, were analyzed again separately.

A separate analysis was completed on where to locate the new structure.

The results of the analyses are that the decision board recommends that a fabric/PVC structure with a metal frame be purchased and located west of the cold test facility. The details of the analyses will be provided in the Alternatives Generation Analysis (AGA).

DECISION BOARD MEETING
FOR THE
STORAGE OF TWRS LLCERS

April 29, 1999

M. D. Hasty, TWRS/CPO

[Signature] 4/29/99

R. M. Boger, TWRS/CE

[Signature] 4/29/99

T. E. Rainey, TWRS/CE

J. L. Smalley, TWRS/CE

[Signature]
P. L. Deichelbohrer, TWRS/CE

J. S. Schofield, TWRS/CE

J. S. Lee, TWRS/CPO

[Signature] 4/29/99

G. P. Janick, TWRS/CE

[Signature]

J. E. Van Beek, FWRS/WFD /W-211

[Signature] 4/29/99

D. F. Hicks, TWRS/CE

[Signature] 4/29/99
M. R. CUSTER

[Signature] 4/29/99
DE Legare

Appendix D

Compilation of Long Length Contaminated
Equipment Removal System Equipment

APPENDIX D

COMPILATION OF LONG LENGTH CONTAMINATED EQUIPMENT REMOVAL SYSTEM EQUIPMENT

Item	Description	Belongs to	Comment	Lngh	Width	Ht	Area ft ²	Importance of Storage	Material Concerns	Replace Cost	Handle With
1	Burial Container	W-151/211	H-2-818192 sht 3 assy 3	65 ft	43 in	46 in	233	moderate	painted	high	crane
2	Poking tools	W-151/211	6 ea approx (store contaminated)	21 ft	6 in	6 in	10	low			
5	Strong Back	W-151/211	(store contaminated)	64 ft	63 in	32 in	336	moderate	painted	high	crane
7	Righting Semi-trailer with Strong Back	W-151/211	HO-64-3531 (store contaminated)	75 ft	8.5 ft	10 ft	638	moderate	painted	high	semi tractor
9	Spare 4-to-6 Inch Flexible Receiver	W-151/211 (Parts missing)	bar code: FA20877 (store contaminated)	9 ft	9 ft	12 ft	81	high	hyd, elec	high	fork truck
12	Winch Control	W-151/211	H-2-83777-020	44 in	36 in	65 in	11	moderate	paint	low	
14	Boxes of Hoses	W-151/211	2 ea (store contaminated)	48 in	24 in	25 in	16	high	wood, hose	low	fork truck
17	12-wheeled Semi-trailer	W-151/211	HO-64-5871 with 6 outrigger pads (store contaminated)	70 ft	12 ft	14 ft	826	moderate	painted	high	semi tractor
18	54-inch Burial Container	W-151/211	2 ea H-2-818142 sht 3 Assy 3 approx 67 ft	65 ft	6 ft	5 ft	344	moderate	painted	moderate	crane
20	Spare Control Trailer HO-64-3534, H-2-79230	W-151/211	7 spools wire/cable (instrument) 2 6-ft storage cabinets UPS Hose Reel	33 ft	8 ft	13 ft	260	negligible			Pickup truck
22	High Pressure Washer on Trailer	W-151/211	HO-64-3538 WW-XVV-25701 (store contaminated)	224 in	94 in	95 in	146	high	hyd, elec, automot	high	Pickup truck
23	High Pressure Washer on Trailer	W-320	HO-64-5257 (store contaminated)	224 in	94 in	95 in	146	high	hyd, elec, automot	high	pickup truck

Item	Description	Belongs to	Comment	Lngh	Width	Ht	Area ft ²	Importance of Storage	Material Concerns	Replace Cost	Handle With
25	26 in Dia ABS Pipe plus end caps	Don Legare	3 ea approx 80 feet long	73 ft	28 in dia		502	low			crane
26	LLCE Long Lift Beam	Don Legare	30 in I-beam, approx 72 feet long (store contaminated)	71 ft	24 in	13 in	141	moderate	painted	moderate	crane
27	106-C Pit A Work Platform Large	W-320 (Project W-320 is complete. Excess Equip)	WGS-XVV-375234 S/N 189296 (store contaminated)	228 in	112 in	69 in	177	low			fork truck
28	106-C Pit A Work Platform Medium	W-320	WGS-XVV-375234 S/N 189289 (store contaminated)	144 in	89 in	42 in	89	low			fork truck
29	106-C Pit A Work Platform Small	W-320	WGS-XVV-378234 S/N 189049 (store contaminated)	161 in	168 in	24 in	187	low			fork truck
30	34 in Dia Pipe with Flange	W-320		130 in	43 in dia		39	moderate	rust	low	fork truck
31	72 in Dia Culvert	W-320		99 in	72 in dia		49	low			fork truck
32	Tower	W-320	Approx 50 ft high (store contaminated)	42 ft	138 in	100 in	477	moderate	painted	moderate	crane
33	Rectangular Container	W-320	H-2-820736, S/N 189254 (store contaminated)	227 in	89 in	137 in	140	low			fork truck
34	Rectangular Container 42 in Flex/receiver Cartridge 2 each	W-320	H-2-79352/H-2-73359 (numbers on only one) (store contaminated) S/N's 189203/4)	106 in	146 in	114 in	215	low			fork truck

Item	Description	Belongs to	Comment	Lngh	Width	Ht	Area ft ²	Importance of Storage	Material Concerns	Replace Cost	Handle With
35	Rectangular Container Sluicing Pit AY-02B	W-320	H-2-820735 (store contaminated)	169 in	162 in	152 in	190	low			fork truck
36	Short Tower	W-320	(approx 10 ft high)	233 in	150 in	135.5 in	243	excess			
37	Moveable, Elevated Drum	W-320	(approx 15 ft high)	112 in	99 in	164.5 in	76	excess			
38	Rectangular Container Heel Pit CR-06B W-320	W-320	H-2-820737 S/N 189205 (store contaminated)	150 in	120 in	95.5 in	125	low			fork truck
39	Rectangular Container Bag Assembly	W-320	H-2-79297 (store contaminated)	72 in	49 in	52 in	24	low			fork truck
40	Rectangular Container	W-320	S/N 189288 (store contaminated)	110.5 in	82 in	53 in	63	low			Crane
41	Rectangular Container 42 in Prototype Leak Containment Bag	W-320	H-2-79362 (store contaminated)	111 in	82 in	53 in	63	low			Crane
42	Railings (3) and Plates (2)	W-320	(store contaminated)	170 in	127 in	24 in	150	low			Fork truck
43	LLCE Receiver Trailer	TWRS/CPO	HO-64-4283 (store contaminated)	83 ft	154 in	172 in	1,059	moderate	hyd & elec equ	enormous	semi tractor
44	LLCE Transportation Trailer	TWRS/CPO	HO-64-4280 (store contaminated)	77 ft	154 in	162.5 in	982	moderate	hyd & elec equ	enormous	semi tractor
45	Conex Box 210526-0	TWRS/CPO	210526-0	238 in	97 in	104.5 in	160	negligible			fork truck

Item	Description	Belongs to	Comment	Lngh	Width	Ht	Area ft ²	Importance of Storage	Material Concerns	Replace Cost	Handle With
46	Trough	TWRS/CPO	(store contaminated)	53 ft	97 in	26 in	426	high	paint & rust	moderate	fork truck
47	Trough	TWRS/CPO	Containing two smaller troughs (store contaminated)	70 ft	87 in	38 in	504	high	paint & rust	moderate	fork truck
48	Trough	TWRS/CPO	Inverted (store contaminated)	199 in	88 in	17 in	122	high	paint & rust	moderate	fork truck
49	Ring	TWRS/CPO	(store contaminated)	61 in dia		8 in	20	high	Rust	low	fork truck
50	Trough	TWRS/CPO	(store contaminated)	53 ft	98 in	42 in	429	high	paint & rust	moderate	fork truck
51	Trough	TWRS/CPO	(store contaminated)	70 ft	20 in	22 in	113	high	paint & rust	moderate	fork truck
52	Trough	TWRS/CPO	(store contaminated)	52'-8 in	98 in	28 in	430	high	paint & rust	moderate	fork truck
53	Box	TWRS/CPO	End caps	60 in	59 in	29 in	25	negligible			fork truck
54	Jack Platform	TWRS/CPO	(store contaminated)	125 in	96 in	85.5 in	83	high	paint	moderate	fork truck
55	Trough	TWRS/CPO	(store contaminated)	199 in	89 in	32 in	123	high	paint & rust	moderate	fork truck
56	Trough	TWRS/CPO	Inverted (store contaminated)	199 in	88 in	26 in	122	high	paint & rust	moderate	fork truck
57	Box	TWRS/CPO		30 in	44 in	24 in	9	high	wood	low	fork truck
58	Cradles (wooden)	TWRS/CPO	8 ea	8 ft	10 in	4 ft	53	low			
59	Tall Box (wooden)	TWRS/CPO		38 in	38 in	69 in	10	moderate	wood	small	fork truck
60	Boxes (wooden)	TWRS/CPO	4 ea	49 in	22 in	24 in	29	moderate	wood	small	
COLD TEST FACILITY											
61	Flexible Receiver Control Trailer and ladder	Cold Test Facility	WB-2436	24 ft	121 in	168 in	237	negligible			pickup truck

Item	Description	Belongs to	Comment	Length	Width	Ht	Area ft ²	Importance of Storage	Material Concerns	Replace Cost	Handle With
63	Lunch Room	W-151/211	MO 667 PNL 622R	34 ft	10 ft	127 in	310	negligible			pickup truck
68	42-Inch Flexible Receiver	W-151/211	(store contaminated)	119 in	76 in	53 in	62	high	Hydraulic	moderate	fork truck
69	Flexible Receiver Dispenser	W-151/211	(store contaminated)	95 in	95 in	98 in	63	negligible			fork truck
75	Gamma Assay System Controller	W-151/211	with air conditioner and pile of coax on top (store contaminated)	36 in	23 in	35 in	6	high	Electrical & instrum	high	
76	42-Inch Secondary Bagger	W-151/211	(Large) (store contaminated)	93 in	65 in	37 in	42	high	Hydraulic	moderate	fork truck
77	4-to-6 Inch Bagger Assy	W-151/211	(Small) (store contaminated)	52 in	32 in	37 in	12	high	hyraulic	moderate	fork truck
78	Flexible Receiver Fingers	W-151/211	2 sets, nested (store contaminated)	78 in dia		75 in	33	negligible			fork truck
79	Control Trailer	W-151/211	HO-64-3535	33 ft	95 in	139 in	261	negligible			
81	Spool of 2/4 wire	W-151/211		29 in	48 in dia		10	high	electrical	low	fork truck
83	Tool Boxes containing wire (3 ea)	W-151/211	size of each	48 in	24 in	19 in	32	moderate	painted w/ wire	small	fork truck
84	Wooden Box	W-151/211		47 in	24 in	28 in	8	high	wood	small	fork truck
88	Distribution Panel	Cold Test Facility	200A, 480 V +	89 in	14 in	68 in	9	negligible			
89	Storage Container (Empty)	Cold Test Facility	(store contaminated)	134 in	133 in	159 in	124	low			crane
90	Platform	W-211	H-2-824707 REV 1 (store contaminated)	170 in	95 in	20 in	112	moderate	painted	high	fork truck

Item	Description	Belongs to	Comment	Lngh	Width	Ht	Area ft ²	Importance of Storage	Material Concerns	Replace Cost	Handle With
91	Platform	W-211	H-2-824709 REV 1 (store contaminated)	203 in	119 in	20 in	168	moderate	painted	high	
92	Pallet of Pipes	W-211	H-2-824818 REV 2	53 in	31 in	8 in	11	low			fork truck
93	Pallet of Clamps	W-211	H-2-824702 REV 2 -030 (store contaminated)	40 in	32 in	28 in	9	moderate	rusting	moderate	fork truck
94	Pallet of Clamps	W-211	H-2-824702 REV 2 -060 (store contaminated)	40 in	32 in	25 in	9	moderate	rusting	moderate	fork truck
95	Tank	W-211	H-2-824810 REV 2 -030 (store contaminated)	56 in dia		66 in	17	moderate	painted	high	fork truck
96	Tank	W-211	H-2-824795 REV 2 -020 (store contaminated)	51 in dia		43 in	14	moderate	painted	high	crane
97	Tank	W-211	H-2-824719 REV 2 -020 (store contaminated)	70 in	56 in	42 in	27	moderate	painted	high	crane
98	Plate	W-211	H-14-102421	70 in	35 in	12 in	17	moderate	rusting	high	fork truck
99	Tank	W-211	H-14-102422 REV 0 -010	60 in	60 in	31 in	25	moderate	painted	high	crane
100	Spool Assy	W-211	H-2-824795 REV 1 -040 (store contaminated)	60 in	60 in	32 in	25	moderate	paint/rust	moderate	fork truck
101	Box, wooden, Flakey	W-211	P.O. MDW-XDD-AZ6324	45 in	23 in	32 in	7	high	wood	low	fork truck
102	Pallet of Rings	W-211	H-2-102420	64 in	64 in	13 in	28	moderate	rubber	moderate	fork truck
103	Exhauster, installed	Cold Test Facility	(no identification)	38 in	27 in	35 in	7	negligible			
104.1	Circular Plates	Cold Test Facility		44 in dia		3/8 in	11	moderate	rust	low	fork truck
104.2	Circular Plates			84 in dia		.5 in	38	moderate	rust	low	
105.1	Sludge TC Tree Mockup	Cold Test Facility	1 ea	20 ft	11 in dia		18	moderate	rusting	high	crane
105.2	Sludge TC Tree		2 ea	20 ft	3.5 in	3.5 in	12	moderate	rusting	high	
106	101-SY Mock Up Pump Pit	Cold Test Facility	H-2-821396-010 REV 0	114 in	114 in	84 in	90	moderate	paint/ rust	high	crane

Item	Description	Belongs to	Comment	Length	Width	Ht	Area ft ²	Importance of Storage	Material Concerns	Replace Cost	Handle With
107.1	Cover Blocks	Cold Test Facility	1 ea	130 in	72 in	24 in	65	negligible			
107.2	Cover Blocks		2 ea	130 in	28 in	24 in	51	negligible			
108	Rings, CS	Cold Test Facility		65 in dia		7/8 in	29	moderate	rusting	low	fork truck
109	Disk, CS	Cold Test Facility		42 in dia		½ in	12	moderate	rusting	low	fork truck
110	Tank/cylinder	Cold Test Facility	with yellow brackets (store contaminated)	66 in	56 in	70 in	26	moderate	paint & rust	high	fork truck
112	Grill Deck	Cold Test Facility	(store contaminated)	146 in	146 in	37 in	148	moderate	rust	low	fork truck
113	Spool Piece	Cold Test Facility	(store contaminated)	41 in	24 in	17 in	7	moderate	paint & rust	low	fork truck
114	Spool Piece	Cold Test Facility	(void, part of 51)				0.00				fork truck
116	3-pipe Tank Insertion	Cold Test Facility		231 in		58 in dia	93	moderate	paint & rust	moderate	crane
117	Pallet of Steel Plates	Cold Test Facility		48 in	35 in	10 in	12	moderate	rust	low	fork truck
118	Variable Density TC Tree, Pipe Assy's	Cold Test Facility	2 ea	244 in		9 in dia	31	moderate	rust	low	fork truck
118.1	TC Tree		1 ea	109 in		3.5 dia	3	moderate	rust	low	
118.2	TC Tree		1 ea	76 in		3.5 dia	2	moderate	rust	low	
118.3	TC Tree		2 ea	12 in		3.5 dia	1	moderate	rust	low	
119.1	Conex, 3/4 full	Don Legare	1ea	40 ft	95 in	102 in	633	negligible			fork truck
119.2	Conex, full	W-320	1 ea	40 ft	95 ft	102 in	633	negligible			fork truck
120	Tool Box	W-320		61 in	32 in	48 in	14	low			fork truck

Item	Description	Belongs to	Comment	Lngh	Width	Ht	Area ft ²	Importance of Storage	Material Concerns	Replace Cost	Handle With
121	Yoke Handled Vessel, Mockup Test Pump	Cold Test Facility	(store contaminated)	100 in		25 dia	17	moderate	paint & rust	moderate	crane
122	Platform	Cold Test Facility	(store contaminated)	145 in	64 in	22 in	64	moderate	paint	moderate	fork truck
123	Bellows	Cold Test Facility	(store contaminated)	38 in dia		10 in	10	moderate	rust	low	
124	White, Horizontal Cylinder, Spool Piece	Cold Test Facility	(store contaminated)	141 in	48 in	41 in	47	moderate	paint	low	crane
125	Pot-bellied Cylinder, white, (Proj 151)	Cold Test Facility	(store contaminated)	68 in	60 in	41 in	28	moderate	410 stainless	moderate	crane
126	Pipe Attachments	Cold Test Facility	6 ea	41 in dia		10 in	70	low			fork truck
127	Power Outlet (elec)	Cold Test Facility	not hooked up	50 in	30 in	38 in	10	low			
128	Box with Foot Clamp	Cold Test Facility	(over by rect cont.)	29 in	45 in	24 in	9.	excess			
129	Steel Pipe	Cold Test Facility	by RR tracks, near conexas	95 in		13 dia	9	low			fork truck
130	SS Cylindrical Shell	Cold Test Facility	near bellows (store contaminated)	37 in dia		10 in	10				crane
EAST OF 241-AP EAST OF 241-AP											
131	Burial Containers	W-211	3 ea	73 ft	96 in	61 in	1,752	low			crane
BY FLUOR DANIEL NW											
134	AZ Removal Platform	W-151/211	H-2-97223 (store contaminated)	126 in	145 in	15 in	126	low			fork truck

Item	Description	Belongs to	Comment	Lngh	Width	Ht	Area ft ²	Importance of Storage	Material Concerns	Replace Cost	Handle With
134	AZ Riser Extension	W-151/211	(store contaminated)	11 ft	42 in	54 in	390	low			fork truck
BY FLUOR DANIEL, NW, BY ROAD											
135	Burial Container	W-151	2 ea	73 ft	45 in dia		548	low			crane
136	Burial Container	W-151	2 ea	75 ft	26 in dia		323	low			crane
137	Burial Container	W-151	1 ea	75 ft	74 in dia		919	low			crane
138	Burial Container	W-151	1 ea	75 ft	54 in dia		671	low			crane
139	Troughs	W-151	White, 2 ea (store contaminated)	69 ft	44 in	28 in	506	high	paint	moderate	fork truck
140	Troughs	W-151	White, 4 ea (store contaminated)	69 ft	19 in	20 in	219	high	paint	moderate	fork truck
IN RBA NEAR FLUOR DANIEL NW											
141	Large Storage Box Containing Contaminated 4-to-6 Receiver	W-151/211	Approx dims. (store contaminated)	32 ft	12 ft		384	low			crane
	Small Storage Container Containing 4-to-6 Secondary Bagger										
	Storage Box Containing Contaminated Decon Tent										
IN FENCED YARD NE OF 241-C											
142	Big Yellow Burial Containers H-2-83725	W-320	3 ea	64 ft	43 in	46 in	688	moderate	paint	high	fork truck

Item	Description	Belongs to	Comment	Lngh	Width	Ht	Area ft ²	Importance of Storage	Material Concerns	Replace Cost	Handle With
143	Cover for burial container H-2-83722	W-320	1 ea	66 in	49 in	8.5 in	22	moderate	paint	low	fork truck
144	Pallets of Brackets H-2-82073	W-320	3 ea (store contaminated)	40 in	32 in		27	moderate	paint	low	fork truck
145	Yoke H-2-820741	W-320	1 ea (store contaminated)	48 in	34 in	11 in	11	high	paint & rust	high	crane
146	Cradles, on 3 pallets H-2-83725	W-320	21 ea (store contaminated)	52 in	14 in	13 in	36	moderate	paint	moderate	fork truck
147	Platform H2-820730	W-320	1 ea	17 ft	14 ft	12 in	23	moderate	paint	moderate	fork truck
148	??Agitator, Heel Jet, Heel Pit??	W-320						(not LLCE stuff)			
	Total LLCE					21,000					

EQUIPMENT NOT IMPORTANT TO LLCE SYSTEM

Item	Description	Comment	Lngh	Width	Ht	Area ft ²	Importance of Storage	Material Concerns	Type (heat, weather)	Service space	Replace cost	Handle with
3	Dunnage	2 W.F. Beams 2 I-beams 4 brackets 2 Channels	24 ft 18 ft 22 in 20 ft	9 5/8 in 4 1/2 in 10 in 5 in	8 in 12 3/8 in 10 in 1 1/2 in	75	Low					fork truck
4	Semi circular Casing Sections	Approx 5 ft long x 2 ft high 92 in 5 piles (store contaminated)	51 in	100 in	30 in	177	Low					fork truck
6	Rocking Shapes	2 ea (store contaminated)	29 in	24 in	22 in	10	Low					
8	In-tank Insertion	Pipe welded to big plate. 6 5/8 in dia pipe	19 ft	52 in	52 in	82	Low					crane
10	RISER/DRYWELL MAPPING POSITIONER	WHC-S-0099, Model 1354, Acme Machine Works, Spokane, P.O. WDW-XVV-327438 1354	77 in	70 in	9 ft	37	to be exceeded					
11	Pallet of Panels		80 in	67 in	20 in	37	Moderate	paint & rust	roof	no	low	fork truck
13	Impact Limiter	2 semi-circular sections (store contaminated)	76 in	38 in	49 in	40	Low					
15	Spool (empty)		22 in dia	10 in		2	Low					
16	Plugs, Valve Handles (2 ea), Welded Bracket on pallet	H-2-78985 40 x 47 pallet	68 in	4 in dia 9 in dia flange		13	Low					fork truck

Item	Description	Comment	Lngh	Width	Ht	Area ft ²	Importance of Storage	Material Concerns	Type (heat, weather)	Service space	Replace cost	Handle with
19	In-tank temperature probe	H-14-100656-010	57.5 ft	28 in	21 in	132	Low					crane
21	Stair/porch		103 in	94 in	72 in	67	Low					fork truck
24	Empty Hoffman Box		30 in	36 in	12 in	8	Excess					
COLD TEST FACILITY												
62	Stair for FRC Trailer		128 in	48 in	87 in	43	Low					fork truck
64	Chairs (4 ea)	pile, stacked	2 ft	2 ft	3 ft	3	Low					
65	Trash Can Stand	Kaiser Hanford Co.	32 in	24 in	60 in	5	Low					
66	Wash Rack		49 in	24 in	57 in	8	Low					
67	Picnic Table		96 in	59 in	33 in	39	Low					
70	Trash Can (3 ea)	size of each	19 in in	19 in	30 in	8	Negligible					
71	SWP Bag Holder (2 ea)		25 in	24 in	48 in 32 in	8	Negligible					
72	Personnel Traffic Rope Stands	19 each	17 in	17 in	42 in	38	Negligible					
73	T-posts (approx one dozen)	whole pile	64 in	6 in	8 in	3	Negligible					
80	Stair/porch for trailer 2 ea	size of each	92 in	48 in	73 in	61	Low					fork truck
82	Empty Spool		40 in dia		32 in	9	Low					
85	Traffic Barricades (2 ea)	Pile	45 in	24 in	6 in	8	Negligible					

Item	Description	Comment	Lngh	Width	Ht	Area ft ²	Importance of Storage	Material Concerns	Type (heat, weather)	Service space	Replace cost	Handle with
86	Miscellaneous Scaffolding	Pile	10 in	6 in	8 in	1	Low					
87	Extension Ladder		148 in	17 in	6 in	17	Moderate	no	roof & walls	no	small	
111	Stair/porch		100 in	51 in	84 in	35	Low					fork truck
112	Grill Deck	(store contaminated)	146 in	146 in	37 in	148	Moderate	rust	tarp	no	low	crane
115	Deck/Porch		72 in	45 in	62 in	23	Low					fork truck
TOTAL FOR APPENDIX D						2,200						

(McKinney input)