



## Department of Energy

Nevada Operations Office

P.O. Box 98518

Las Vegas, NV 89193-8518

JUL 31 1995

R. Thomas Bell, III, International Health Studies, DOE/HQ (EH-63) 270

### MARSHALL ISLAND PROGRAM SUPPORT

The DOE Nevada Operations Office (DOE/NV) recently reorganized to align itself with the Secretary's Strategic Alignment Initiatives and DOE/NV's Strategic Plan. As a result of this reorganization, responsibility for DOE/NV's programmatic support to DOE Headquarters' (DOE/HQ) Marshall Island Program was transferred from the Office of the Assistant Manager for Administration to the Office of the Assistant Manager for Environmental Management. Overall responsibility for this support has been delegated to E. Frank Di Sanza, Director, Energy Technologies Division. Assisting Mr. Di Sanza in matrix support roles are Marc T. McCusker, Contracts Management Division, who provides administrative assistance and James H. Winget, Resource Management Division, who provides financial assistance. It is my understanding that William D. Jackson, DOE/HQ, is your on-site representative for the Marshall Island Program. As such, DOE/NV has designated Mr. Jackson as the Designated Official for Marshall Island activities under DOE/NV's contract with Bechtel Nevada. It is my expectation that in the day-to-day operations of the Marshall Island Program the principal support provided to Mr. Jackson will be from Messrs. McCusker and Winget. However, should you or Mr. Jackson require support or assistance that Messrs. McCusker or Winget can not provide, please contact Mr. Di Sanza and he will accommodate your needs.

If you have any questions concerning this matter, please contact Mr. Di Sanza at (702) 295-5855.

  
G. Leah Dever, Assistant Manager  
for Environmental Management

ETD/MTM

cc:

W. D. Jackson, DOE/HQ (EH-63) 270

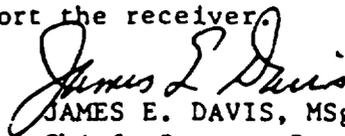
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7. SUPPORT PROVIDED BY SUPPLIER (CONT)		
a. SUPPORT (Specify what, when, where, and how much)	b. BASIS FOR REIMBURSEMENT	c. ESTIMATED REIMBURSEMENT
B1 - ADMINISTRATIVE SERVICES	SEE ATTACHMENT FIVE	SEE ATTACHMENT FIV
B6 - COMMUNICATION SERVICES		
B7 - COMMUNITY SUPPORT SERVICES		
B15 - FACILITY MAINTENANCE AND REPAIR		
B18 - HEALTH SERVICES		
B21 - INSTALLATION RETAIL SUPPLY AND STORAGE OPERATIONS		
B29 - REFUSE COLLECTION AND DISPOSAL		
B33 - UTILITIES		
B37 - AIRFIELD OPERATIONS		
OPTIONAL TOTAL:		
GRAND TOTAL:		

11. GENERAL PROVISIONS (Continued):

1. No additional manpower is required to support the receiver.

  
 JAMES E. DAVIS, MSgt, USAF  
 Chief, Support Branch

m. Reviewed and found legally sufficient.

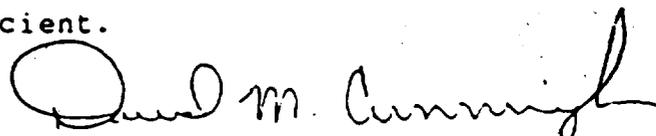
  
 DAVID M. CUNNINGHAM, Capt, USAF  
 Asst Chief of Civil Law

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### **Inspection of Excess Facilities at Enewetak Field Station, Marshall Islands.**

This report presents the results of an independent inspection conducted between January 16, 1993 and January 20, 1993 (local dates) on the field station site on Enewetak Atoll, Marshall Islands by Linda Munson of Evergreen Innovations, Inc. and David Eaton of EG&G Idaho. The inspection team was led by the DOE/EH Program Liaison Officer, William D. Jackson. The field station facilities were inspected because they currently or previously had belonged to the Department of Energy, the Department of the Interior, another U. S. Government agency or one of their contractors. The Enewetak Council already owned most of the facilities and equipment and is scheduled to receive the remainder on January 31, 1993.

One reason for the inspection at this time was the fact that the atoll had experienced a typhoon (Typhoon Gaye) in November 1992 that destroyed one DOE trailer, removed a kerosene storage tank from its foundation and caused major erosion and other damage to individual facilities as discussed below.

The buildings and trailers inspected were brought in and/or constructed over the years, for temporary use to meet various programmatic needs. Although some operations have continued under recent DOE contracts most of the facilities have not been brought into compliance with the Occupational Safety and Health Act, National Electric Code, the uniform building code or other standards.

#### **Purpose of the Inspection**

The purpose of this inspection was to identify and arrange for the amelioration of imminent danger, not only in those situations that might pose a risk to workers but where the introduction of infants or small children would be likewise unacceptable. A further purpose was to identify other risks, liabilities, hazards and attractive nuisances and recommend that they be ameliorated within the time, jurisdictional restrictions and resources available. In this category emphasis was placed on those hazards that are least likely to be understood by the general native population such as electrical and chemical hazards.

Where even low hazard materials or conditions were present and did not appear to provide any commensurate benefit they were removed or mitigated to the extent possible.

Description of the Site and Facilities

A general description of the facilities follows. Figures 1 and 2 show the location of the facilities, and Tables 1 and 2, supplied by Raytheon Services, Nevada (RSN), DOE's operating contractor, show the inventoried facilities and equipment.

The Atoll is home to approximately 700 native Marshallese. Most live in concrete houses built by the U. S. Government for the Marshallese, who were returned to the atoll in 1981, following DOD's cleanup program. These homes have no central electrical, water supply or sanitation system. There is an extensive (considering the size of the island) system of roads and a runway that runs nearly the length of the island and is also used for vehicle travel.

Many of the natives have automobiles or trucks. Education is available through 8th grade on the island. Two teachers from the U.S. Mainland, employed by the Enewetak Council, are housed in one of the residential trailers on the field station site.

The field station at the north end of the island has 8 trailers, 6 permanent buildings, 4 cisterns, a boat dock, launching ramp, paved and unpaved roads, storage tanks, vehicles, excess equipment, and central power, water, and sewage disposal systems. Some of the major features are described below. Serious deficiencies and recommendations for their remediation are contained in the sections that follow. All facilities were inspected with particular attention to those items on the DOE inventory, Table 1, (except that the radio equipment was not individually inventoried).

Trailers (all DOE owned):

The trailers are old and in poor repair. One has been condemned due to major damage from the recent typhoon which moved it off its support and damaged the structural members. The remaining trailers are supported on concrete pilings or wooden beams. Most trailers leak in at least a few locations when it rains. The structural integrity of several of the trailers is suspect due to oxidation of metal support beams and rotting of wooden components. The inspection team believes that when the listed items are corrected the continued use of these trailers will not present an imminent danger in the near future; however, continued inspection and maintenance will be necessary for safe occupancy.

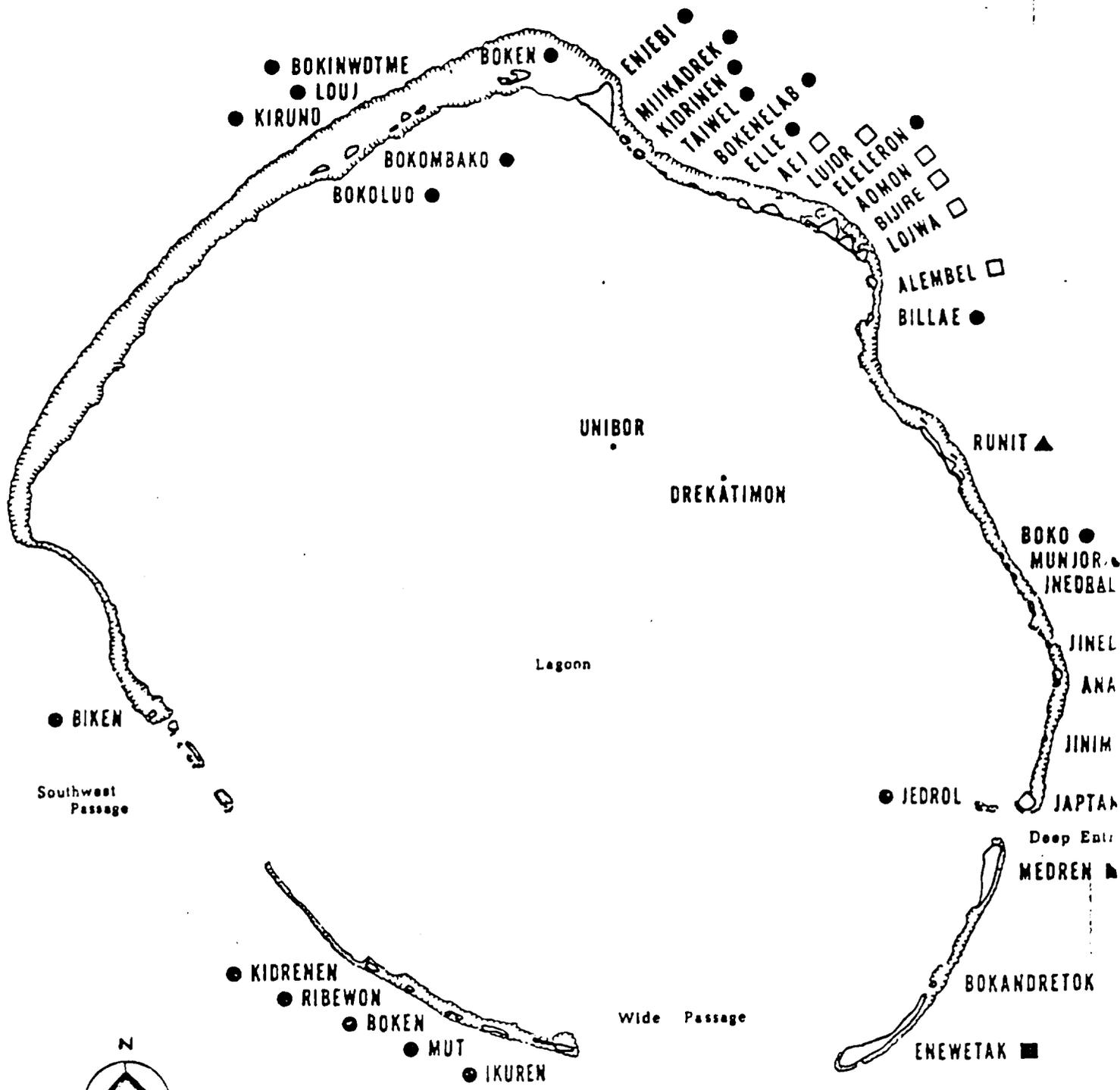
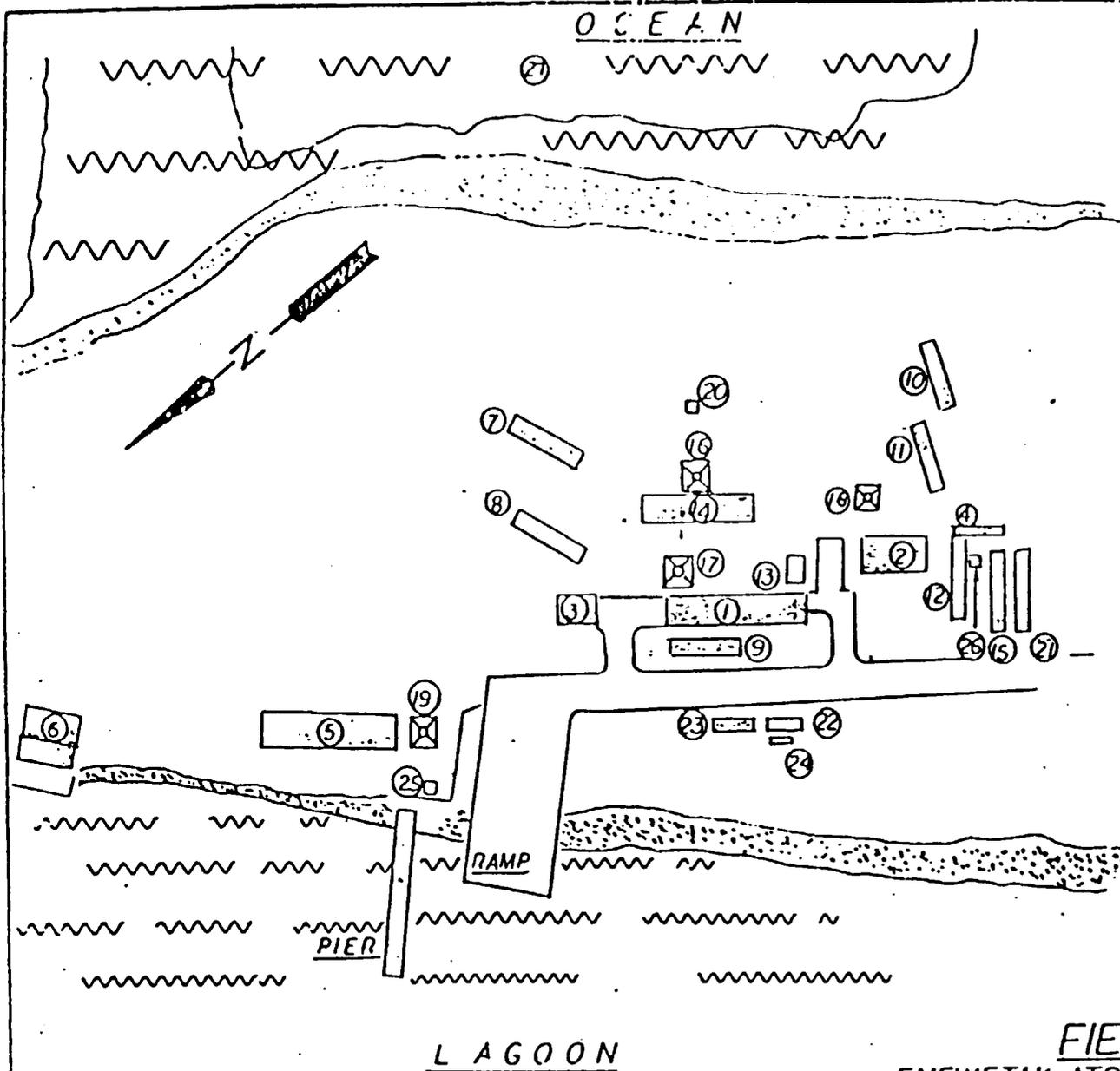


Figure 1  
ENEWETAK ATOLL

- - Living & Agricultural Islands
- - Agricultural Islands
- - Food Gathering & Picnic Islands
- ▲ - Quarantined



FACILITY LEGEND

- ① Laboratory & Generators
- ② Quarters
- ③ Boat House & Shop
- ④ Refer Storage
- ⑤ Equipment Repair
- ⑥ Agriculture Storage & Nursery
- ⑦ ⑩ ⑪ ⑮ ⑰ Living Trailers
- ⑧ Scientific Trailer
- ⑨ Chemical Storage Trailer
- ⑫ Kitchen Trailer
- ⑬ Compressed Air & Storage
- ⑭ Wet Lanai
- ⑯ ⑰ ⑱ Rainwater
- ⑲ Salt Water Pumphause & Holding Tank
- ⑳ ㉓ Diesel Storage Tanks
- ㉔ ㉕ MOGAS Storage Tanks
- ㉖ Refer
- ㉗ Quarry Area

Figure 2  
**FIELD STATION**  
 ENEWETAK ATOLL MARSHALL ISLANDS

DEPARTMENT OF ENERGY  
PROPERTY LISTING - JANUARY 1993

Table 1

	PROP NUMBER	DESCRIPTION	MODEL NUMBER	SERIAL NUMBER
1	36310	AMPLIFIER, CONTROL GROUP	OA-7666/GR	AF66-343
2	36669	ANTENNA TUNER, ICOM	AT-500	5872
3	36171	BOAT, BOSTON WHALER 16'7"	16.7 FT	NA
4	36170	BOAT, BOSTON WHALER 16'7"	16.7 FT	NA
5	36230	BRAKE, SHEET METAL	NA	76514
6	36416	CALCULATOR, ELECTRIC TEXAS INST	T1-5219	167274
7	13251	FREEZER, CHEST TYPE 23.2 CU FT	198.8132352	P42306137
8	36193	GENERATOR SET, 2.5K, ONAN	205LK-1R/1C	650834502
9	36113	MIXER, CONCRETE, 1/2HP ELECT	3-1/2 SE	120297
10	32561	MIXER, FOOD, ELECTRIC	6207 G	844L-KR-17
11	13256	OVEN, TOASTER CENTER CRAFT	303.482600	NA
12	13319	OVEN, BUILT-IN WALL UNIT	850-4238391	4U9612
13	36618	RADIO ICOM W/POWER	IC-735	017010
14	36057	RADIO ICOM W/POWER	IC-720A	13103814
15	36203	RADIO TRANSMITTER-RECEIVER	MARK IVSS	NA
16	36208	RADIO TRANSMITTER-RECEIVER	RT723/23	AF66-334
17	36207	RADIO TRANSMITTER-RECEIVER	RT723/GR	AF64-56
18	26493	REFRIGERATION, WALK IN TYPE	88-76	573941
19	36105	REFRIGERATOR/FREEZER, 17.6 CU FT	EHT181AKWR1	E14893519
20	36106	REFRIGERATOR/FREEZER, 17.6 CU FT	EHT181AKWR1	E22436172
21	36107	REFRIGERATOR/FREEZER, 17.6 CU FT	EHT181AKWR1	E22436208
22	36227	SHEARING MACHINE	G52A	222
23	36263	SAW, BAND	3122	04318
24	36159	TRAILER, CALKINS	21-5100	1-305
25	36191	TRAILER, HOUSE, NORTHLAND, (KITCHEN)	NA	255-61160
26	36187	TRAILER, HOUSE, NORTHLAND (LIVING) 4	NA	255-61112
27	36189	TRAILER, HOUSE, NORTHLAND (LIVING) 5	NA	255-6104
28	36190	TRAILER, LAB, 12X50	NA	NA
29	36186	TRAILER, WET CHEMISTRY (I&P)	NA	NA
30	36631	TRANSCEIVER, RADIO, ICOM (555)	IC-28h	25256
31	36057	TRANSCEIVER, RADIO, ICOM	720A	07104
32	36063	TRANSCEIVER, ICOM	IC-720A	07277
33	7972	TRANSIT, LEVEL	NP-5085	158158
34	36741	TRUCK, PICK-UP, 1/2T 4X4 DODGE 1981	W-150	W14R7BS168872
35	36948	TRUCK, PICK-UP, 1/2T 4X2 DODGE 1984	RAM 50	---
36	36397	TRUCK, PICK-UP, 1/2T 4X2 DODGE 1985	RAM 50	COV1442140646
37	36308	VEH/FORKLIFT PETTIBONE 6000#	OS-3354-1	1501
38	36349	WELDER DC LINCOLN	DC-225-3:AS	A-1035866

Table 2

 DEPARTMENT OF INTERIOR  
 PROPERTY LISTING - JANUARY 1993

DESCRIPTION	MODEL NUMBER	SERIAL NUMBER
1 BOAT, ALUM. 28'	HAMMERHEAD	MUNSEN
2 COMPUTER SYSTEM, USIT	FZ-357	2SX000278
3 COMPUTER SYSTEM, USIT	FZ-357	2SX000216
4 COMPUTER SYSTEM, PS/2	MODEL 30	23-272477
5 COMPUTER, COMPAC	1422021569	CNT75MCOMPAQ
6 CONCRETE MIXER, ESSICK	93B	920-160487
7 COPIER, XEROX	1012	02U407521
8 COPIER, XEROX	5014	EA1
9 COZER, TD-15C	TD-15C	151644704
10 GENERATOR, 75KW LIMA	CR 248 EM	3170-0811
11 GENERATOR, 100 KW LIMA	3170A-0812	AD143043 CNH
12 HAMMER, BREAKER, BOSCH	0611304-034	9480501
13 HAMMER, BREAKER, BOSCH	11034	9490585
14 MOTOR OUTBOARD, JOHNSON 120 HP	J-120TXCEM	GO2321307
15 MOTOR OUTBOARD, JOHNSON 120 HP	J-120TXCEM	GO2321278
16 MOTOR OUTBOARD, EVINRUDE 30 HP	E-30ELCED	RO8180830
17 MOTOR OUTBOARD, EVINRUDE 30 HP	E-30ELCED	RO8180898
18 MOTOR OUTBOARD, EVINRUDE 70 HP	E-70TLCEM	GO2263982
19 MOTOR OUTBOARD, EVINRUDE 70 HP	E-70TLCE	G02267539
20 MOTOR OUTBOARD, EVINRUDE 70 HP	E-70TLCE	G02270192
21 MOTOR OUTBOARD, EVINRUDE 70 HP	E-70ELCUR	R1430518
22 MOTOR OUTBOARD, EVINRUDE 70 HP	E-70ELCUR	R1430368
23 MOTOR OUTBOARD, EVINRUDE 70 HP	E-70ELCUR	R1430358
24 MOTOR OUTBOARD, EVINRUDE 70 HP	E-70ELCDC	J1110802
25 MOTOR OUTBOARD, EVINRUDE 70 HP	E-70ELCEM	GO2287688
26 MOTOR OUTBOARD, EVINRUDE 70 HP	E-70ELCUR	R1430373
27 MOWER, ATTACHMENT (KUBOTA)	R105-2	5585
28 PRINTER, EPSON LQ-2550	LQ2550	OHA0023308
29 PRINTER, LASERJET IIP	HP 33471A	3048JOC7Y
30 PROPRINTER, XL, IBM	56X9692	11-0365528
31 PRINTER, OKIDATA MICROLINE 93	54568	8222G
32 REFRIGERATOR/FREEZER, 20 6 CU.FT	RT216JCW2	LA-93123048
33 REFRIGERATOR/FREEZER	E14893519	EHT18AKWR1
34 REFRIGERATOR/FREEZER	LA-93123048	RT216JCW2
35 REFRIGERATOR/FREEZER	SB734766	1B14SBF
36 REFRIGERATOR/FREEZER	E-41619265	ET20HKXMWRO
37 REFRIGERATOR/FREEZER	E-43972979	1067645162
38 REFRIGERATOR/FREEZER	E-14893519	EHT18AKWR1
39 CO UNIT	800 GPD	OML BB083026
40 TRACTOR, KUBOTA	M40305SU	20663
41 TRACTOR LOADER/BACKHOE (FORD)	K5012K	C-434415
42 TRACTOR LOADER/BACKHOE (CASE)	480-LL	17003653
43 TRANSCEIVER, POWER SUPPLY	PS15	24373
44 TRANSCEIVER, RADIO	IC-720A	04910
45 TRUCK TRACTOR, FORD DUMP	8000	R8000DVC42620
46 TUNER, AUTO ANTENNA	IC-AT-500	05872
47 WASHER, H/P, LANDA	PG6-30221	P5328-0989
48 WELDER, MILLER	T-250G	- - -

Permanent Buildings (property of the Enewetak Council):

With the exception of the agricultural building the permanent structures appear to be in reasonable structural condition. Inspection did not include evaluation for termites or dry rot. Numerous electrical deficiencies were noted in these structures. The agricultural building has sections of the roof missing and many of the support beams appeared to be rusted through. It should be emptied and demolished or rebuilt to prevent a future safety hazard.

Vehicles (property of DOE, DOI and unknown):

The vehicles range from ancient to relatively new and include pickup trucks, industrial trucks, earth moving equipment and boats. These were generally serviceable for the conditions of use (low speeds) although some were awaiting repair parts. Those that were in running condition had satisfactory steering and brakes, except as noted in Appendix 1. Crazed or broken glass is a common problem and replacing it would make the vehicles safer.

Excess Material Storage:

There is used cabling, tanks of various construction materials (carbon steel, stainless steel and fiberglass) and various other surplus equipment and material awaiting salvage. Most tanks are closed or stored in such a way that it would be difficult if not impossible for a child to enter and impossible for a child to close the opening behind them. Some have collected rainwater. There are also several crated pieces of machinery such as motors and generators. These are unusable and probably unrepairable.

Electrical Power:

Electrical power is supplied to the field station site by diesel generators and distributed to the field station facilities through underground cables. Despite considerable erosion the central distribution system was not damaged in the recent typhoon. Sub-systems in various facilities were damaged to varying degrees as noted in Appendix 1.

Water supply:

There are two water supply systems. An open well about 15 feet deep provides brackish water for toilet flushing and industrial uses. A new ground water intake was under construction at a location adjacent to the cistern at location 17 on Figure 2. This was necessary due to repeated damage to the intake at locations 20 and 27. The tank was missing from location 20 and that seawater intake was abandoned.

The potable water system collects rainwater in four cisterns. This system is augmented by a reverse osmosis system operating off the brackish water system. Potable water is chlorinated with industrial bleach as needed. Need is indicated by colormetric analysis.

Sewage:

Sewage is collected and treated in a septic system and disposed of in an adjacent drainage field. The drain field has plugged repeatedly and had been excavated for repair during the inspection. There was a pronounced odor in the vicinity of the excavation and we recommend that repairs be completed as soon as possible.

Safety Considerations

This section describes the principal safety considerations determined during the inspection. Specific findings are listed in Appendix 1.

Environmental Findings:

The predominant hazards associated with turnover of the Enewetak Field Station to the atoll residents appear to be industrial hazards. Nearly constant (10-20 mph) winds dissipate concentrations of air pollutants. The water table lies about six feet below the common elevation and is brackish at the northeastern part of the island where the field station is located.

Disposal of used chemicals including battery acid, paints, thinners, solvents, and used oils appear to present the greatest environmental hazard that will remain after the field station is turned over. Areas outside of mechanical shops show clear contamination by oils and other petroleum products. Used oils and solvents are collected and used to facilitate the burning of the garbage. In this island environment, this should not present much of a problem. One potential area of concern is that the local pigs, which freely

roam the area, forage through the makeshift incineration area, probably consuming some oils or solvents. These pigs are later consumed by the local population.

Oils, solvents, and cleaning solutions are dispensed from 55 gallons drums laid horizontally on supports about two feet above ground level. Obvious contamination of the sand/soil has occurred in two areas, the lagoon side of the maintenance shop and near the main generator.

Diesel fuel, kerosene, and Mogas are dispensed from large tanks, ranging from 2500 to 10,000 gallons. These tanks are usually filled from 55-gallon drums. There are no secondary containment systems in place. Contaminated soils around the dispensing area clearly show that minor spills have occurred. These tanks typically rest within a few feet of the beginning of the beach area.

#### Fire Protection:

There is no fire detection, protection or fire fighting capability on the island. There are a large number of fire extinguishers that are either carbon dioxide or pressurized water, however, it was not possible to tell if the carbon dioxide extinguishers were serviceable and the pressurized water extinguishers were not operable at any location observed. Unserviceable fire extinguishers are a poor practice because an individual attempting to use one could be in danger.

#### Electrical Safety:

Several of the main electrical distribution boxes were extremely corroded and a few had been replaced with site-fabricated wooden boxes. This deficiency had been noted by Raytheon, DOE's contractor, and replacement boxes were on order and due to arrive on the vessel that took the inspection team off the island. Many facilities had additions to the original wiring in the form of surface run Romex cable. Many of the electrical distribution panels within the facilities were missing breakers or portions of the box covering exposed wiring, leading to conditions sometimes classified by OSHA as imminent danger. Many junction boxes and outlet boxes were missing cover plates. No ground fault circuit interrupters were noted at any location on site although current code requires them in the vicinity of sinks and other wet areas.

The inspection involved checking the polarity and grounding of a majority of the outlets on site and many were found to have either reversed polarity or to be ungrounded. The inspection team left a circuit tester with the Raytheon Advisor so he could verify the correction of wiring difficulties.

Sanitation:

The drinking water system is chlorinated. There was no evidence of cross connections with sewage or saltwater systems (except through the reverse osmosis unit). There was no evidence of any unhealthful conditions in drinking water.

Food storage and preparation areas were observed to be surprisingly free of insects or other vectors. Some of the trailers have had difficulties with rats and rodent and insect control will be a continuing challenge.

Chemical Safety:

Numerous chemicals were found in lockers, closets, and on shelves. Most of these chemicals were labelled and in good condition. Most appeared to be usable for continued operations at the station by the natives. This includes the following types of materials:

- |                    |                               |
|--------------------|-------------------------------|
| Acetone            | Paints                        |
| Chlorine bleach    | Paint Thinners                |
| Battery Acid       | Varnish                       |
| Stoddard Solvent   | Kerosene, Diesel and Gasoline |
| Acetylene & Oxygen | Medical Oxygen                |
- and other industrial chemical products too numerous to mention.

These chemicals were left with the intent that they be controlled by the personnel managing the station to facilitate proper station maintenance after DOE terminates its control.

Several containers were found without labels. These containers need to be labelled, with any unneeded or unwanted chemicals disposed of. For example, there is one 15 gallon black plastic container from the Agricultural building whose contents are completely unknown. This material was removed by the inspection team. Proper disposition can not be made until the chemical is identified. It appears that most of the other unlabelled containers can be identified based on the location stored and the type of container found. (i.e., Round 1-gallon cans found in the paint locker can be assumed to be paint.)

Lead bricks, asbestos containing materials, and an algaecide were determined to have no future use at the station and were removed by DOE personnel to Kwajalein for future use or disposal there.

The most hazardous chemicals on site appear to be the battery acids and flammable solvents. These are necessary for the continued operations and were not removed. Protective eyewear was available; however, in the case of kerosene and diesel handling, observation indicated eye protection was rarely used.

#### Mechanical Equipment Safety:

There are numerous mechanical safety hazards, the most serious are rusted metal and broken glass. The most numerous is rusted metal.

#### Actions Taken

The list of items in Appendix 1 and a draft of this report was assembled and given to the Station Manager and the Raytheon advisor on site. Numerous items were corrected and verified as noted on the list. An exit meeting was held with the Station Manager, Raytheon Advisor and the inspection team to ensure that site personnel were aware of the items that need to be corrected prior to the transfer of the site. At this meeting the team reviewed the conditions as found, the current status of each hazard and potential hazard and the proposed schedule for remediation. Emphasis was given to the specific corrective actions which are expected of the DOE contractor personnel by 1/31/93. The team also endeavored to ensure that the senior indigenous staff understood the status of the Enewetak Field Station facilities, the hazards that exist, and the action which they can take to eliminate hazards or reduce risks.

Certain hazardous items were removed from the site including lead bricks, some surplus chemicals, possible asbestos containing material, and an unknown chemical solution (assumed to be an agricultural product). Outdated signal flares were fired or disposed of by fire. Unused radiation signs were also burned.

#### Concluding Remarks

Although we believe that the actions recommended in this report should prevent imminent or unreasonable dangers to the residents of Enewetak, hazards incidental to the operation of the field station equipment will remain. The Enewetak Council should be made aware that there are hazards involved in operating the equipment remaining at the field station. The following list identifies those items of unknown condition and those that are substantially below the margin of safety required by current U.S. codes and standards:

DOE property	Item number on property list
- Forklift	DOE #37
- Shearing machine	DOE #22
- Sheet metal brake	DOE #5
- Bandsaw	DOE #23
- Dodge Ram 150	DOE #34
- Dodge Ram 50	DOE #36
- Generator Set (2.5 KW Onan)	DOE #8
Field Station/Enewetak Council property	
- Ford dump truck	DOI #45
(The following material are not in Tables 1 & 2.)	
- Army flatbed truck	
- Diesel Tank #4	
- Enewetak Field Station electrical system	

The above listed items, along with the other existing equipment, were left at the field station because alternative equipment was not available. These items have been used safely for the life of the station (the station has not had a single lost workday injury) and their removal would present a hardship to the residents. Therefore it is recommended that an agreement be reached with the Enewetak Council to hold the U.S. Government and its agents harmless for damages or injuries resulting from the operation of the above listed equipment. All other items noted with an asterisk in Appendix 1 that have not been remediated by February 1, 1993 should be disposed of or included in this agreement.

## Appendix 1

**Specific Inspection Findings and Current Status**

Note: The presence of an asterisk (\*) indicates that the item is sufficiently hazardous that it should be corrected before DOE transfers the facility. The square bullet (■) indicates that they have been corrected by the time the team left the facility.

General Site

1. The drawing of the underground utilities, especially underground electrical lines, should be updated in case there is a need to dig or a natural event exposes them.
2. ■ The trench surrounding the excavation of the sanitary drain field should be barricaded to preclude entry. -- Completed.
3. Repairs to the sanitary sewage system should be completed as soon as possible.
4. There are several tanks on site that could create a confined spaces hazard. In most cases the entries are not readily accessible. Should they become accessible, physical barriers should be installed to ensure that children do not climb into them and become asphyxiated. See Figure 1.1.
5. There are fire extinguishers throughout the site that are not expected to function. A person attempting to use a non-functioning extinguisher would put himself at risk. Therefore, all fire extinguishers should be inspected and made serviceable or removed.
6. Seat belts are strongly recommended on all vehicles, including fork lifts and tractors. They are especially beneficial in vehicles with roll-bar construction to protect the driver.
7. All combustible structures, or those with combustible contents, should be provided with functional smoke detectors, especially if they are used as sleeping quarters. Trailers are especially vulnerable since they often burn very quickly.
8. Clean up contaminated soils:
  - Remove contaminated soils from around shop areas and fuel dispensing

- areas until clean soil is reached.
- South end of compressor building.
  - Dispensing area north of main equipment shop.
  - Entrance to main equipment shop
  - Entrance to battery area of main shop
  - Spread contaminated soils in thin layer on top of ground in area where children do not have access.
  - Use tiller attachment on back of tractor to mix soils.
  - Backfill with clean dirt around the tanks as needed.
  - Till soils every three weeks until discoloration of soils is no longer evident.

Sand/soil should be removed until obvious discoloration of soils is gone or until bedrock is found. This removed material should then be spread out in a thin layer on top of an unused area to allow the soil to be naturally cleaned. The area where the soils are spread out should be clearly marked and the digger attachment on one of the tractors should be used to agitate the soils every three weeks. This agitation should continue at the three week intervals until the soil discoloration has disappeared. (You should not be able to tell the contaminated soil from the clean sand when looking at it.)

Any future spills of the oils, gas, or kerosene should be treated in the same manner.

8. Prevent future spills:

- Build containment system for areas where solvents and lubricants are dispensed.
  - South end of generator building
  - North corner of main equipment shop
- Build containment system for fuel dispensing tanks and fuel dispensing area.
  - Two diesel fuel, one mogas, and one kerosene tank across road from generator building
  - One mogas and one mogas with oil tanks located next to pier.

A more detailed explanation of this is contained in Appendix 2. Figure 1.2 illustrates some of the undiked fuel storage tanks and dispensing area.

9. The current practice of disposing of used oil and solvents by using them to aid in combustion of refuse and/or garbage is probably an acceptable practice for this location. Attempts should be made to ensure that pigs do not forage in the incinerators.

10. Used lead-acid batteries from vehicles and equipment should be disposed of in a manner consistent with the best disposal practices of the resident population. The acid should be drained and the batteries flushed with plenty of water before being disposed. The drained battery acid should be neutralized before being disposed. It is recommended that the used batteries be recycled if possible.
11. All containers should be labelled and stored in appropriate places. Food containers should not be used for toxic industrial products.

**Main Office Building  
Structure 1 in Figure 2**

1. Some of the 9 inch floor tiles may contain asbestos. Care should be used if they are removed, cut, etc. to avoid creating dust. If asbestos is inhaled, lung cancer may result.
- 2.■ Some outlet boxes do not have covers. All should if they contain energized wires. -- Completed.
- 3.\* The electrical distribution panel is not completely closed, presenting an imminent danger if a person were to stick his/her hand in.
- 4.■ There is an outlet box on a flexible cord to the freezer. It has the polarity reversed. -- Completed. The cord was removed from service.
5. A floor channel containing old communications cables is covered with what appears to be an asbestos containing material. It should be replaced with a non-hazardous material and the asbestos containing material properly disposed of.
- 6.■ There is a medical oxygen cylinder that has no cap. It should be properly capped. -- Completed.
- 7.\* There are unlabeled and incorrectly labeled containers in the storeroom. These should be labeled as to their actual contents.
8. There are three unguarded fans. These should be properly guarded. -- Partially completed. Two fans were completely guarded and a guard was installed on one side of the other.
- 9.\* The wooden box of the electrical safety disconnect panel at the north end of this building (outside) should be replaced with a UL approved box.

10. In the generator room of the main office complex there is a vacuum pump in the corner on a table. The belt of this pump should be guarded before it is used.
- 11.\* The main electrical panel in the generator room has two breaker panels missing exposing workers to high voltage electrical bus bars.
- 12.\* The plug on the far wall opposite the door of the generator room has its polarity reversed.
- 13.\* There is an open electrical box on the common wall with the office building. It should be covered.
14. There appears to be a leak of diesel fuel from the north diesel generator. It should be repaired.
15. A sign indicating the need for hearing protection in the generator room should be posted.
16. The receiver tank on the air compressor should be drained of water daily to prevent corrosion. This is particularly important because there is no program for periodic testing or inspection. A corrosion failure of this pressurized tank would cause it to rupture possibly injuring someone.

**I & P Trailer**  
**formerly the "Wet Chemistry Trailer"**  
**(Structure 9 in Figure 2, Item 29 in Table 1)**  
**(DOE Owned)**

- 1.\* The electrical distribution panel is not completely closed, presenting an imminent danger if a person were to stick his/her hand in.
- 2.\* Some outlet boxes do not have covers. All should, if they contain energized wires.
- 3.\* There are chocolate chips and other food stuffs that have spoiled. They should be disposed of.
- 4.\* The polarity is reversed on the air conditioner outlet plug. It also should have a cover plate.

- 5.\*    The polarity is reversed on the plug by the main door and on the plug by the soft serve ice cream machine. They should be fixed.
- 6.\*    There are exposed wires outside by the alternate exit door. These should be covered.
- 7.\*    The trailer support and the foundation of the administration building are badly eroded (typhoon damage) and should be filled in as soon as possible. In the interim, no one should be allowed in the hole. -- The support to the main building was complete and progress had been made in filling the remainder of the hole.
8.     The unused wiring for the solar panel should be removed from the outside of the building so that people don't get in the habit of assuming loose wire ends are safe.

#### **Diesel and Mogas Storage Tanks**

**(Structures 22, 23, 24 and one additional tank in the same location, not shown in Figure 2)**

- 1.\*    The grounding strap for the Mogas tank should be replaced with one that is not so corroded.
- 2.\*    Diesel tank #4 should be resupported at the south end to prevent a serious problem when the existing support gives way. It is badly rusted at present. Figure 1.3 shows the existing fuel tank support.
3.     Tanks should be diked as discussed in Appendix 2.

#### **Boat Gas Storage Tanks and Dock (Structure 25 and pier in Figure 2)**

- 1.\*    The fill line used to fill boats on the gas dock has been patched in a way that defeats the internal grounding mechanism. It must be repaired to restore the ground, or replaced.
2.     The number 5 boat gas storage tank (empty) is not grounded. It should be before it is filled.
3.     Tanks should be diked as discussed in Appendix 2.

4. The ladder from the water to the boat dock is attached on only one side, and is badly damaged. It should be removed and/or replaced.

**Boat House  
(Structure 3 in Figure 2)**

- 1.\* The electrical distribution panel is not completely closed, presenting an imminent danger if a person were to stick his/her hand in. See Figure 1.4.
2. There are two sets of flexible cables exiting the electrical distribution box from the top and passing through the metal box of the building. One is frayed at the connection to the box and neither is properly grommetted to protect from abrasion. If these wires are carrying current, they should be properly protected to prevent a possibly lethal short from occurring.
- 3.\* Some outlet boxes do not have covers, especially the one on the left of the door and another above the door. All should be covered if they contain energized wires.
- 4.■ Oxygen and acetylene cylinders are not secured to keep them in the upright position. -- Completed. Figure 1.5 Shows the cylinders before they were supported.
- 5.■ A pressurized cylinder of the type that normally contains freon is badly corroded. It should be emptied and disposed of. -- The cylinder was verified empty and ready for land disposal. Figure 1.6 shows this cylinder and an acetylene tank after they were punctured to ensure they were empty prior to disposal.
- 6.■ There is a bottle of unlabeled chemical in the electricians storage cabinet. -- It has been labeled.
- 7.\* Unlabeled paint cans are present.
- 8.\* The safety harness used for climbing is frayed and should be replaced, or if it is required before a replacement arrives, reinforced.
9. The 2.5 KW Onan generator was being repaired and so inspection was incomplete.

**Outside the Boat House  
(West of Structure 3 in Figure 2)**

- 1.\*    The compressor outside this building has exposed electrical wires. To prevent exposure the shed should be locked.
- 2.■    The cold patch compound for road repairs should be clearly labeled. -- This was in progress when the inspection team left the site. Most were already labeled.
3.    Outside Paint Storage Shed -- No concerns.
- 4.■    The possibly asbestos containing material around the exhaust vent from the old compressor should be removed. (See previous asbestos concerns.) -- Completed.
5.    Boat trailer for Munson Boat, no concerns.

**Motor Pool Maintenance Shop  
(Structure 5 in Figure 2)**

1.    The power cable supplying this building does not appear to be properly protected from weather.
2.    The wooden junction box on the outside of this building should be replaced with a UL-listed box.
- 3.\*    The electrical distribution panel is not completely closed, presenting an imminent danger if a person were to stick his/her hand in. A UL-listed box with a standard cover should be used. Figure 1.7 shows the electrical box after the site-fabricated cover had been removed.
- 4.\*    The broken glass in the window pane should be removed.
5.    There is oil spilled in front of the storage barrels. (See previous environmental section and Appendix 2.)
- 6.\*    The electrical outlet box nearest the door on the left side is badly corroded. It should be replaced.
- 7.■    Old radiation signs should be removed. --- Completed.
- 8.■    The asbestos glove should be removed. -- Completed.

9. Sulfuric, phosphoric acid and batteries are stored in an area with no eyewash facilities. Outside there is a sink but currently no water supply. Appropriate personnel protective equipment and water for eyewash should be provided. -- Partially completed. The water supply to the battery handling area has been restored.
- 10.■ Expired marine flares should be disposed of by firing. -- Completed.
- 11.■ The unneeded lantern gas should be added to the Mogas tank. -- The gas was removed.
- 12.■ The exhaust line from the old breathing air compressor is covered with what appears to be an asbestos containing material. It should be bagged and disposed of. -- Completed.
13. The electrical cement mixer has no belt. When a belt is put on, the doors should be replaced so that the belt is properly guarded. The electrical to this may also need some attention to ensure that wires are properly protected.
- 14.■ All containers in the outside paint storage area attached to the Motor Pool Maintenance Shop should be labeled as to content (especially the red fluid in the "Rocky Mountain Spring Water" bottle.) -- Reinspection showed that the bottle had been removed.

#### **Agricultural Storage Building (Structure 6 in Figure 2)**

1. This building may not be structurally sound. The steel beams are badly corroded. The absence of a roof in several areas will accelerate further corrosion. The building should be demolished or rebuilt. Figures 1.8 and 1.9 show this building.
- 2.■ The evaporated milk in this building may not be palatable and should be disposed of. -- Completed.
- 3.\* There is a large number of drums of hydraulic fluid and oil stored. These should be properly labeled. -- These drums had been moved out of the shed and labeling was about to begin. Figure 1.9 shows these drums after they had been removed from the building.
- 4.■ The adjacent storage yard contains a degraded acetylene cylinder. It should be emptied and disposed of. -- It has been removed, emptied and is ready for land

emptied and disposed of. -- It has been removed, emptied and is ready for land disposal. See Figure 1.6.

- 5.■ There is also an unlabeled container of liquid in this yard. The contents should be determined and the container labeled or disposed of. -- Completed. The barrel has been removed and transported off the island.
- 6.■ There are barrels labeled aviation fuel stored along side the building. These are no longer needed and should be added to the existing fuel in storage. -- Completed.

**Carpenter Shop  
(Structure 14 in Figure 2)**

- 1.\* The electrical panel is no longer attached to the wall. The electrical distribution panel is not completely enclosed, presenting an imminent danger if a person were to stick his/her hand in.
- 2.\* Some outlet boxes do not have covers. All should if they contain energized wires.
3. There is an open trench in front of two of the doors. It should be filled or covered in these locations as it presents a tripping hazard.
- 4.\* Several containers of paint are not labeled.
5. The valve box outside should be covered so it does not present a tripping hazard.

**Old Loran Station - Dormitory  
(Structure 2 in Figure 2)**

- 1.\* The electrical distribution panel is not completely closed, presenting an imminent danger if a person were to stick his/her hand in. See Figure 1.10.
- 2.■ An outlet box in the bathroom to Room 2 does not have a cover. -- Completed.
- 3.\* In the eating area there is an overhead outlet without a ground. The ground may be intermittent on the other outlets in that area.
4. At least one of the tie downs for severe wind protection is not connected.

- 5.■ The fire extinguisher in the water heater cabinet is not functional and should be pressurized or removed. -- Completed. It was removed.
6. The sign indicating that the building is Coast Guard property should be removed.
7. Roach control is needed under the sink in the main bathroom.

**Wetak II Storage Locker  
(Structure 13 in Figure 2)**

- 1.■ Some of the flares in storage were past their expiration date. -- Completed. These have been removed.
- 2.\* Some containers of chemicals (paints or varnishes) were not labeled as to contents. These must be properly labeled.

**Cisterns  
(Structures 16, 17, 18, and 19 on Figure 2)**

- 1.■ The lead bricks holding the cistern tops on should be replaced with a non-toxic material so there is no potential for harm if they fall into the cistern. -- Completed. The inspection team took the bricks from the island.
- 2.■ Retrieve the lead brick from the cistern east of the carpenter shop (Structure 16 on Figure 2). -- Completed. Figure 1.11 shows the brick before it was removed.
- 3.■ Obtain duplicate water samples from the cistern east of the carpenter shop for lead analysis. -- Completed. Samples were taken with the team.
4. The wooden structures supporting the cistern covers are generally rotted. An alternate cover system will soon be required in several locations. Figure 1.12 shows the top of one of the cisterns with all but one of the covers removed.

**Kitchen Trailer  
(Structures 4, 12 and 26 on Figure 2)**

1. The exterior siding on the addition to the kitchen trailer (Structure 4 in Figure 2) is badly rusted at the bottom. It could present a hazard to children in the vicinity and should be covered, preferable with plywood or some other material that will

not be adversely effected by the weather. Figure 1.13 shows the rusted siding.

2. The sewage line vent should be reattached to the trailer at the top so that it doesn't break and expose people in the area to sewage fumes. The vent line is shown in Figure 1.14.
3. The loose electrical cable under the trailer should be removed, if it is no longer in use, or reattached if it is.
4. The beams supporting the trailer should all be inspected and replaced as needed. One is showing serious signs of rot.
5. ■ When foodstuffs are transferred to another container they should be properly labeled. The green liquid in the Karo syrup bottle is a case in point. -- Completed.
6. ■ The 8 bottles of algaecide that are no longer used should be removed from the island. -- Completed. This material was packaged and removed from the island.
- 7.\* The microwave oven on site is of an old design that has a push button (like an old car door) as the only interlock to prevent personnel exposure to microwaves. This is easily defeated, exposing the operator to potentially lethal doses of microwave radiation. -- The oven will be disabled by the Raytheon Advisor before he leaves the site. Figure 1.15 shows this oven with the door open.

#### **Food Storage Trailer (Structure 8 in Figure 2)**

1. All wiring to the air conditioner and freezer is temporary. Considerable upgrade would be required before permanent wiring is installed.
2. There is considerable water damage to the ceiling and stored boxes. We were unable to determine if this was one-time-damage or if leakage will be a continuing problem. Continued inspections may be needed to ensure that the trailer is suitable for food storage.

**DOE Residential Trailers  
(Structures 10, 11, 12, 15 and 21 on Figure 2)**

- 1.\* DOE Trailer 5 (Structure 10 in Figure 2) has been condemned and salvage and demolition should be completed as soon as possible, but not later than 1/31/93.
- 2.\* DOE Trailer 4 (Structure 11 in Figure 2) has open wires in a ceiling outlet in the hall. The fixture should be replaced or the box otherwise covered.
- 3.\* DOE Trailer 2 (Structure 15 on Figure 2) has ungrounded electrical outlets opposite the main entrance and at the opposite end of the middle bedroom from the air conditioner outlet.
- 4.\* The second exit from DOE Trailer 2 is padlocked from the outside and therefore unavailable as an emergency exit. This type of lock should be removed.
- 5.\* In DOE Trailer 1 (Structure 21 in Figure 2) the electrical outlet where the TV is now, is ungrounded. The polarity on the bathroom outlet is reversed. Several other ground connections appear to be weak or intermittent. The conductivity of the ground should be verified as it shows signs of corrosion.
6. Also in DOE Trailer 1, the door to the back bedroom hangs on a single hinge and would be difficult to use in an emergency. It should be fixed.
7. There is a smoke detector in DOE Trailer 1 but it is plugged into an outlet that has no power. If it is not functional it should be replaced.
- 8.\* There are a series of nails protruding from DOE Trailer 1 near the bottom. These present a hazard to personnel and should be hammered back in.
- 9.\* The electrical connections to DOE Trailers 1 and 2 are not in junction boxes.
10. Power cables to DOE Trailers 1 and 2 are run in flexible cable on top of the ground where they are subject to weathering and mechanical damage and where any damage is more likely to result in injury. They should be buried (or run overhead.)
- 11.\* DOE Trailer 7 (Structure 7 in Figure 2) has the polarity reversed on the plug directly below the one used for the air conditioner. The main breaker panel in this trailer has two missing breakers presenting an imminent danger if a person were to stick his/her hand in.

12. Water reportedly leaks from several of the electrical outlet boxes in DOE Trailer 7. This should be fixed.

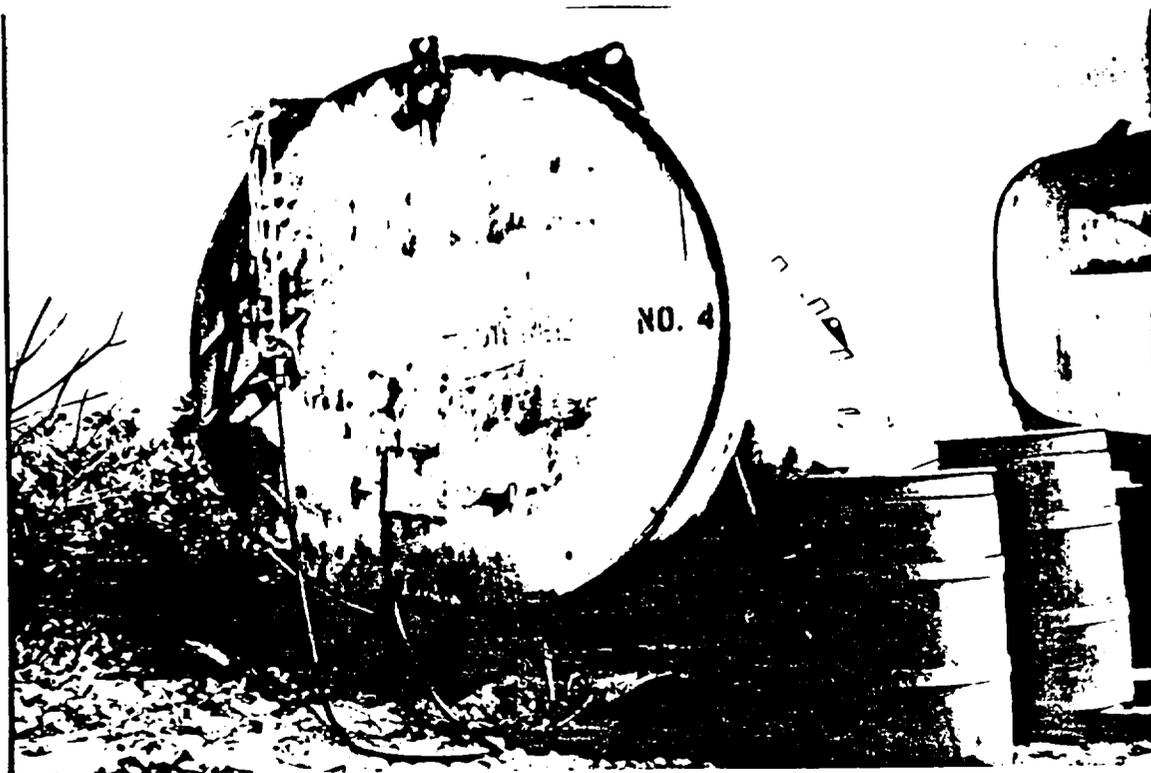
### Vehicles

1. DOE 36742, a 1981 Dodge 150 Truck, is up on blocks with the wheels removed awaiting a torque converted. No other serious safety defects were observed.
2. ■ Boston Whaler 17.7 foot boat, property number 36171, has compartments constructed for the portable gasoline tanks. These are unventilated. Breather holes should be provided near the bottom front and at the top back of the compartments to provide flow-through ventilation. -- Completed. Figure 1.16 shows the initial attempt to correct the ventilation. Additional vents were constructed lower in the boat.
3. A 20 foot Boston Whaler, not on either inventory list, is currently out of service being refurbished. The grounding of the installed gasoline tank is one of the items being improved. It should not be returned to service until this work is complete.
4. A gasoline-powered flatbed truck, bearing both the numbers 8C0589 and 81875, has only window glass that is cracked. The damaged glass should be removed. This vehicle shows severe rust damage and should not be operated in excess of about 15 miles per hour. It should not carry passengers. Figure 1.17 shows this truck.
5. Dodge Truck, Ram 50, DOE 36948, was inspected and found serviceable, however the windshield is cracked and should be replaced.
6. ■ Dodge 150 Ram Truck, DOE Number 36741, has wooden seats built into the bed for hauling passengers at low speeds. These seats are not structurally sound and should be repaired or removed. -- Completed. The seats were repaired.
- 7.\* Case Tractor, Model 480-LL, with a scrapper, had an oversized battery in a position where it interfered with the operation of the pedals. The battery should be replaced with a standard sized one or the battery mounting should be reworked to eliminate the problem. The broken glass insulator hanging from the roll bar should also be removed.
8. Ford backhoe, K5012K, had no apparent safety deficiencies.

- 9.\* The Pettibone fork truck had poor brakes with parts on order to replace them. The steering on the forklift had excessive play, approximately 270 degrees, due to the fact that the steering column is not attached at the top. These items must be corrected for the fork truck to remain usable. Figures 1.18 and 1.19 show this vehicle.
10. The Munson Hammerhead boat would be safer with a clear windshield that improved the pilot's visibility. Alternately it might be possible to shorten the existing windshield so he/she could see over the top and still have some wind protection.
- 11.\* Vehicle markings that indicate U. S. Government ownership should be removed or painted over prior to 1/31/93. This responsibility is assigned to the Raytheon advisor.
- 12.\* The DOI-owned Ford Dump Truck was awaiting clutch repairs and could not be completely inspected. However, a panel was missing from the floor as shown in Figure 1.21.



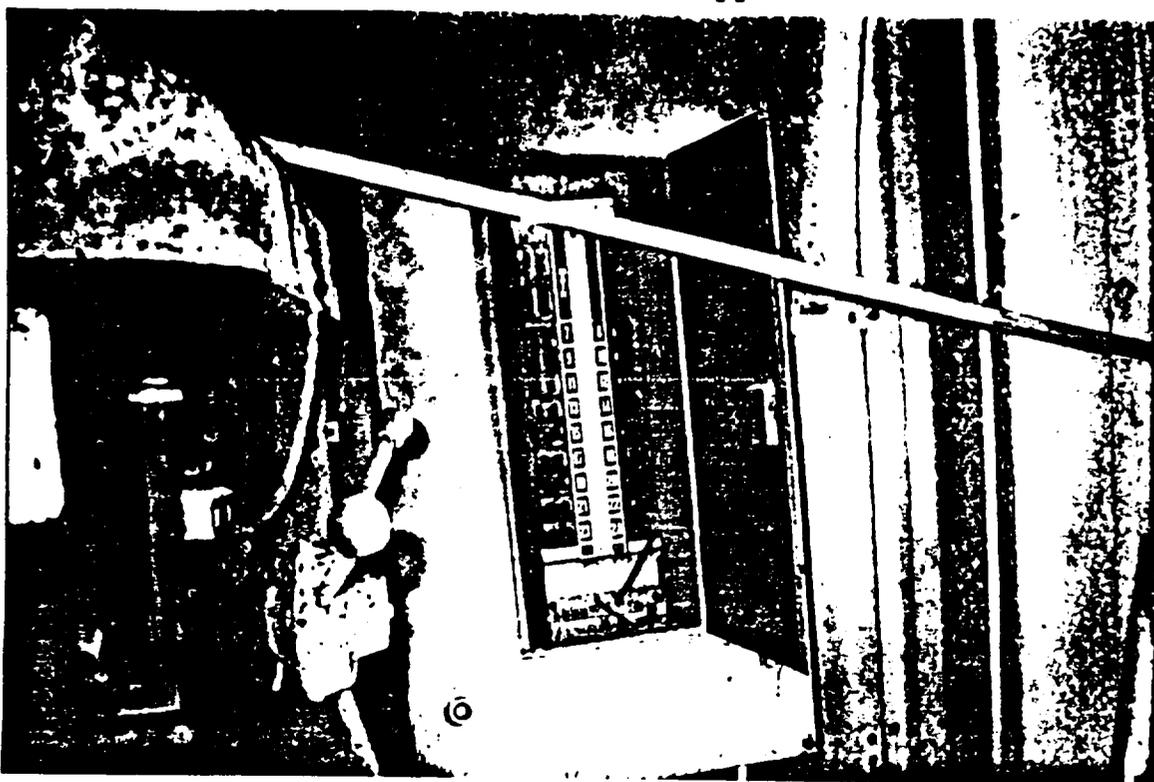
**Figure 1.1**  
**Some of the Excess Tanks and Material**



**Figure 1.2**  
**Undiked Fuel Storage Tanks and Dispensing Area**



**Figure 1.3**  
**Diesel Tank #4 Support**



**Figure 1.4**  
**Electrical Distribution Panel in the Boat House**  
Note the Absence of Any Cover Below the Breakers.

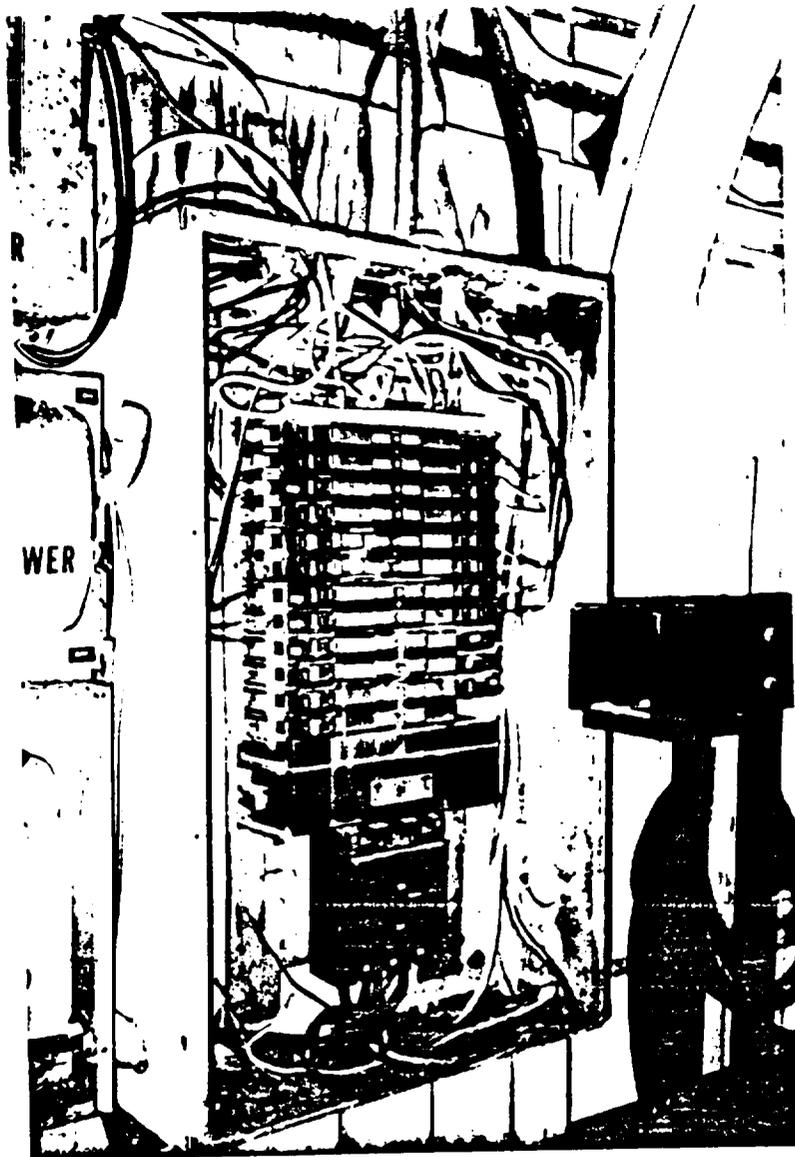


**Figure 1.5**  
**Oxygen and Acetylene Cylinders in Boat House**

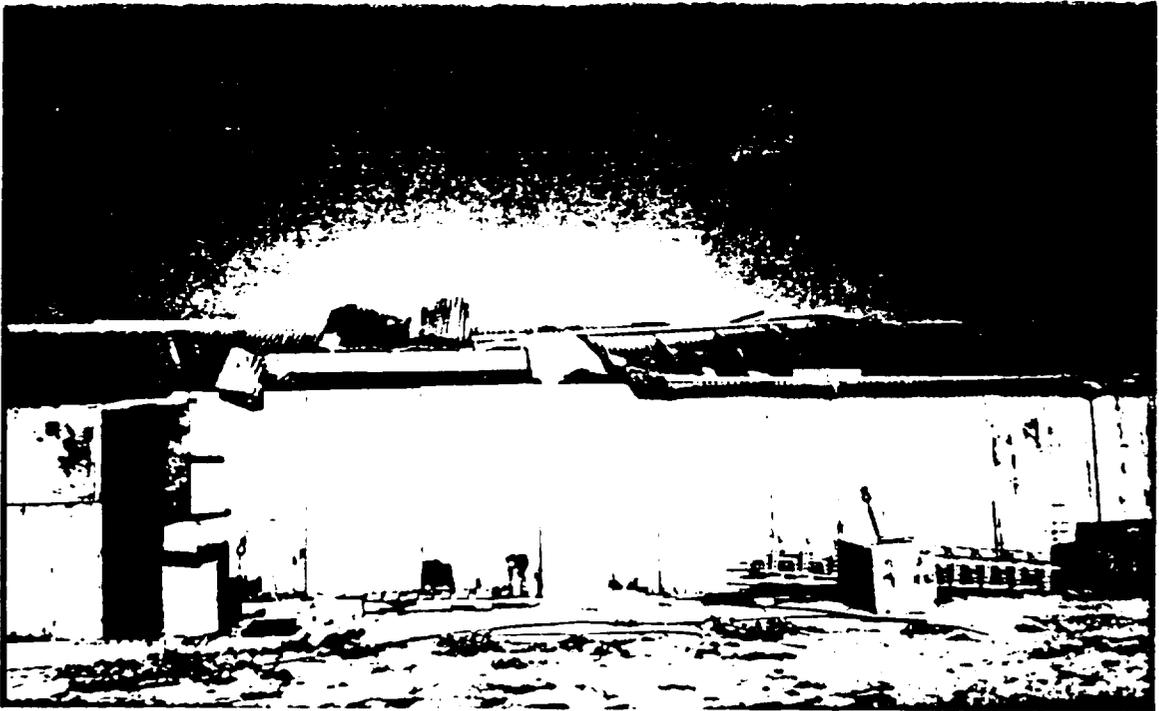
These were latter chained to prevent falling



**Figure 1.6**  
**Acetylene and Freon Pressure Vessels After Remote Puncturing**



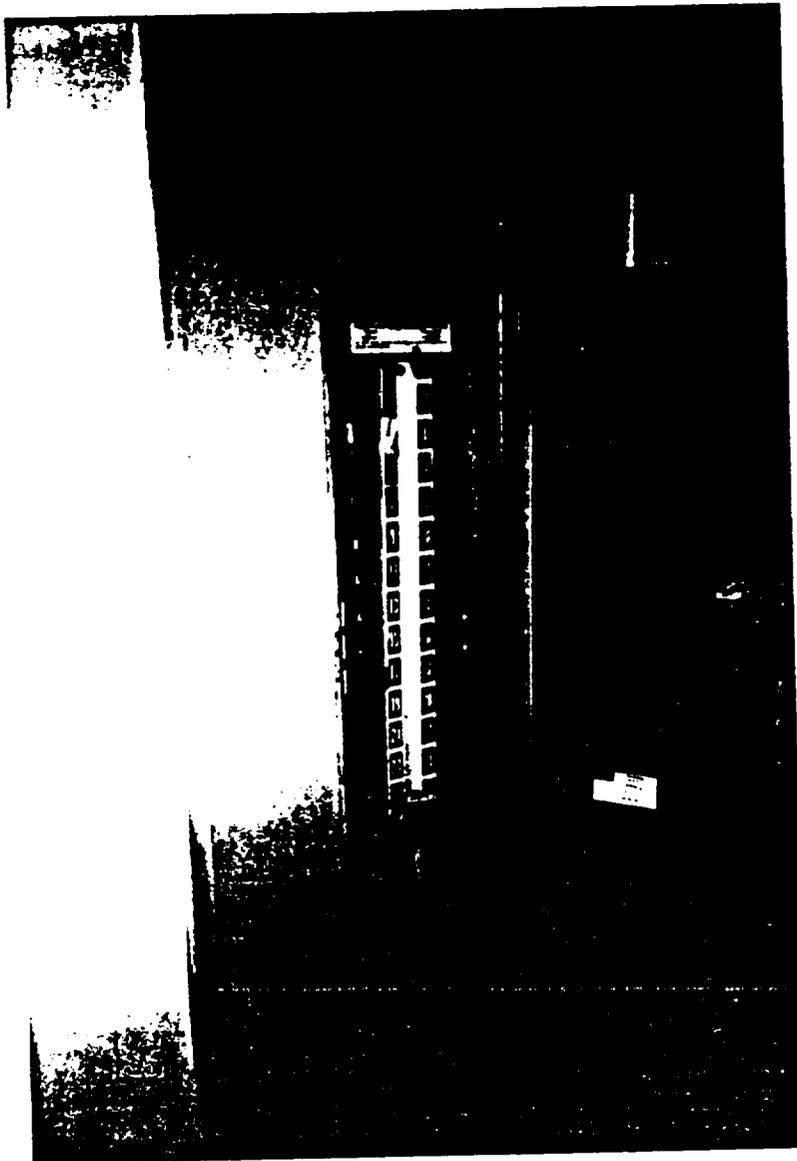
**Figure 1.7**  
**Motor Pool Maintenance Shop Electrical Distribution Panel with the Site-**  
**Fabricated Cover Removed**



**Figure 1.8**  
**Agricultural Storage Building showing Typhoon Damage to Roof**  
The rusted condition of the support beams is not readily apparent in this photo.



**Figure 1.9**  
**Agricultural Storage Building with**  
**Stored Drums Removed for Labeling**



**Figure 1.10**  
**Electrical Distribution Panel in the Old Loran Station/Dormitory**

Note exposed wiring at bottom.

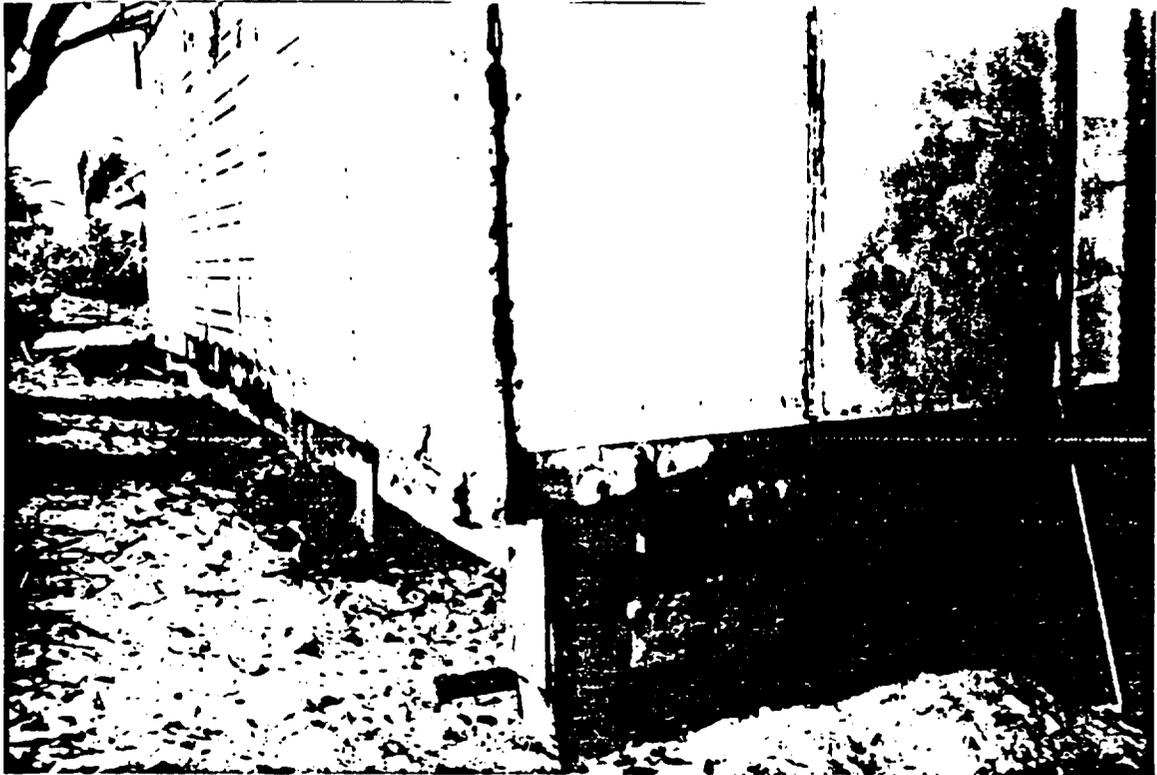


**Figure 1.11**  
**Lead Brick in Cistern East of the Carpenter Shop**



**Figure 1.12**  
**Cistern Top**

The wooden supports at the perimeter of the opening are rotted.



**Figure 1.13**  
**Rusted Siding on the Addition to the Kitchen Trailer**

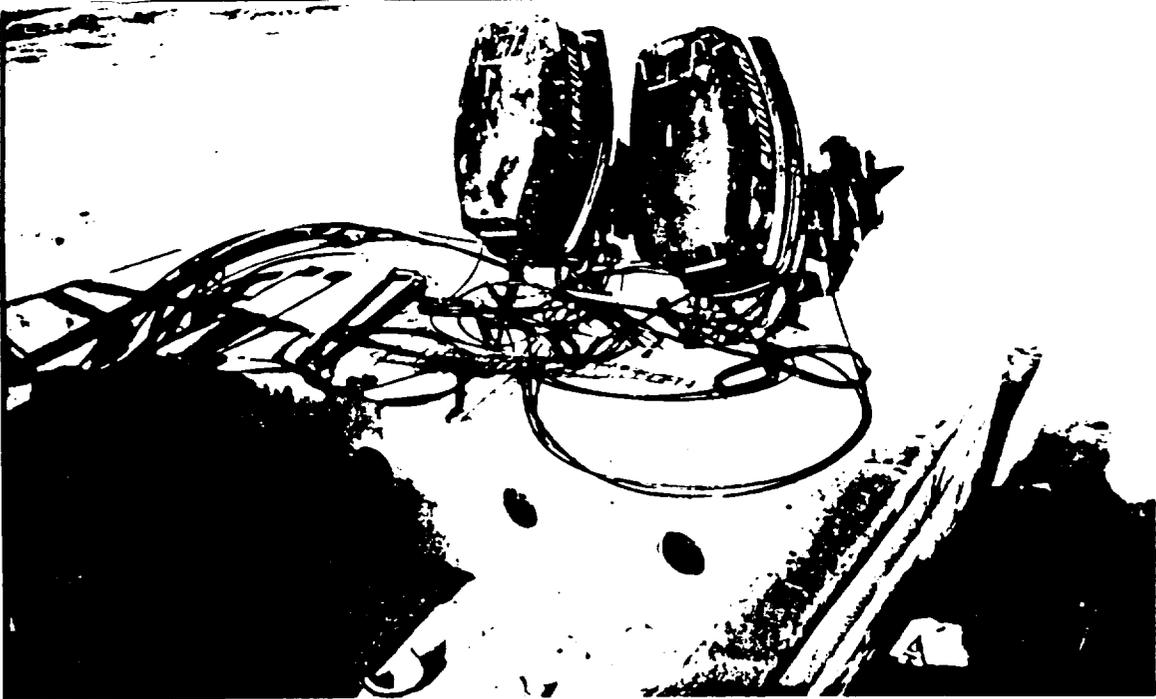


**Figure 1.14**  
**Sewage Ventilation Line on Kitchen Trailer**

Note the absence of any physical support above the uppermost fitting.



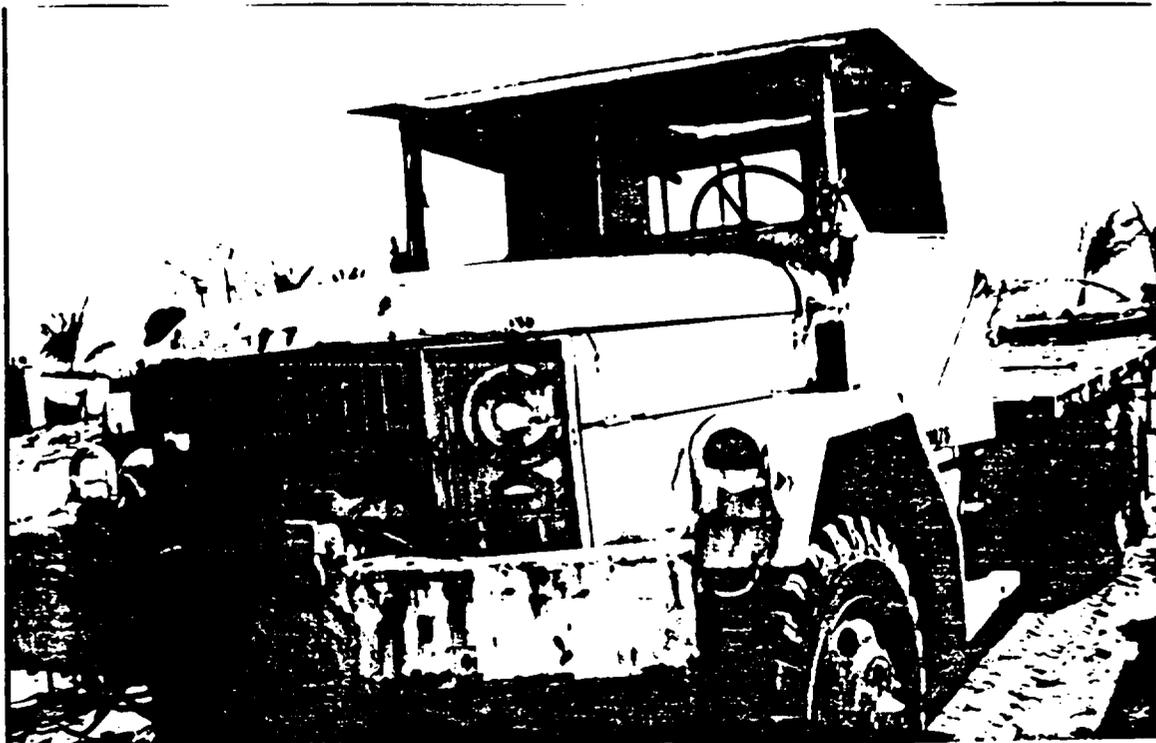
**Figure 1.15**  
**Microwave Oven showing the Push Button Interlock**  
The oven can be operated by depressing the button next to the gasket.



**Figure 1.16**

**The 17.7 foot Boston Whaler**

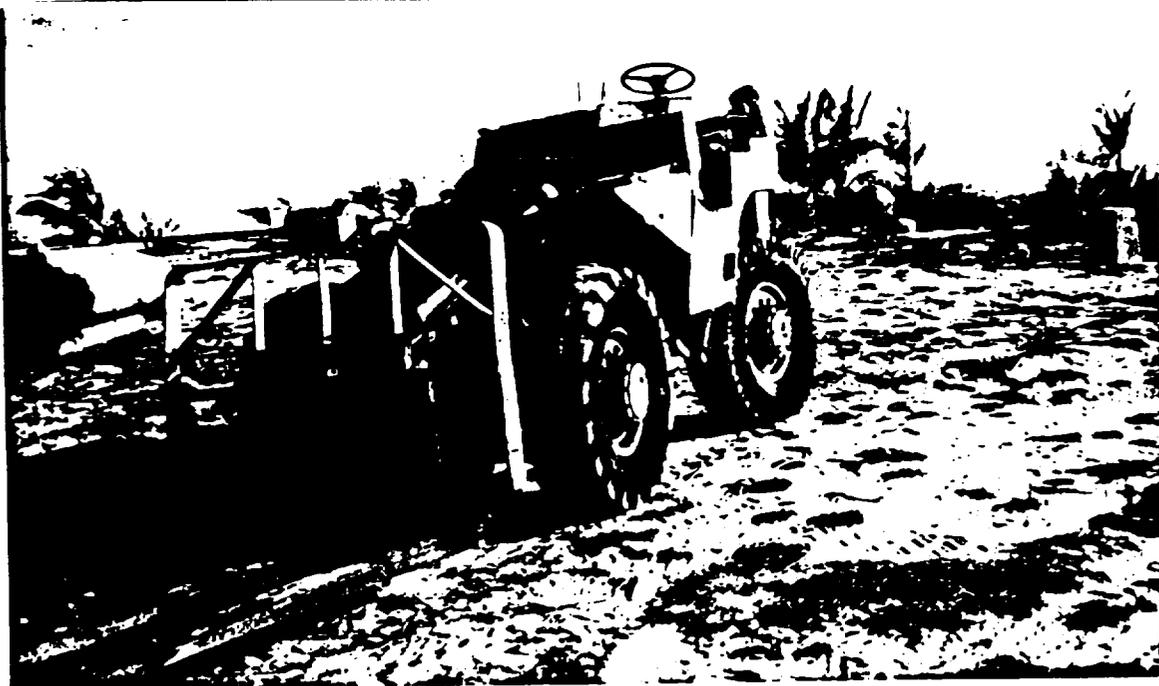
This shows the first attempt to ventilate the box where portable fuel tanks are stored. Additional vents, lower in the panel, were added later.



**Figure 1.17**

**Gasoline-Powered Flat Bed Truck.**

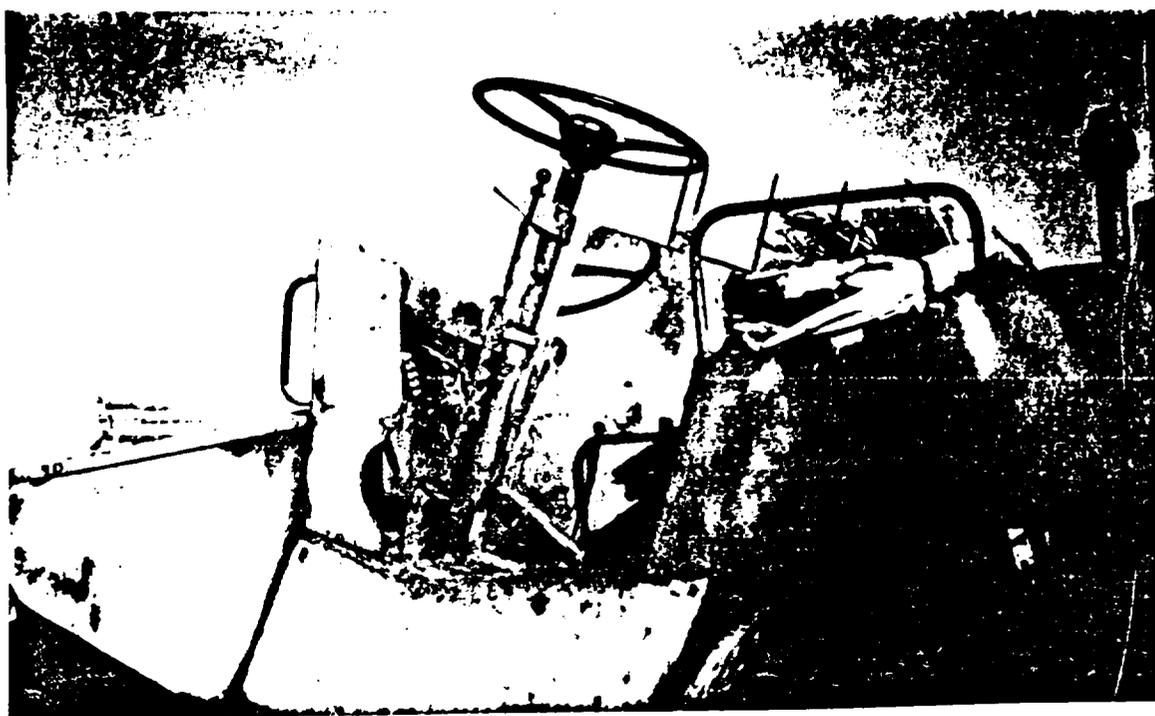
The front winch is inoperable. The only window glass was in the back and it was cracked. The top is plywood wired in place.



**Figure 1.18**

**The Pettibone Fork Truck**

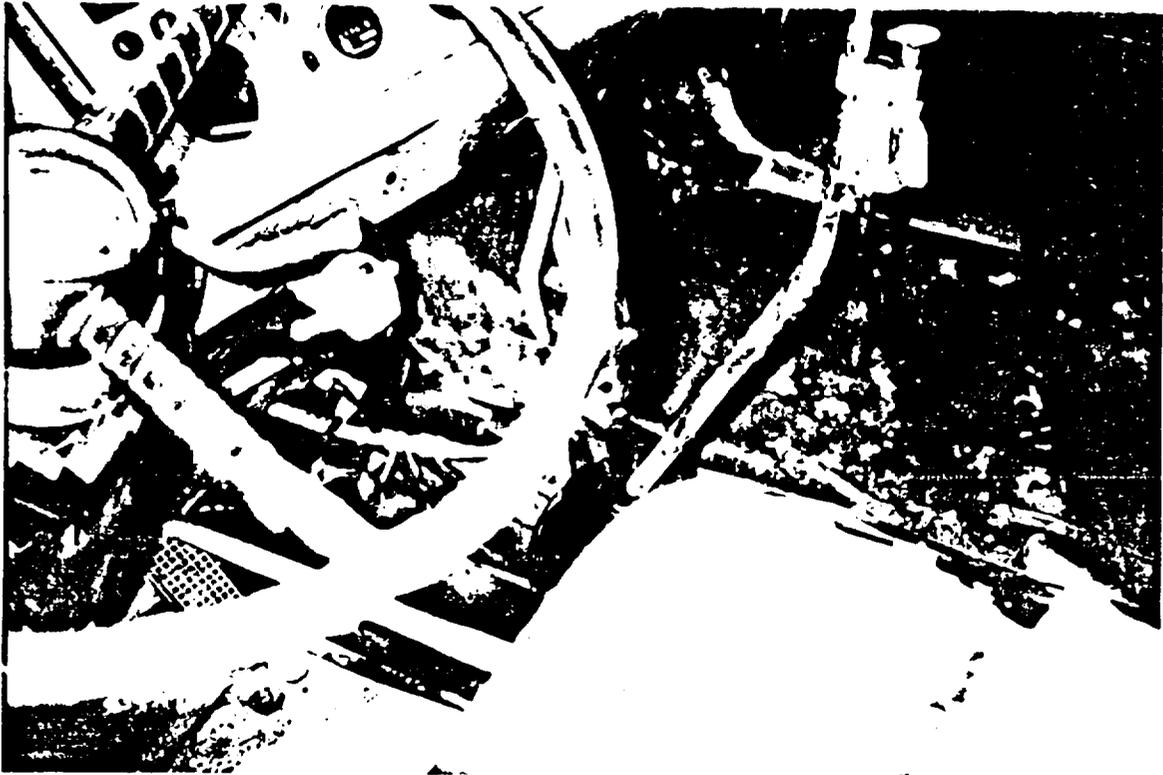
This vehicle had poor breaks and steering.



**Figure 1.19**

**The Pettibone Fork Truck Steering Station**

Detachment of the steering column from the dashboard contributed to the steering problems.



**Figure 1.21**  
**Open Floor of Ford Dump Truck**

## Appendix 2

### Secondary Containment Systems

The areas listed below should have secondary containment systems installed to prevent large scale contamination from tanks, and to contain smaller, more routine, spills from liquid petroleum product dispensing areas.

- Petroleum products dispensing near maintenance shop
- Generator building (liquid dispensing area)
- Diesel, kerosene, and mogas tank storage area
- Mogas and mogas with oil tank storage area at the top of the pier.

The drum dispensing areas can have secondary containment systems built by simply installing a concrete pad of sufficient size for the drums and whatever containers are to be filled, to fit within. The pad should have 6 inch curbs on all sides and a sump within the area to collect any spills or rainwater and to facilitate removal. Oil or rain water should be removed from the sump on a regular basis. For example, the oil or rainwater should be removed whenever the depth within the sump is more than 6 inches.

The tank system should have continuous 24" above ground level berms installed around the outside of the tanks to prevent major spills of product. These berms will contain major spills, will prevent major quantities of oil being released to the lagoon, and will facilitate any needed cleanup or removal of contaminated soils from small spills. Recommended dike dimensions are shown on the attached Figures.

# Enewetak Field Station Main Fuel Tank Farm

Proposed diking system

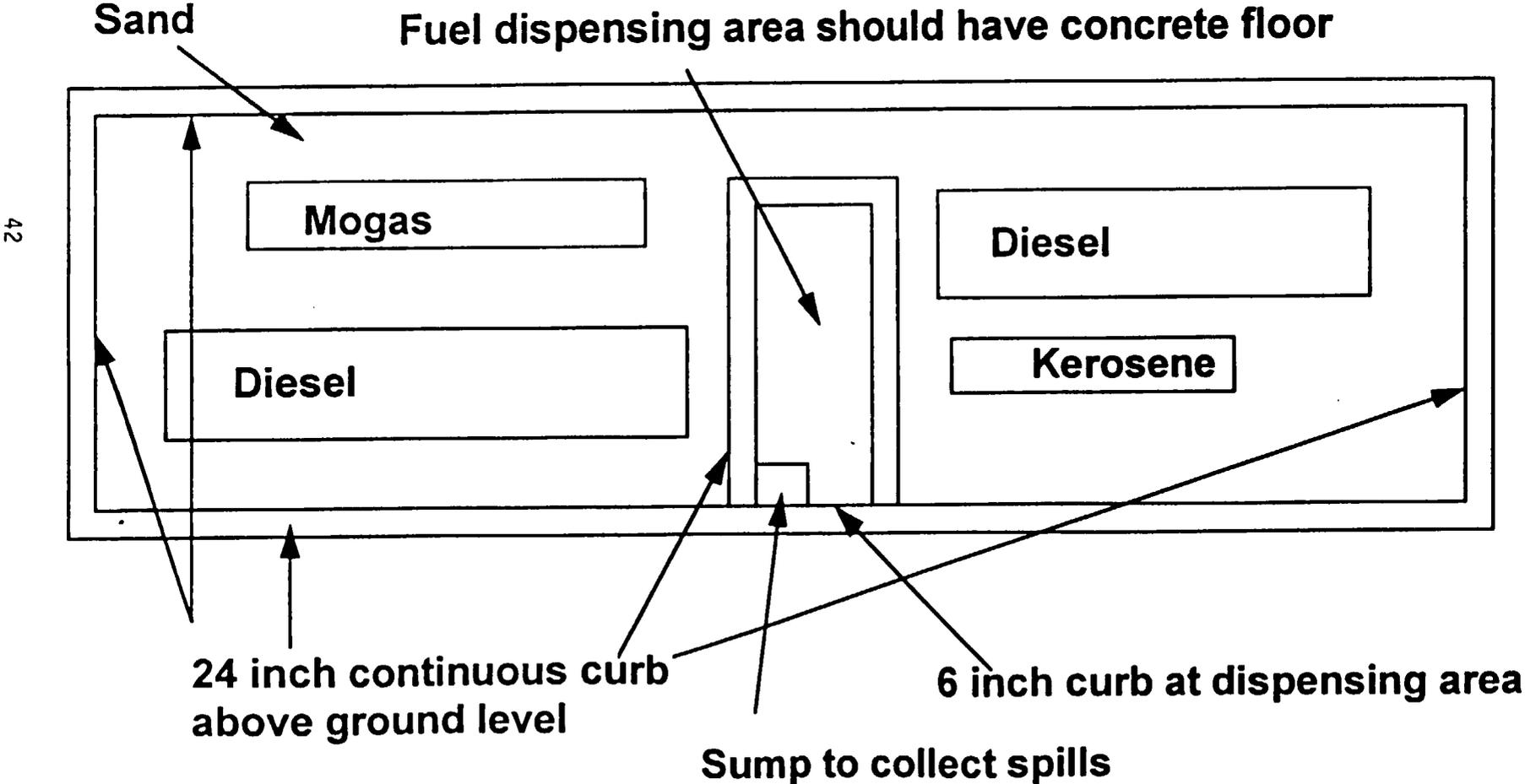
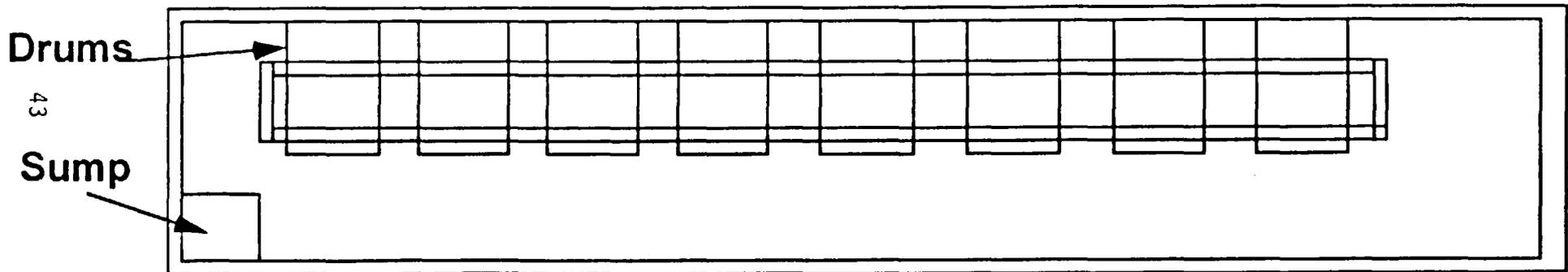
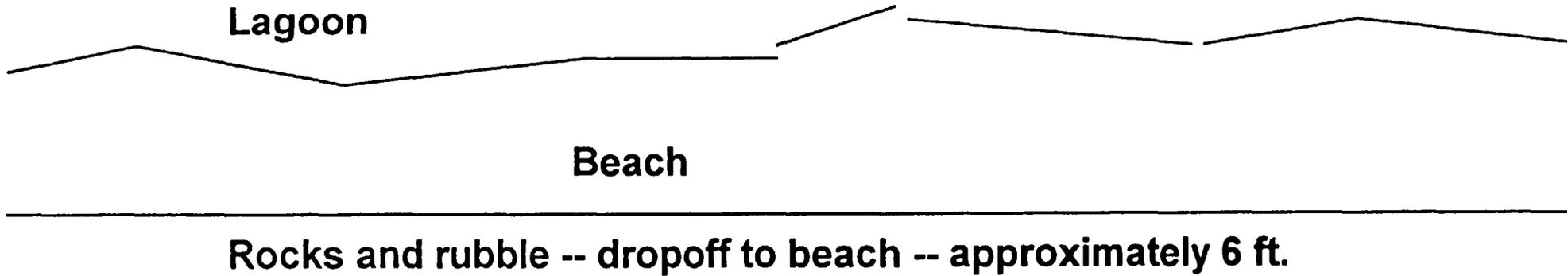


Figure 2.1

# Enewetak Field Station Maintenance Shop Drum Dispensing Area

Proposed diking system



Six inch curbs all the way around with a concrete floor and a sump in one corner to facilitate removal of liquids

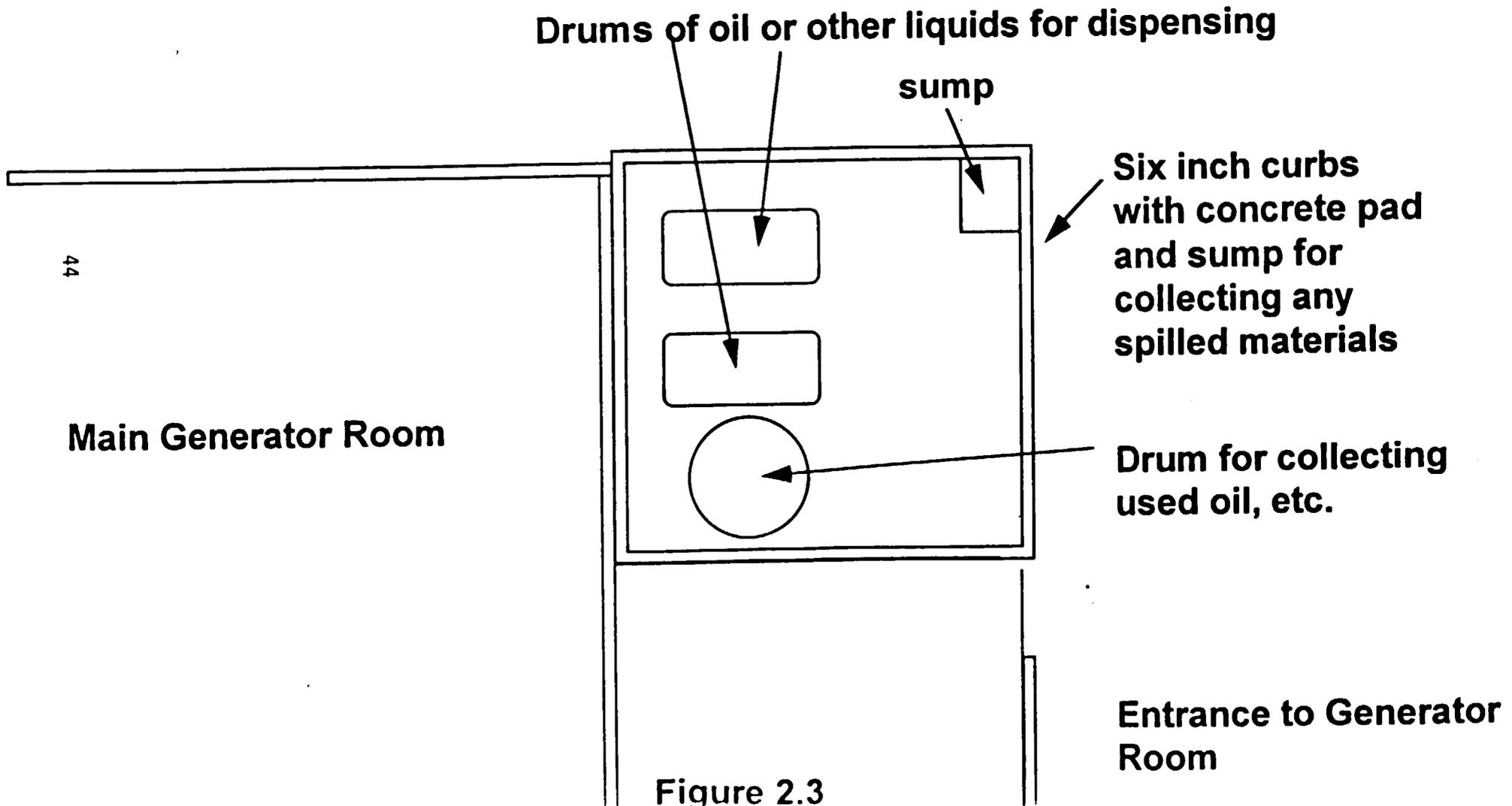
Pad should be about six feet wide and long enough to accommodate the number drums needed at any one time

Maintenance Shop

Figure 2.2

# Enewetak Field Station Liquid Dispensing Area Near Generator/Office Building

Proposed diking system



# Enewetak Field Station Bulk Gas for Boat Dock

Proposed diking system

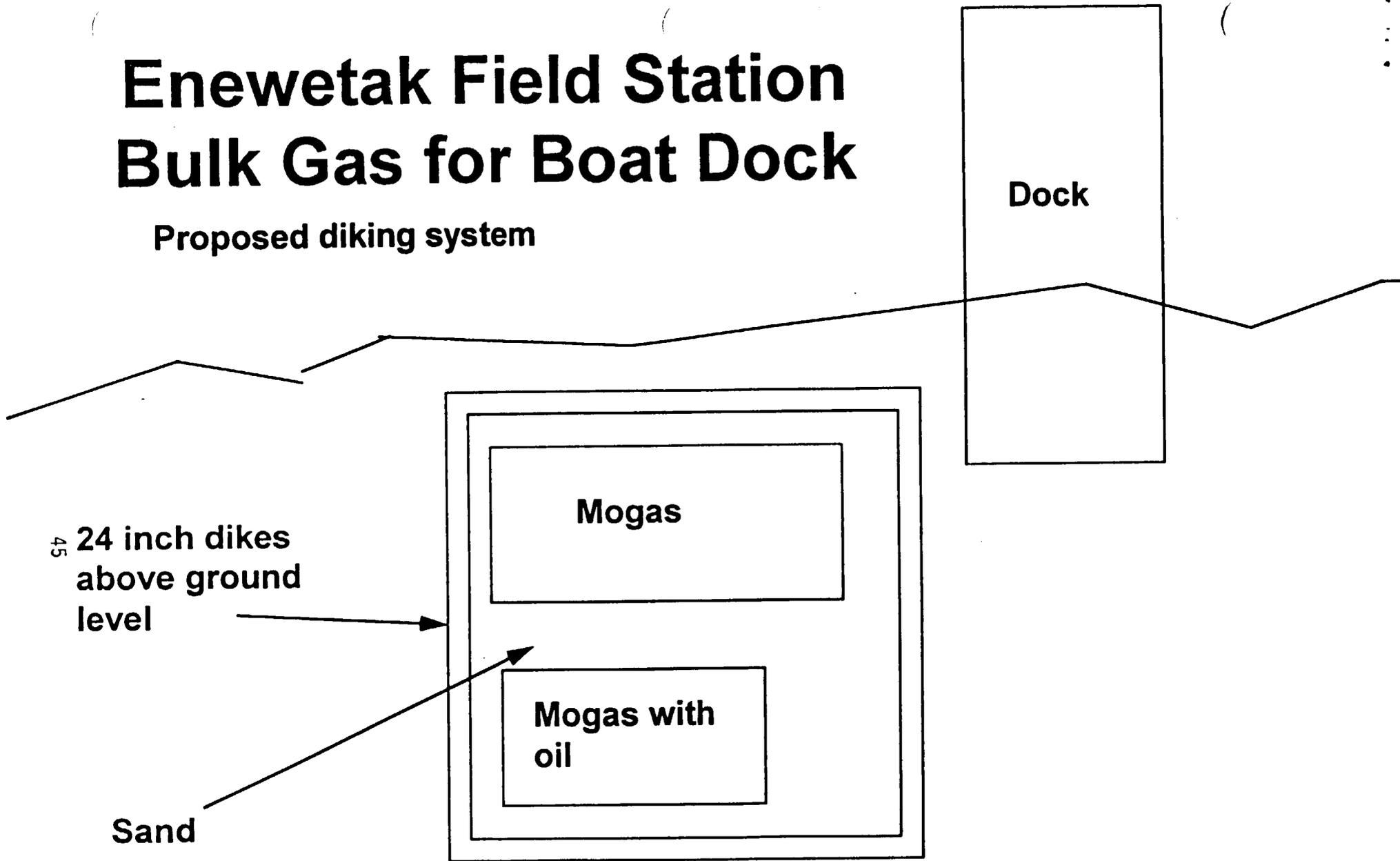


Figure 2.4