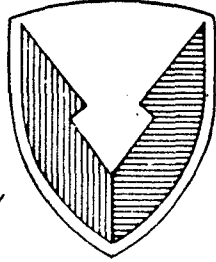
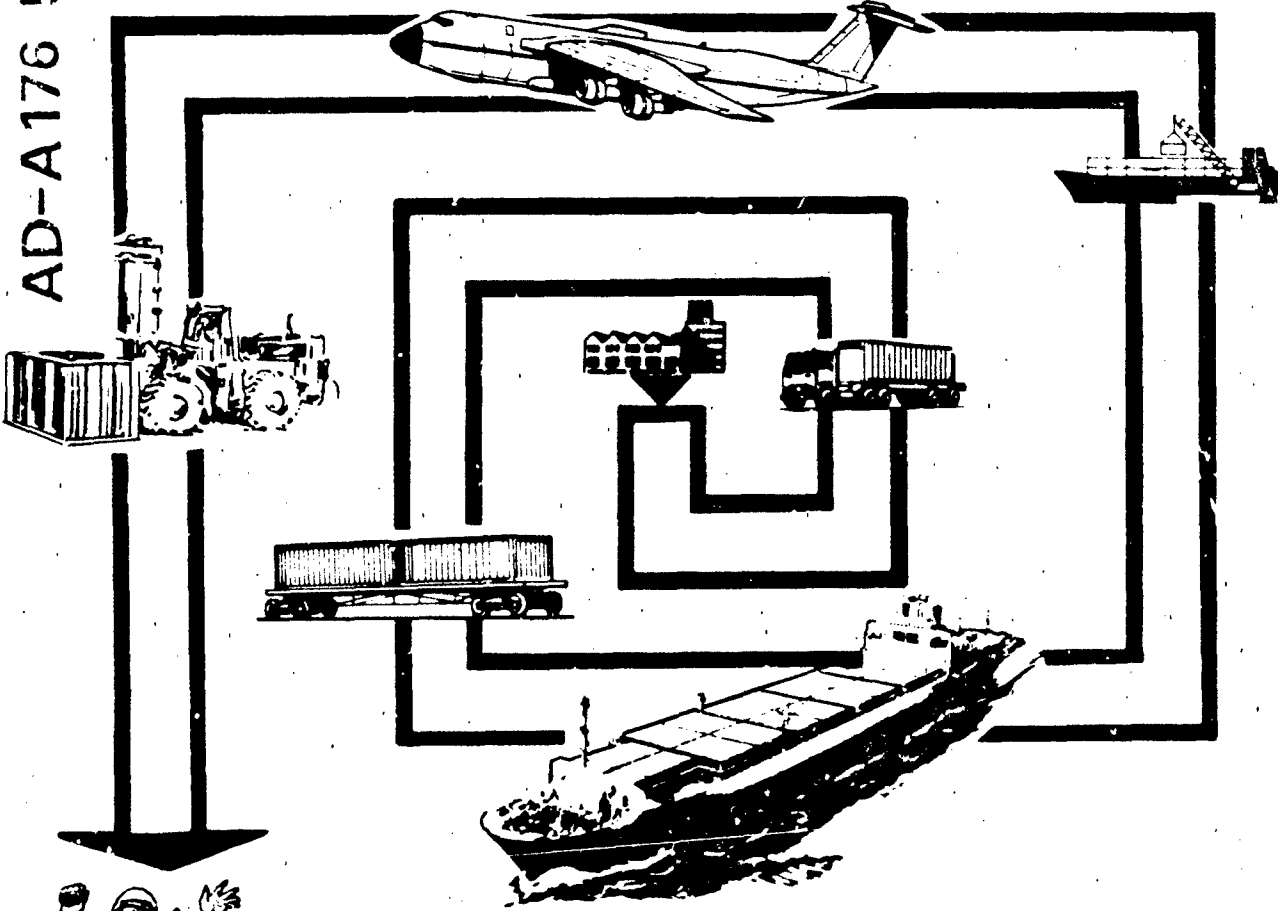


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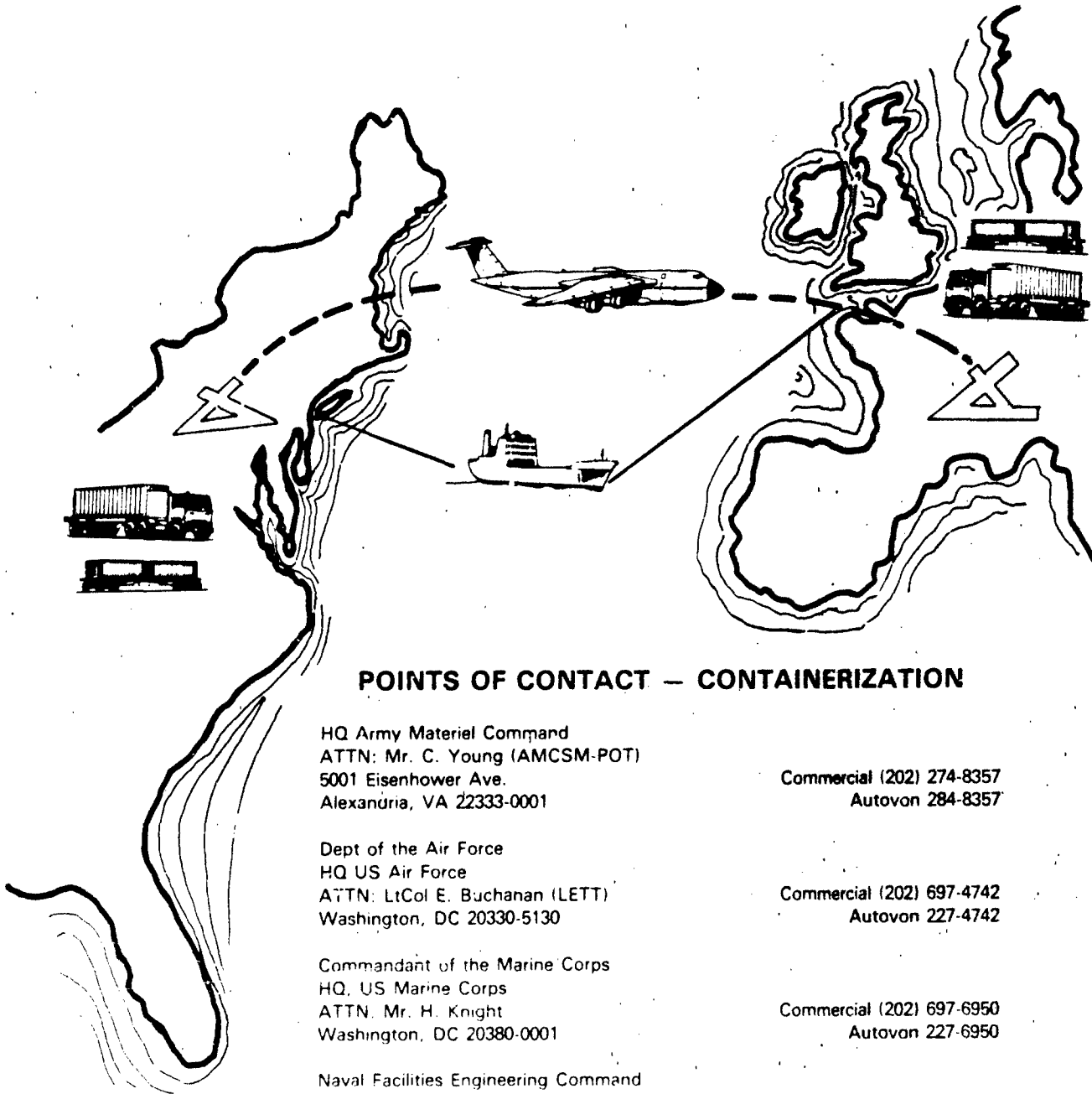
US ARMY  
 TROOP  
 SUPPORT COMMAND  
 BELVOIR RDE CENTER

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 FEB 05 1987  
 S E D

# CONTAINER SYSTEM HARDWARE STATUS REPORT

1986

# INTERMODAL SCHEMATIC



## POINTS OF CONTACT – CONTAINERIZATION

HQ Army Materiel Command  
ATTN: Mr. C. Young (AMCSM-POT)  
5001 Eisenhower Ave.  
Alexandria, VA 22333-0001

Commercial (202) 274-8357  
Autovon 284-8357

Dept of the Air Force  
HQ US Air Force  
ATTN: LtCol E. Buchanan (LETT)  
Washington, DC 20330-5130

Commercial (202) 697-4742  
Autovon 227-4742

Commandant of the Marine Corps  
HQ, US Marine Corps  
ATTN: Mr. H. Knight  
Washington, DC 20380-0001

Commercial (202) 697-6950  
Autovon 227-6950

Naval Facilities Engineering Command  
ATTN: Mr. C. Stevens (NAVFAC Code 032)  
200 Stovall Street  
Alexandria, VA 22332

Commercial (703) 325-8533  
Autovon 221-8533

Naval Sea Systems Command  
ATTN: Mr. R. Lisiewski (PMS377W)  
Washington, DC 20362-5101

Commercial (202) 692-8517  
Autovon 222-8517

Naval Supply Systems Command  
ATTN: Mr. W. Arseneault (Code 051)  
Washington, DC 20376

Commercial (202) 697-8785  
Autovon 227-8785

2

FOREWORD

Future contingencies will require heavy reliance on the use of containers for the shipment of all commodities. Over the past two decades, the shift by the Merchant Marine industry from the breakbulk fleet to containerships has compelled the Department of Defense to examine its programs to support deployed forces and projected contingencies. In order to report on the status of programs associated with containerization, the publication of this report was initiated by the former Office of the Project Manager, Army Container Oriented Distribution System to provide information to various Army activities having an interest in the development and fielding of the Container Oriented Distribution System. In response to the request of the Joint Intermodal Steering Group (formerly the Joint Container Steering Group) the status of systems hardware items of the Departments of the Navy and Air Force have been included in this publication beginning with the Jan 79 issue. In Nov 81, publication responsibility was transferred to the former US Army Mobility Equipment Research and Development Command (presently the Belvoir Research Development and Engineering Center) as a function of its development responsibilities in the Container Oriented Distribution System. Subsequent to the Jan 82 edition the Container System Hardware Status Report has been published in accordance with the DOD Project Master Plan for a Container Oriented Distribution System (DOD Directive 4540.6). In the 1983 edition, material was organized by categories of utilization rather than by service application. In addition, a section was added to report on the number of ISO shelters in the military logistics system. → to p. ii

The Belvoir RD&E Center Technical Coordinator for this publication is Mr. Richard Taylor, Autovon 354-5751/Commercial (703)664-5751. User comments on this report may be submitted to US Army Belvoir RD&E Center, ATTN: STRBE-FMM, Fort Belvoir, VA 22060-5606. Comments on the individual services' containerization programs should be submitted to the appropriate service point of contact listed on the inside of the front cover. Comments on particular pieces of equipment should be submitted to the POC shown for that item.

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A-1	

*Richard Taylor*  
 RICHARD C. TAYLOR  
 Technical Coordinator  
 Logistics Support Directorate  
 Belvoir Research, Development  
 And Engineering Center

**DTIC ELECTE**  
 FEB 05 1987

QUALITY INSPECTED  
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Approved  
 Date: \_\_\_\_\_

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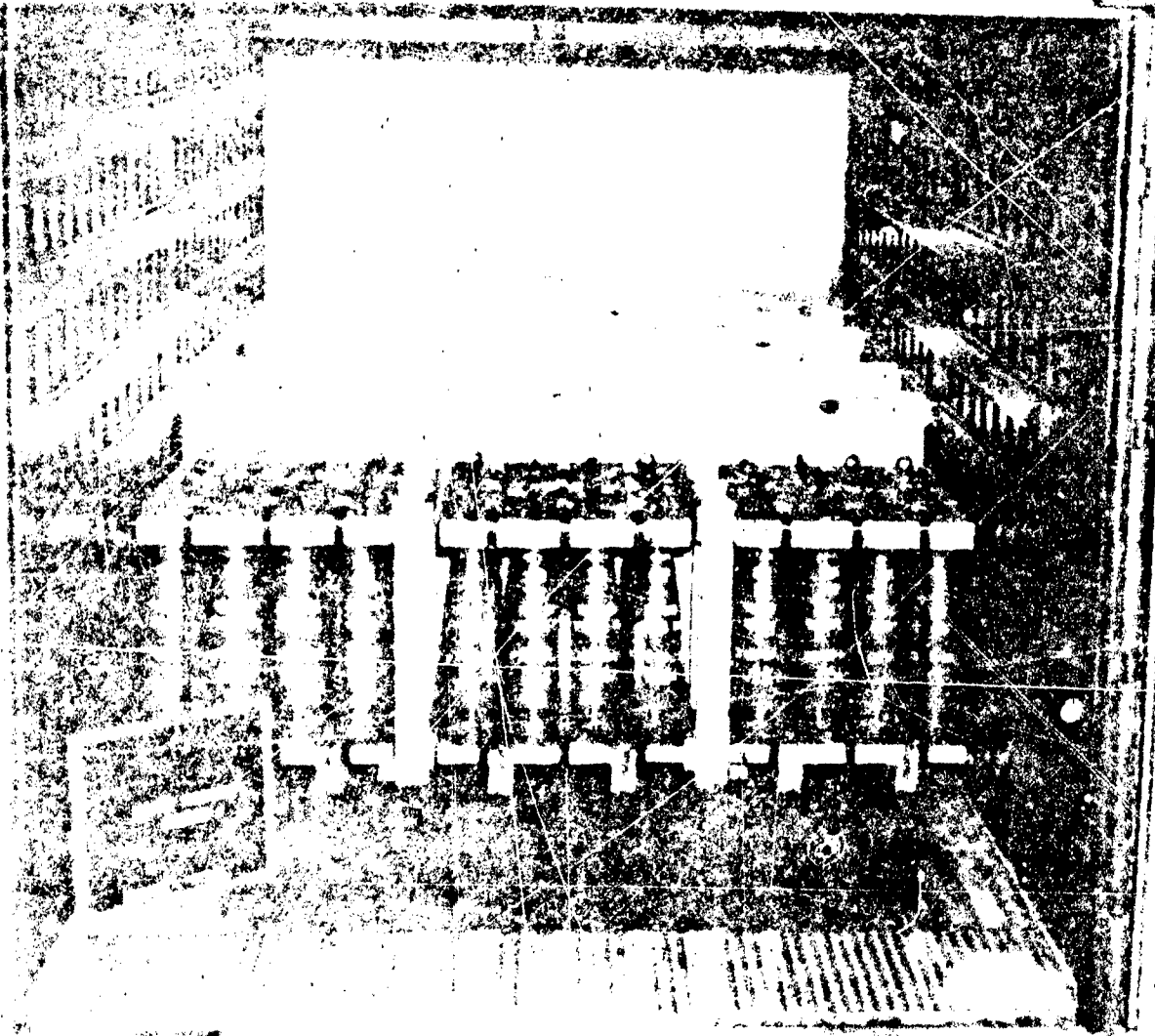
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**CONTAINER**

**EQUIPMENT**





LENGTH: 20 FT

HEIGHT: 8 FT

GROSS WEIGHT: 14,800 LBS.

WIDTH: 8 FT.

WEIGHT EMPTY: 5,785 LBS.

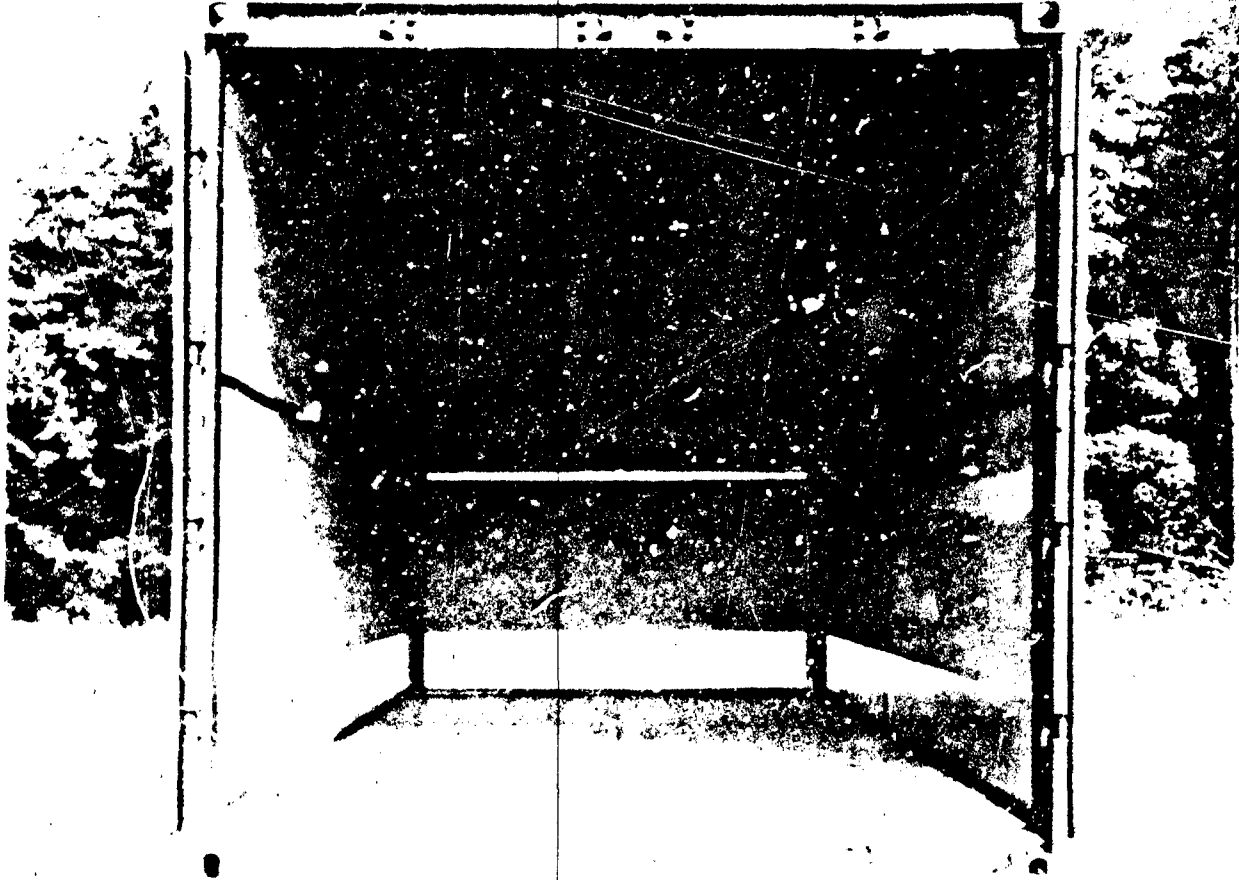
Title: MILVAN - Ammunition Restraint

Point of Contact: Smith, D., Mr., U.S. Army Belvoir RD&E Center,  
STRBE-FMM, Fort Belvoir, VA 22060-5606,  
Autovon 354-5751/Commercial (703)664-5751

Item Description: The MILVAN ammunition restraint container is essentially a standard ANSI/ISO container equipped with restraint hardware capable of handling approximately 20 tons of ammunition. The restraint system consists of eight slotted steel rails permanently installed on each side wall and 25 adjustable cross bars that can be inserted in the slotted rails. The restraint system was provided by the Aeroquip Corp. Its use at full rated load has been approved by the US Coast Guard and the Association of American Railroads. Other restraint systems also approved for use in the MILVAN are those developed by Evans Corp. and Kinedyne Corp. The MILVAN container is 8 x 8 x 20-ft, weighs 5,785 lbs including 1,300 lbs for the restraint system.

Status: The Army procured 4,500 MILVAN ammunition restraint containers of which approximately 4,000 remain in the inventory. The specification, MIL-C-52661, was recently updated to include the 8'6" height which is now ISO standard, composite flooring, and corrosion resistant steel.

Program Plan: FY85 procurement is on schedule for 249 MILVAN Ammunition Restraint Containers. 578 containers are scheduled for procurement in FY86.



LENGTH: 20 FT.  
HEIGHT: 8 FT.  
WEIGHT EMPTY: 4,700 LBS.

WIDTH: 8 FT.  
VOLUME INSIDE: 1,060 CU. FT.  
GROSS WEIGHT: 44,800 LBS.

Title: MILVAN - General Cargo

Point of Contact: Smith, D., Mr., U.S. Army Belvoir RD&E Center,  
STRBE-FMM, Fort Belvoir, VA 22060-5606,  
Autovon 354-5751/Commercial (703)664-5751

Item Description: The MILVAN provides a capability of handling up to 20-tons of general cargo. It is used to transport and temporarily store military cargo. The MILVAN dimensions are 8-ft W x 8-ft H x 20-ft L. It weighs 4,770 lbs when empty and has an internal volume of 1,060 cu ft. The MILVAN is designed to ANSI/ISO standards and procured with a military performance specification. The container is of steel construction with hardwood flooring and the walls are lined with plywood.

Status: The Army procured 2,200 MILVAN general cargo containers and there are 1,559 in the present inventory. The International Convention for Safe Containers (CSC) was ratified by the United States 3 Jan 78. The US Coast Guard, as the implementing agency, has issued approval to the Army for the existing MILVAN fleet 9 Nov 78. Action has been initiated to have the CSC approval plate mounted on the containers during the current refurbishment program. The convention requires reexamination of the containers at 24 month intervals after initial approval. Contracts were awarded beginning in 1978 to refurbish the container inventory and, with depot participation, refurbishment has been completed.

Program Plan: Procurement was completed. There is no current plan to procure additional quantities.



LENGTH: 20 FT.  
HEIGHT: 8 FT.  
DOOR OPENING WIDTH: 89 IN.

WIDTH: 8 FT.  
DOOR OPENING HEIGHT: 82 IN.  
WEIGHT: 8,500 LBS.

Title: Refrigerated Container

Point of Contact: Smith, D., Mr., U.S. Army Belvoir RD&E Center,  
STRDE-FMM, Fort Belvoir, VA 22060-5606,  
Autovon 354-5751/Commercial (703)664-5751

Item Description: The refrigerated container provides a capability to transport, temporarily store, and distribute temperature sensitive cargo. The container including the refrigeration unit is nominally 8 x 8 x 20-ft and weighs approximately 8,000 lbs. The unit is powered by a military Standard 10kw diesel engine generator set or by an external electrical power supply. The refrigerated container is a modified commercial design and procured to a military specification. It meets all ISO requirements for intermodal shipments.

Status: A total of 665 containers, of which 24 went to the US Navy, were purchased and delivered by 1980. Approximately 225 have been deployed to Europe where they see constant use. In FY85 a value engineering study was contracted to examine the use of a commercial direct drive diesel refrigeration unit. If implemented, the specification will be updated in FY86. The Navy procured 49 units in FY85.

Program Plan: The Army is scheduled to procure 268 units in FY90.





Title: 20-Ft ISO Flatrack, Project EASY ISO

Point of Contact: Swanick, D., Mr., Armament Div/YNP, Eglin AFB, FL  
32542-5000, Autovon 872-4173/Commerical (904)882-4173

Item Description: Evaluation of ISO flatrack containers for transport of munitions by DOD. Expect increased utility in loading and downloading, use of existing munitions handling equipment and reduced cost for retrograde shipping.

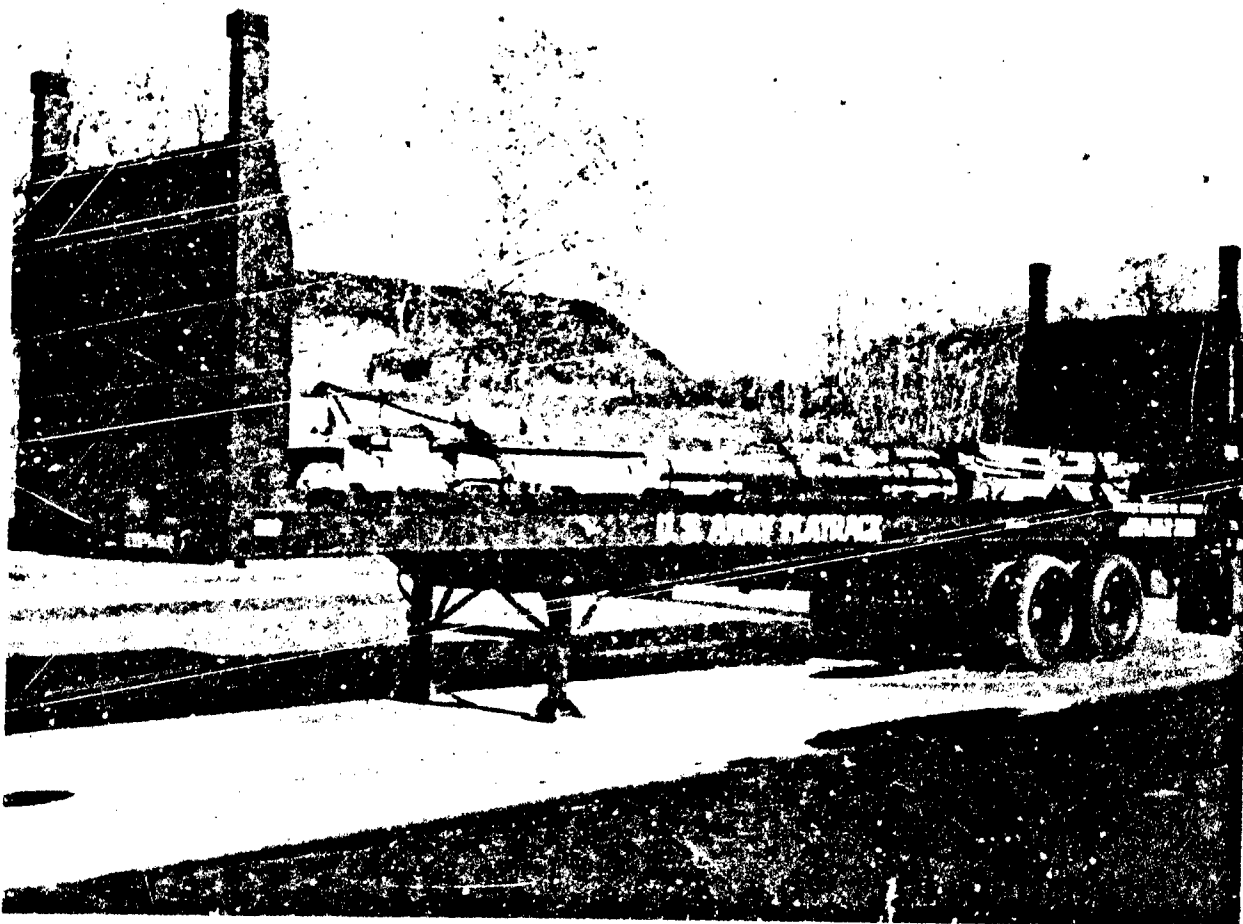
Status: In Mar 83, the Air Force Armament Division at Eglin AFB, FL gained US Coast Guard (USCG) and Bureau of Explosives (BOE) approval for load plan drawings of 30mm ammunition loaded on a 20-ft x 8-ft x 5-ft 8-in flatrack. The loaded flatrack was successfully shipped to Korea in Jun 83. This shipment confirmed the flatrack advantages of effective cube utilization and ease of unloading with conventional munitions handling equipment.

Also, in Mar 83, HQ FACA completed the static test loading of 11 different air munitions loads on a 20-ft x 8-ft x 8-ft flatrack. Drawings for these load configurations has been submitted to the U.S. Army Defense Ammunition Center and School for preparation of load plans and USCG/BOE approval.

Transportability testing of the flatrack for use on Federal Republic of Germany railroads was completed in Sep 85. Upon formal approval a test shipment of 30mm ammunition will be made to Europe using an approved ISO flatrack drawing.

Upon completion of the flatrack test shipment of 30mm, a test comparing 25 flatracks and 25 commercial containers will be made to validate the handling efficiencies of each container.

Program Plan: Evaluate the results of the test shipment to Europe to advise the benefits of using the ISO flatrack for munitions shipments promoting increased usage. Lessons learned from the test will guide future Air Force use of flatracks for munitions shipments.



LENGTH: 40 FT.  
HEIGHT: 9 FT. 6 IN.

WIDTH: 8 FT.  
COLLAPSED HEIGHT: 3 FT. 2 IN.

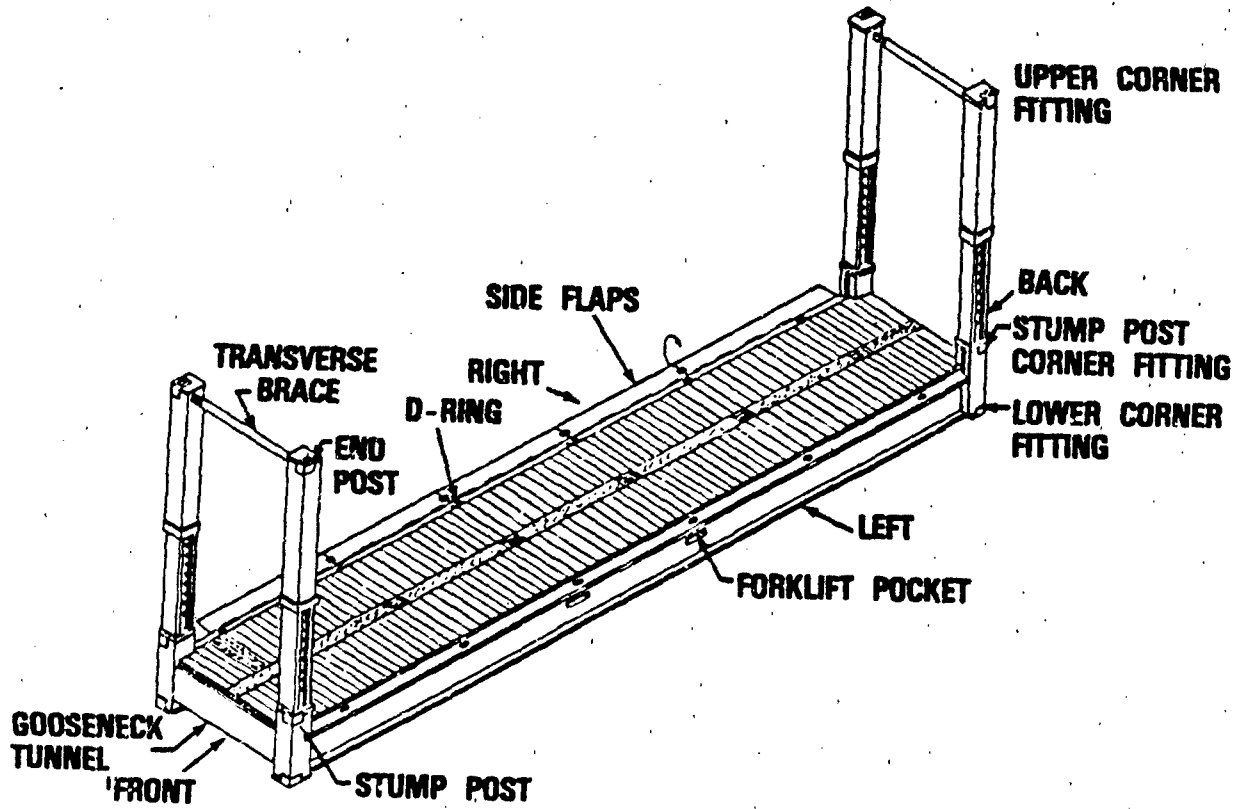
Title: 40-Ft Flatrack

Point of Contact: Smith, D., Mr., U.S. Army Belvoir RD&E Center,  
STRBE-FMM, Fort Belvoir, VA 22060-5606,  
Autovon 354-5751/Commercial (703)664-5751

Item Description: The 40-ft ISO Flatrack will have collapsible endwalls, a tiedown system, and adjustable corner posts. Other design features include storage compartments for chains, fold out bolsters (for 'tween decks use) and a drive-on/off ramp in the endwall. The design will incorporate new corrosion resisting paints and composite floor boards for extended life and increased durability.

Status: Six prototypes were procured and tested between 1975 and 1980. Operational testing was completed and a final report was published. It was planned to award a production contract in FY82, but in July 1981 the Department of the Army directed that the development be stopped. It had been determined that suitable quantities were available from commercial lessors. Recent information indicates that this is no longer true, and the US Navy and the Department of the Army have confirmed this.

Program Plan: Based on a DA directive to utilize commercially available flatracks, development action was terminated. It has been indicated by DA that commercial supplies are inadequate. A sizeable quantity of Navy flatracks will be purchased in the next 10 years to support deployment plans.



## SPECIAL PURPOSE 40' HEAVY DUTY FLATRACK

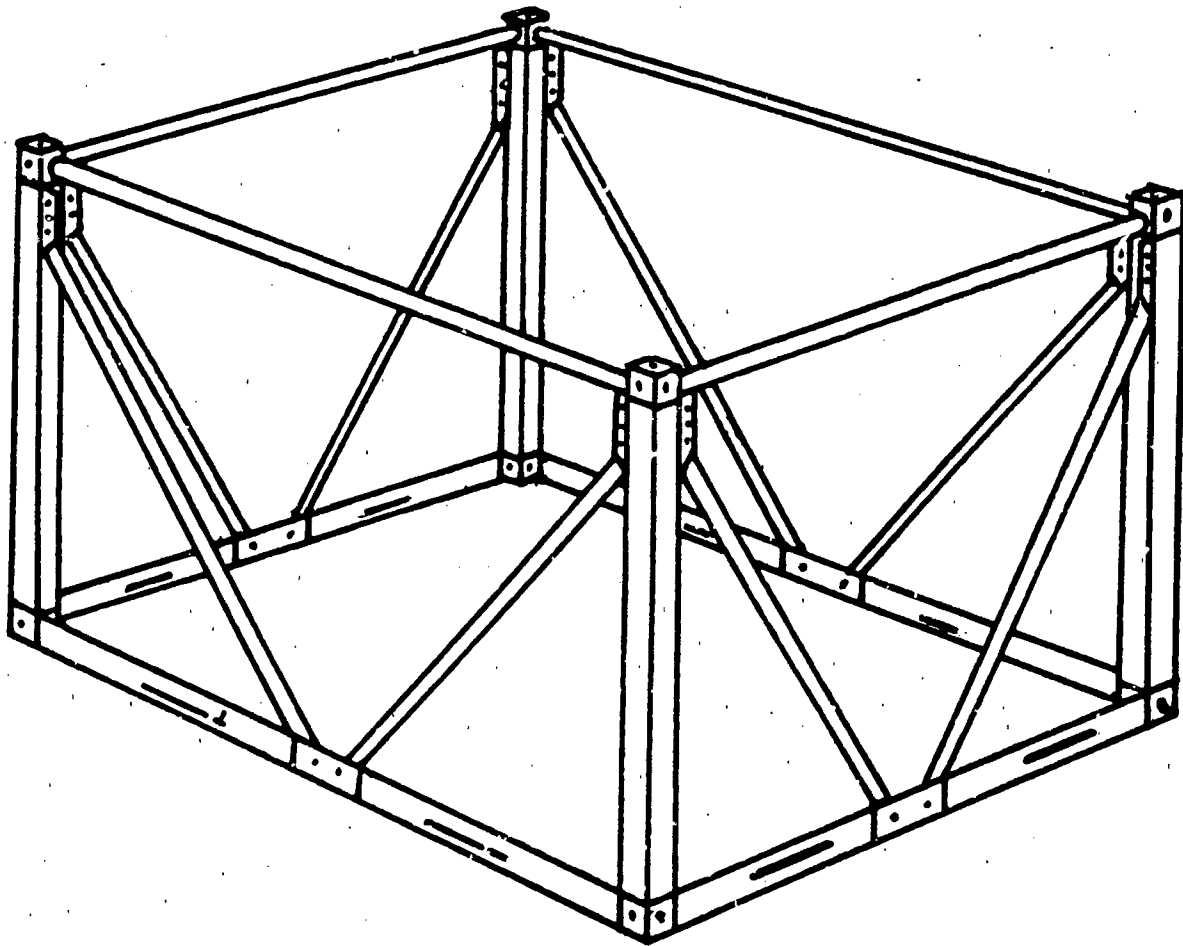
Title: 40-Ft Heavy Duty Flatrack

Point of Contact: Lisiewski, R., Mr., Naval Sea Systems Command  
(PMS-377W) Washington, DC 20362-5101  
Autovon 222-8517/Commercial (202)692-8517

Item Description: The 40-ft heavy duty flatrack was developed to provide a breakbulk capability to containerships for the carriage of tanks and other heavy and/or oversized cargo. The 40-ft heavy duty flatrack is a relatively uncomplicated structural steel frame, decked over and fitted with tiedown points. It has a weight handling capability of 60 LT and telescoping corner posts adjustable from 8.5-to 13-ft for various cargo heights. The corner posts fold down to facilitate stacking and storage. The flatracks are to be inserted into the container cell empty and then loaded out.

Status: The heavy duty flatrack was initially authorized in the FY83 budget for 223 units; the FY84 budget was for 135 units.

Program Plan: Currently project final delivery before 31 Jan 86 for 350 units.



LENGTH — 10 FT.

HEIGHT — 8 FT.

WIDTH — 8 FT.

ARRAYED CONFIGURATION — 8 FT. x 8 FT. x 20 FT.

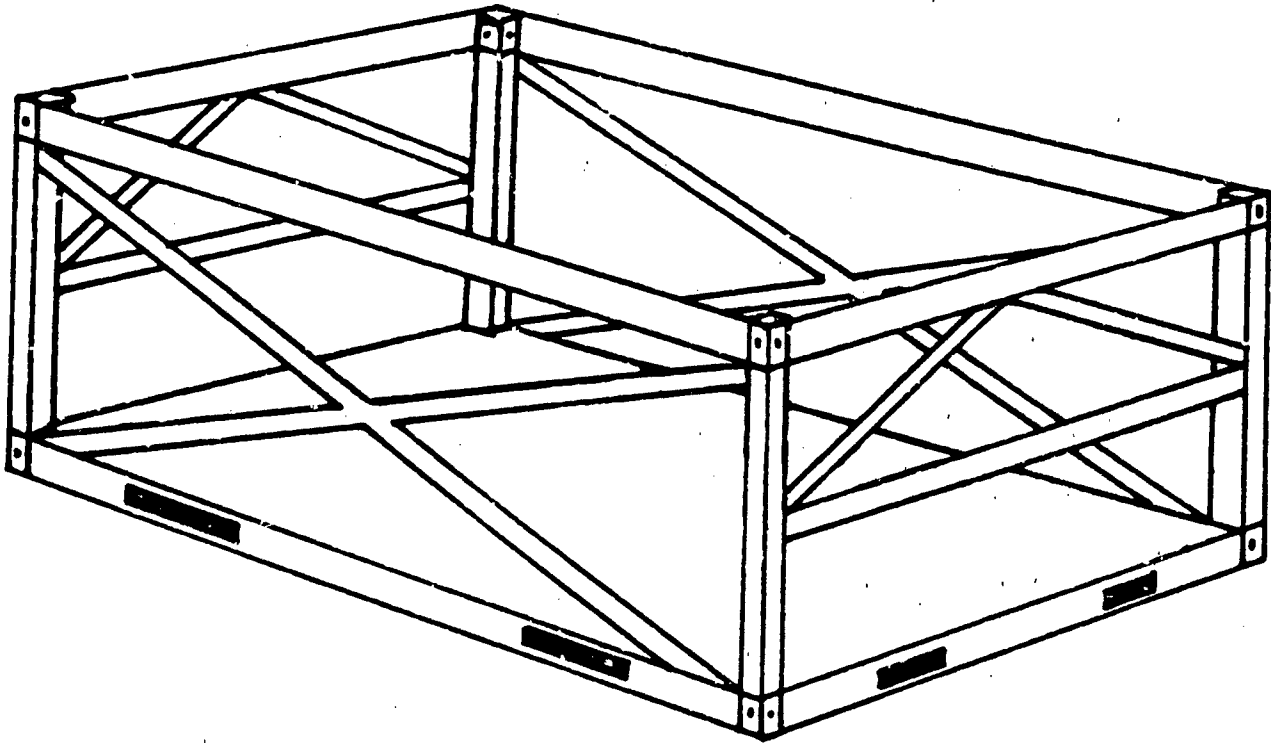
Title: Shipping Frame, 8-ft x 8-ft x 10-ft

Point of Contact: Crivello, J., Mr., HQ US Marine Corps/LME-4,  
Washington, DC 20380, Autovon 225-3072/  
Commercial (202)695-3072

Item Description: This item is an open top cargo carrier of steel construction which features a four-way forklift handling capability and standard ISO corner fittings. An array of two frames forms an 8-ft x 8-ft x 20-ft configuration and fits the 20-ft cells of a containership. The frame will be used to support the mounting and movement of the reverse osmosis water purification unit.

Status: Approval for service use was obtained in May 1981. An Army contract was awarded on 30 Sep 1983 for the procurement of 496 frames. Deliveries commenced in Aug 1984 and will continue through July 1986.

Program Plan: A follow-on contract will be awarded during FY86 for 335 frames which will satisfy Marine Corps requirements.



LENGTH —  $6\frac{2}{3}$  FT.

HEIGHT — 4 FT.

WIDTH — 8 FT.

ARRAYED CONFIGURATION — 8 FT. x 8 FT. x 20 FT.



Title: Shipping Frame, 4-ft x 6-2/3-ft x 8-ft

Point of Contact: Crivello, J., Mr., HQ US Marine Corps/(Code LME-4)  
Washington, DC 20380, Autovon 225-3072/Commercial  
(202)695-3072

Item Description: Reusable open top cargo carrier with four way forklift handling capability with ISO standard corner fittings. Can be arrayed up to six, forming an 8-ft x 8-ft x 20-ft configuration to fit the cell of a containership. Capability objective is to provide an open container of intermediate size which is compatible with US Navy amphibious ships and the Merchant Fleet. Will house fuel and water pump and storage equipment, general cargo, and organizational property.

Status: Procurement quantities, final testing, and fielding dates have yet to be determined.

Program Plan: To be determined.

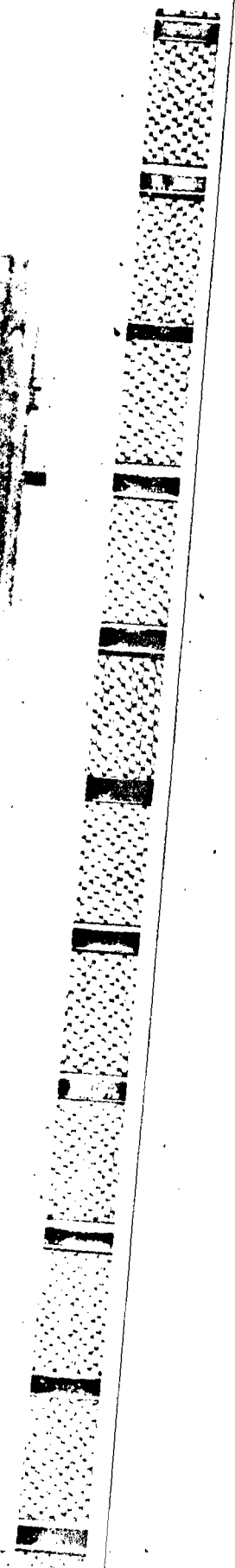


LENGTH: 96 IN.  
HEIGHT: 82 IN.

QUADCON (QUADRUPLE CONTAINER)

WIDTH: 57½ IN.  
CARGO CAP: 7500 LBS.

1-9



Title: QUADCON (Quadruple Container)

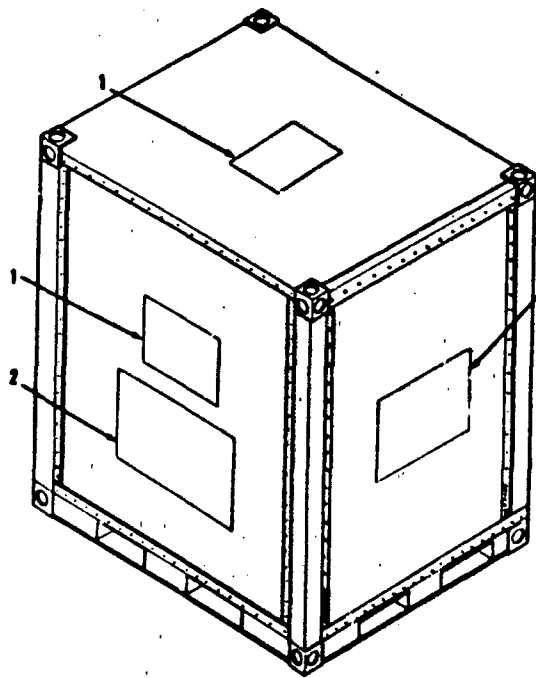
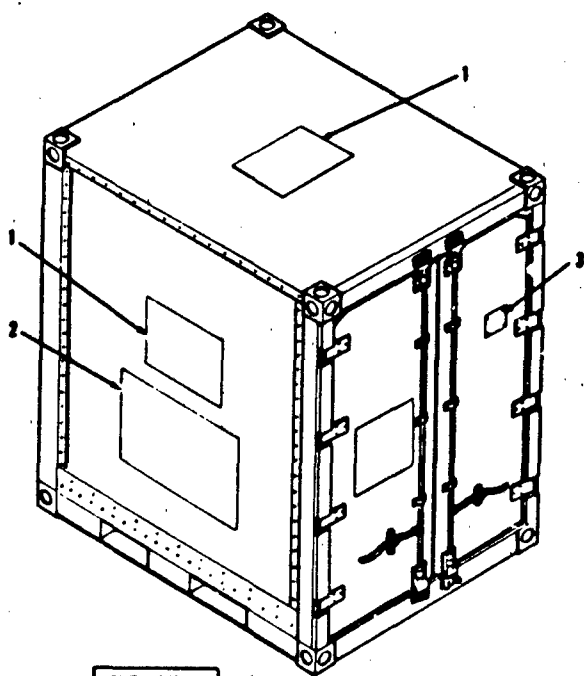
Point of Contact: Cribello, J., Mr., HQ US Marine Corps/LME-4, Washington, DC 20380, Autovon 225-3072/Commercial (202)695-3072

Item Description: The QUADCON is an 82-in x 57.5-in x 96-in lockable, weatherproof, reusable, prefabricated container with a cargo capacity of 7,435 lbs. The QUADCON has a structural steel welded frame; top, sides, and door panels of plywood coated with a plastic laminate; and a floor of high-density plywood covered on both sides with sheet steel. It has ISO corner fittings for lifting and restraint, and for coupling QUADCONs into arrays up to four units, and a tineway base with four-way forklift entry. A four-array of QUADCONs is nearly equivalent in volume to one 8-ft x 8-ft x 20-ft commercial container and is compatible with the 20-ft cells of a containership.

Status: A Headquarters Marine Corps contract to fabricate four pre-production prototypes was awarded on 18 Aug 83. The contract included a production option for 560 QUADCON's. Approval for service use was obtained in Jun 1984 and the production option was exercised on 21 Aug 1984. The initial quantities will be delivered between Dec 85 and Apr 86. User validation will be conducted throughout the remainder of 1986.

Program Plan: The following quantities of QUADCON's are programmed for procurement during the years indicated:

<u>FY86</u>	<u>FY87</u>	<u>FY88</u>	<u>FY89</u>	<u>FY90</u>
700	1400	1400	1500	1907



1  
**U S NAVY  
 SEABEE  
 EQUIPMENT  
 SHELTER**

3  
**SPECIFICATION MIL-8-20633A (YD)  
 NSN NUMBER: 2C5410-00-004-4740  
 CONTRACT DLA700-78-C-8192  
 MFG BY: AMERICAN AIR FILTER CO., INC.  
 DATE OF MFR: 1978**

2  

TARE WT	2,100 LBS	950 KG
GR. WT	15,680 LBS	6,160 KG
SINGLY		
	47,040 LBS	27,480 KG
COUPLED		
CUBE	413 CUFT	11.3 CTM
OUTSIDE DIMS.	L 8FT	2.4M
	W 6.5FT	2.0M
	H 8FT	2.4M

Title: TRICON - Multipurpose Equipment Shelter

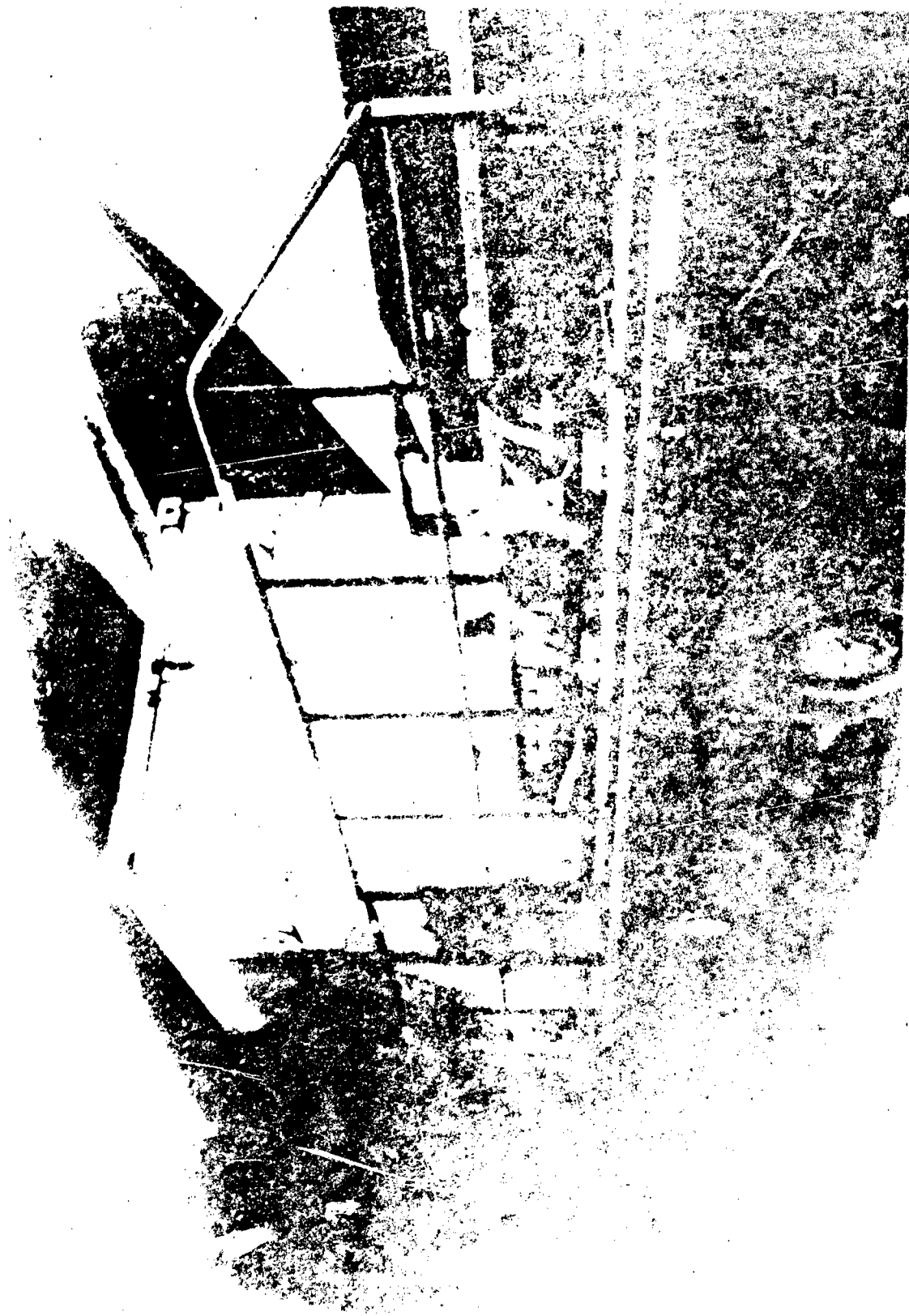
Point of Contact: Edwards, D. Mr., Naval Construction Battalion Center  
(CESO 1543), Port Hueneme, California 93043-5000,  
Autovon 360-3368/Commercial (805)982-3368

Item Description: The TRICON Shelter conforms to the requirements of MIL-S-28633 and is identified by the National Stock Number 2C5411-00-004-4740. It is manufactured by Engineered Air Systems, Inc. The TRICON Shelter consists of a rigid steel frame covered by panels of fiberglass reinforced plastic (FRP) on plywood. Floors and exterior are green color 14064 of Fed Std 595, interior is white, color 17875 of FED STD 595. Sides, top and floor panels are affixed to the frame by means of permanent fasteners of the pin and sleeve type. On the front of the shelter are two hinged doors made of steel-clad plywood. The closed shelter is watertight. Floor level forklift pockets allow movement, placement, and storage of TRICON Shelters by use of conventional materials handling equipment. Each shelter is equipped with standard ISO corner fittings to allow lifting by overhead sling, also to permit coupling three shelters into a nominal 20-ft modular assembly. Stacking of fully-loaded shelters is limited to a height of five units.

Status: The development is complete.

Program Plan: A contract was awarded for 286 units for FY83-85 with deliveries to begin in Jul 86. Procurement of additional units is planned for FY86.

<u>FY83</u>	<u>FY84</u>	<u>FY85</u>	<u>FY86</u>
56	147	83	124



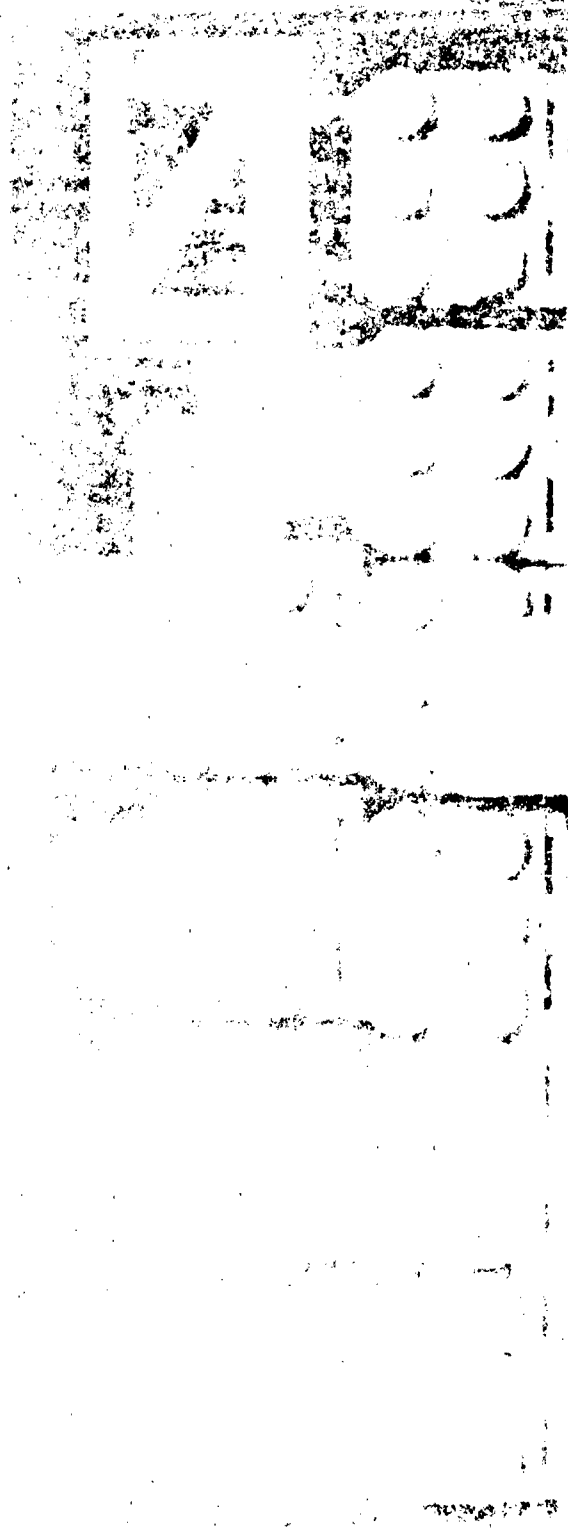
**Title: Air/Surface (Intermodal) General Purpose Container**

**Point of Contact: Mays, M., Mr., HQ Military Airlift Command/TRXF,  
Scott AFB, IL 62225, Autovon 638-5977/Commercial.  
(618)256-5977**

**Item Description: The 8-ft x 8-ft x 20-ft air/surface container provides a capability to handle a gross weight of 25,000 lbs. It will be used to transport military general cargo from consignor to consignee via the military airlift system. The air/surface container is expected to have a tare weight which ranges from 2,116 to 2,600 lbs and an internal volume of 1,077 cubic ft. The containers are designed to ISO 8323 standards. Intermodal air cargo containers are constructed by several manufacturers using various combinations of aluminum, steel, and fiberglass. Some containers are available with forklift pockets.**

**Status: The requirement for intermodal air cargo containers was validated by the MAC/DARCOM ISO container test which was conducted from Dec 81 to Feb 82. OASD/(MI&L) subsequently approved the Air Force request to purchase up to 50 intermodal air cargo containers. During the procurement process, ISO discontinued the existing air/land container standard before the new air/surface standard received final approval. HQ MAC is finalizing the purchase description and Warner Robins Air Logistics Center will initiate a contract in Oct 86 for procurement of these containers. MAC will use these containers to support the New Cumberland Army Depot ALOC from Dover AFB, Delaware to Ramstein/Rhein Main.**

**Program Plan: When the initial procurement is completed and routine service is underway, the Air Force will evaluate the requirements to expand the inventory of air/surface containers.**





**Title: 20-Ft ISO Side Opening Containers**

**Point of Contact: Swanick, D., Mr., AD-YNP, Eglin AFB, FL, 32542-5000,  
Autovon 872-3978/Commercial (904)882-3978**

**Brooks, CMSGT, HQ USAF/LEYW, Washington, DC 20330,  
Autovon 227-5097/Commercial (202)697-5097**

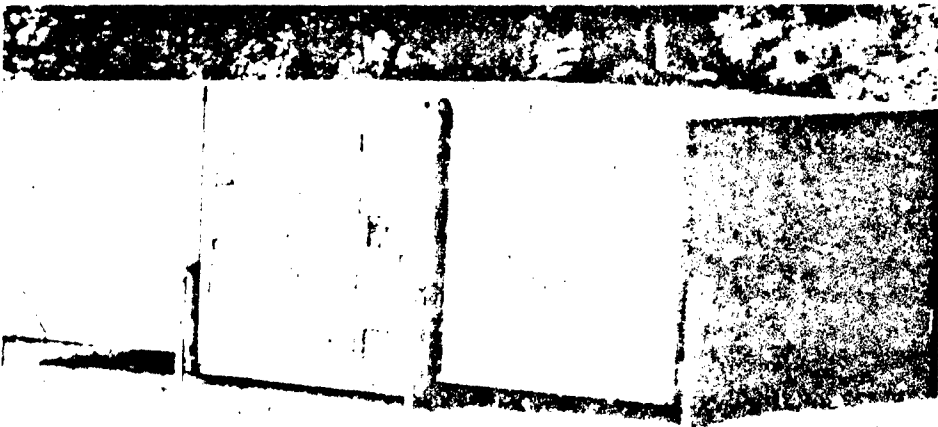
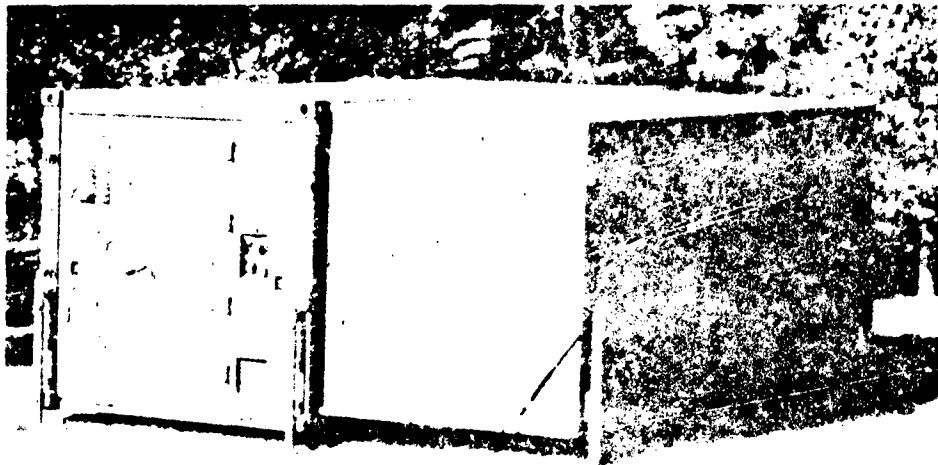
**Item Description: The Air Force is evaluating side opening ISO containers for munitions storage and shipment. The side opening container was selected for ease in munitions loading and unloading.**

**Status: HQ USAF has static test loaded side opening containers with munitions. The initial test was designed to determine the storage capability of side opening containers for munitions in a complete round configuration. The test also determined the number of fighter aircraft sorties that could be supported by the munitions placed in a single 20-ft container.**

**HQ USAF has released a request for proposal to purchase 20-ft side opening ISO containers. These container will be used initially as interim munitions storage facilities. As permanent fixed facilities become available, these containers will be used for munitions shipments if approved.**

**The Armament Division (AD) has leased 10 side opening ISO containers of 3 designs: (1) One side door and one end door (2) Ventilated. Full side access doors and one end door (3) Side doors, both sides, and one end door. Three containers of each design has been shipped to USAF, PACAF, and MAC for operational testing and evaluation over a one year period. Test results will be used to determine performance requirements for future AF containers buys.**

**Program Plan: The urgent need to improve munitions storage capability in USAF necessitated procuring containers before AD testing is complete.**



**Title: ISO Shelters**

**Point of Contact:** Wheeler, J., Mr., US Army Natick Research and Development Center, Natick, MA 01760-5017, Autovon 256-5246/Commercial (617)651-5246

Harris, F., Capt, Electronic Systems Division/OCMS, Hanscom AFB, MA 01731, Autovon 478-4106/Commercial (617)861-4106

**Item Description:** A shelter is a presized, transportable structure designed for a functional requirement and which provides a live-in or work-in capability. This structure can be either rigid or expandable. Insofar as practical, the shelter will conform to applicable ANSI/ISO container standards. All services are increasing their utilization of the shelter concept and the impact of shelters on the transportation and materiel handling system will become more and more significant in coming years. A standard family of 20-ft rigid wall ISO shelters has been developed by the US Army Natick Research and Development Center for DOD use. The shelter family includes three types:

- a. Non-Expandable (1:1) Rigid Wall ISO Shelter.
- b. One-Side Expandable (2:1) Rigid Wall ISO Shelter.
- c. Two-Side Expandable (3:1) Rigid Wall ISO Shelter.

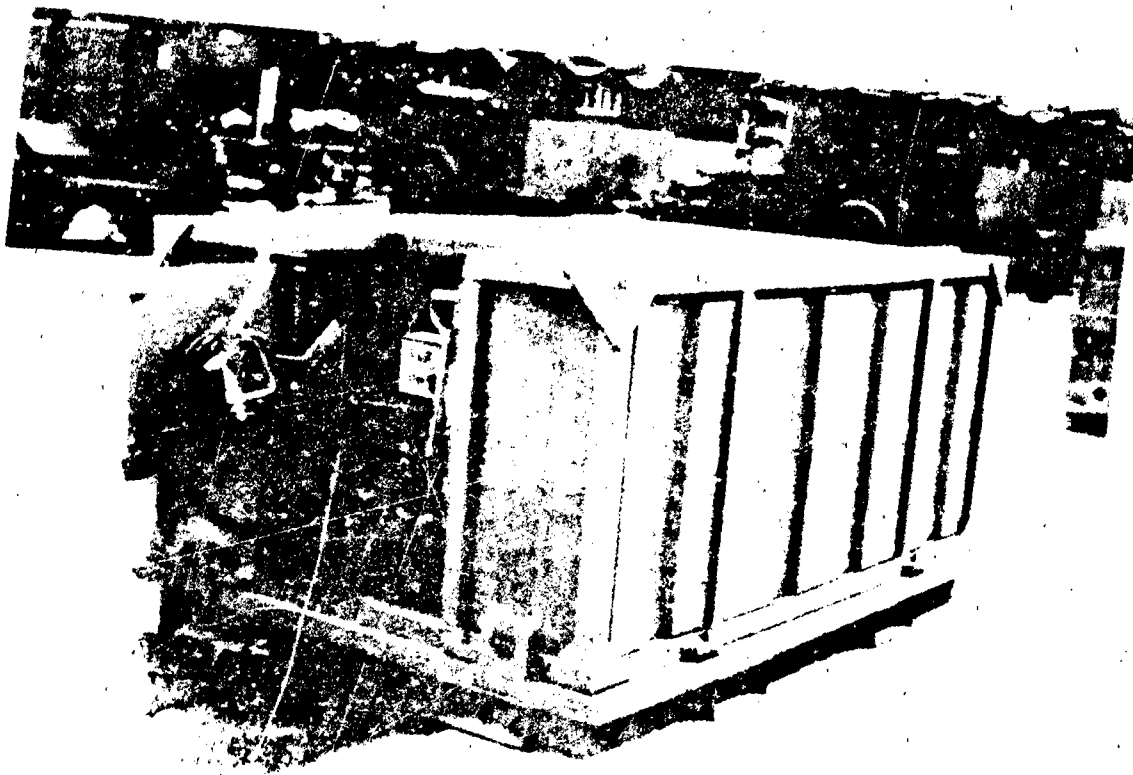
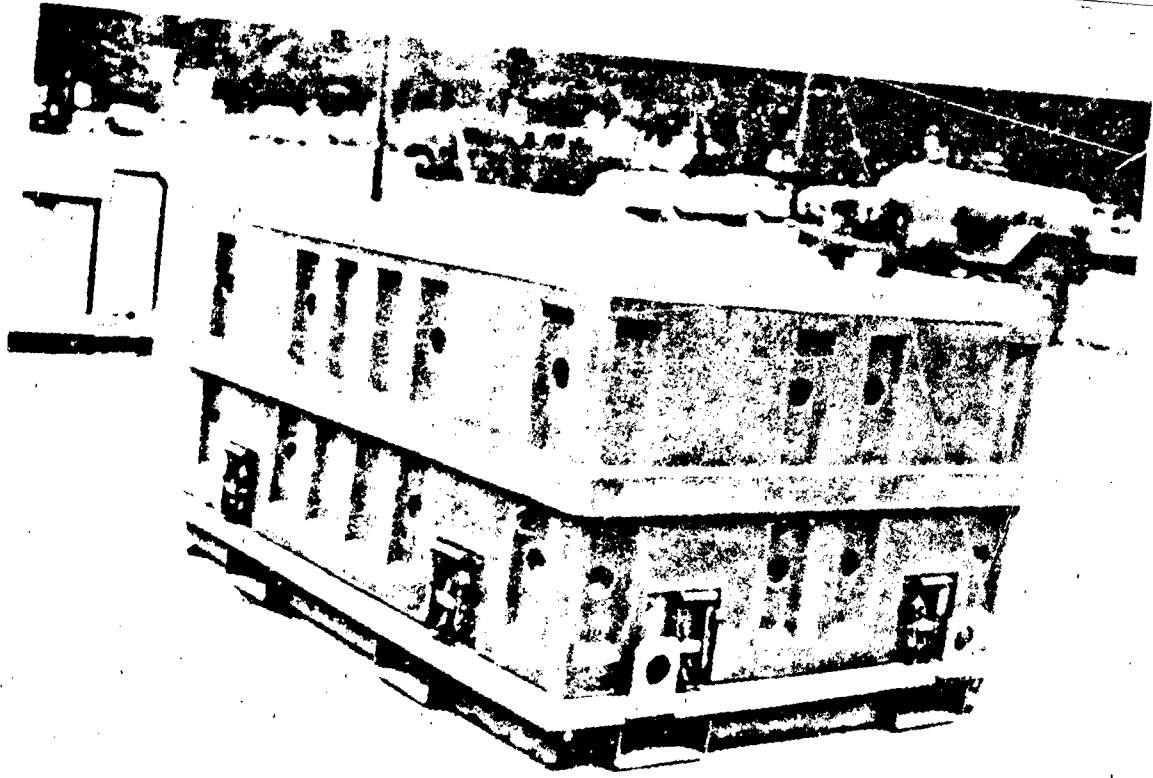
**Status:**

a. 1:1, 2:1, and 3:1 ISO shelters have completed development and a Technical Data Package has been prepared. The First Production contract was awarded on 27 Apr 84 for 762 shelters with an FY85 option for 200% more. Initial production deliveries began in Dec 85. 1705 shelters will be delivered under this contract.

b. The following quantities represent standard ISO shelters procured since 1978 for both the Army Formal Shelter Development Program and for Specific new Navy, Air Force and Army ISO sheltered systems.

	<u>Approximate Quantity</u>
1:1 ISO Shelter	9
2:1 ISO Shelter	67
3:1 ISO Shelter	29

**Program Plan:** First Article Testing of shelters being delivered under the First Production Contract has been completed. Entire option quantity was awarded in 1985 under this contract. It is estimated at this time that 447 shelters will be procured in FY86, and 618 in FY87. USAF also has requirements for 984 additional Navy design ISO shelters through FY90.



1-14

Title: PLS Containers (COMPODS)

Point of Contact: Smith, D., Mr., U.S. Army Belvoir RD&E Center,  
STRBE-FMM, Fort Belvoir, VA 22060-5606  
Autovon 354-5751/Commercial (703) 664-5751

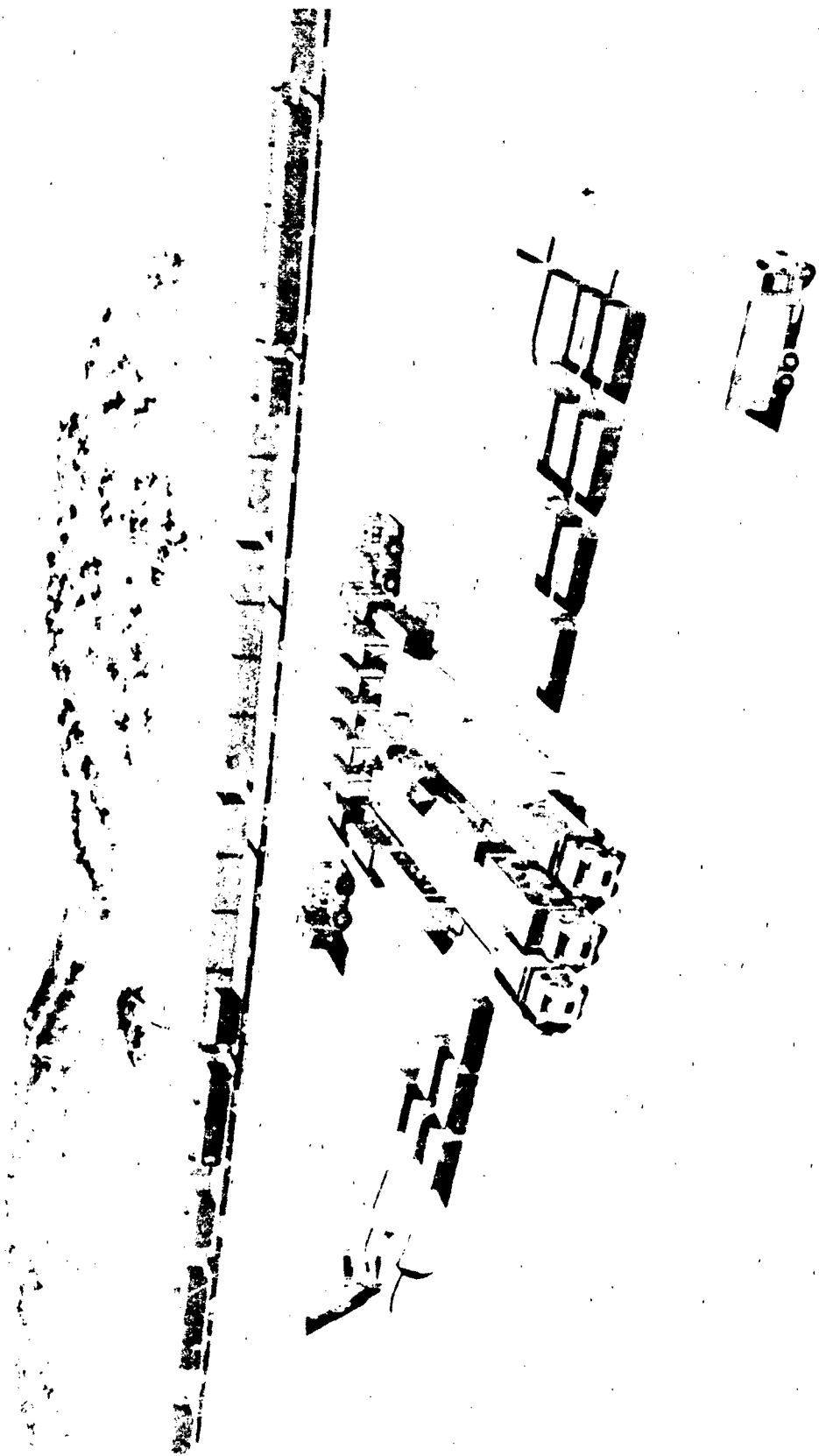
Item Description: Containers were adapted from commercial designs for use on the palletized Loading system (PLS) flatracks. Basic design was a pallet and "butterdish" cover for the dry freight, and tank containers for water and fuels. The containers were equipped with 4-way forklift pockets and lifting/tiedown fittings. They were 4' x 5' x 8' and sized so that 8 units fit in a MILVAN or on an ISO flatrack. The units stack and nest. The tank units were equipped with a handpump for fluid transfer in the field.

Status: Units have been tested at the Army Development Employment Agency (ADEA) Ft Lewis, WA and Belvoir. The units were returned to the contractor at the end of the test lease.

Program Plan: Currently Belvoir is examining similar items for field transport of food, fuel, water, ASL, PLL, etc. However, no requirements document exists.

**HANDLING  
EQUIPMENT**

PALS  
CONTAINER OUTLOADING FACILITY - SVAD



11-1

Title: Prestaged Ammunition Loading System (PALS)

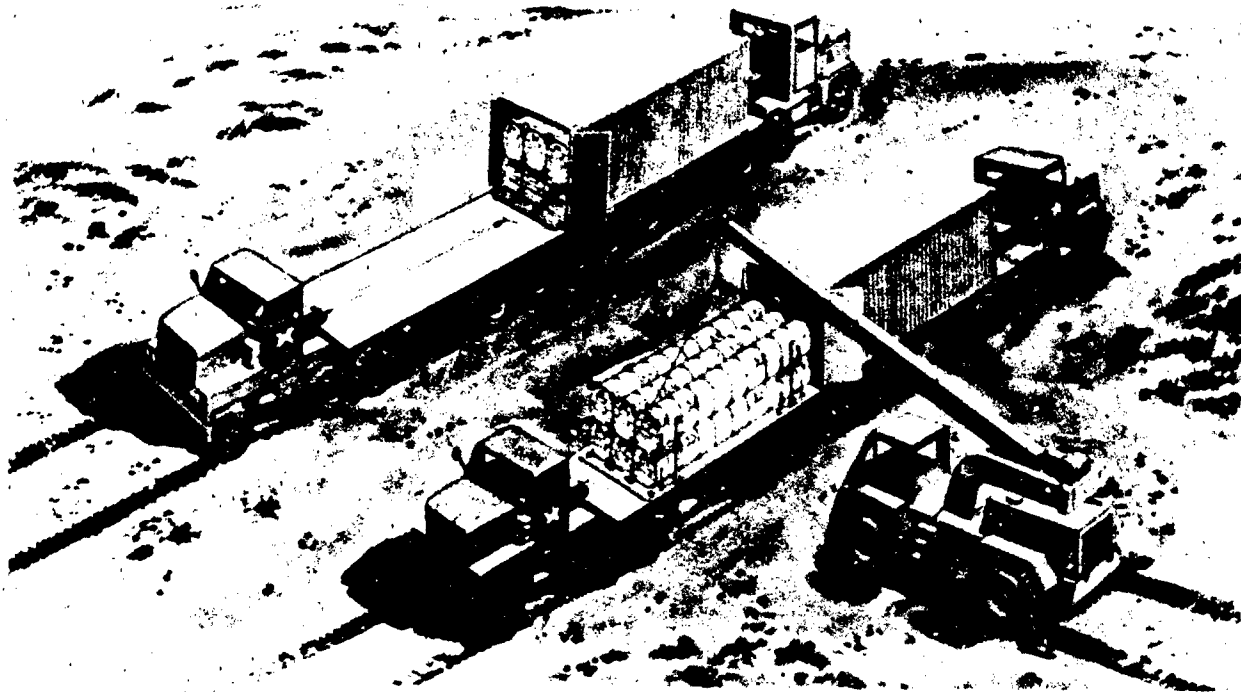
Point of Contact: Rodrick, E., Mr., U.S. Army Belvoir RD&E Center,  
STRBE-FMR, Fort Belvoir, VA 22060-5606, Autovon  
354-1143/Commercial (703)664-1143

Item Description: The Prestaged Ammunition Loading System will give CONUS ammunition depots, plants, and ocean terminals the capability to meet a mobilization goal of outloading 1,000 commercial containers per day with reduced manpower and material when compared to existing outloading methodologies. PALS consists of six major subsystems: transfer vehicle; container loader; container indexing; container dunnage; materials handling; and inspection and documentation.

Status: A study, including a cost effectiveness analysis, was conducted and the automatic dockmounted loader system was found to be the most effective approach. A PALS compatible dunnage subsystem was developed by the Defense Ammunition Center to interface with the dockmounted loader methodology. This subsystem was successfully subjected to regulatory testing during Nov 81. A device to automatically install the dunnage into the container has been designed. Design of PALS has been finalized and hardware interface drawings prepared to allow concurrent development of PALS dockmounted hardware drawings are being prepared to allow initiation of hardware fabrication in FY84. Drawing package to allow hardware fabrication was completed in FY84. In February 84, the program was terminated when the requirement was withdrawn by the user.

Program Plan: Program terminated.





**GIANT SLIP SHEET AMMUNITION HANDLING SYSTEM  
(CONTAINER TO SEMI-TRAILER UNLOADING)**

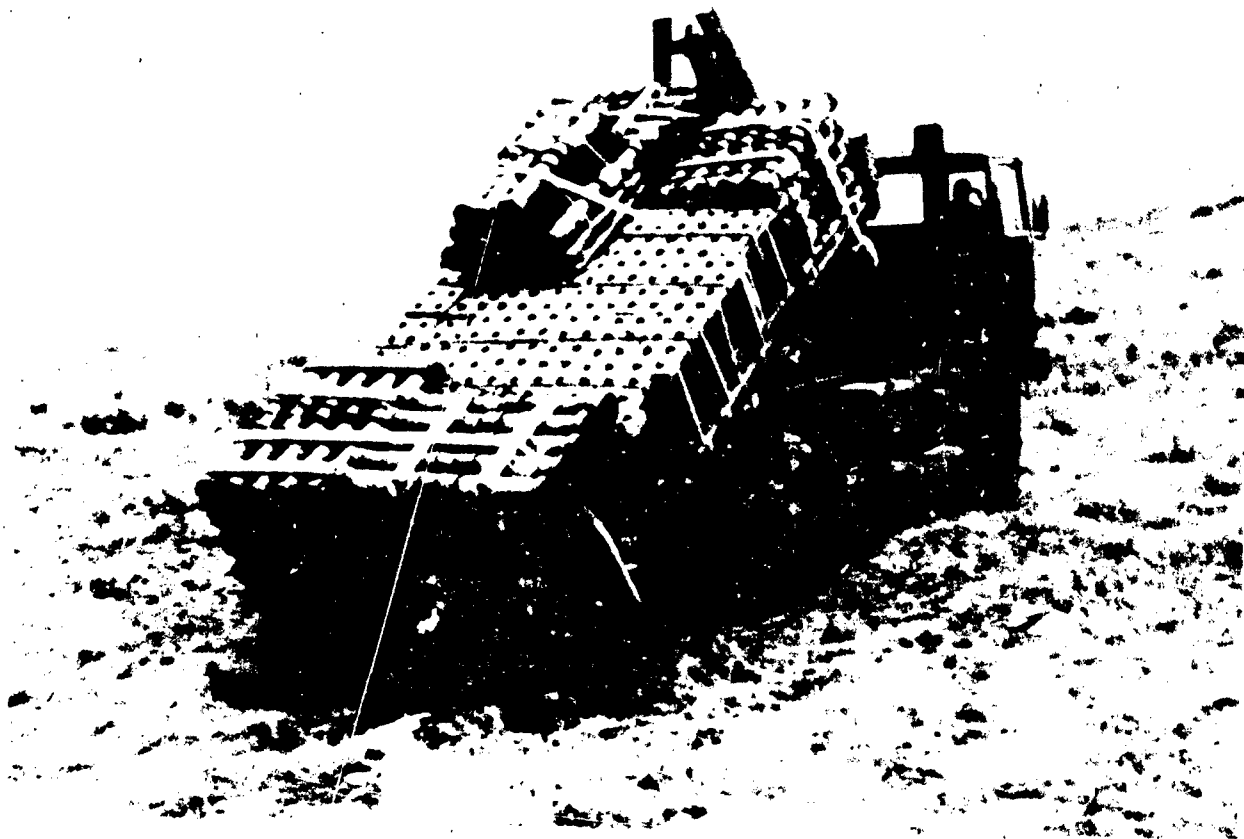
Title: Slip Sheets for Unstuffing Containerized Ammunition in the Field

Point of Contact: Rodrick, E., Mr., U.S. Army Belvoir RD&E Center,  
STRBE-FMR, Fort Belvoir, VA 22060-5606, Autovon 354-1143/  
Commercial (703)664-1143

Item Description: The Slip Sheet is used to extract an entire load of ammunition, weighing up to 20 tons, from cargo containers as a unit load, thereby, allowing easy access to the palletized load by materials handling equipment. The Slip Sheet System consists of a polyethylene sheet, which is placed on the floor of the cargo container prior to ammunition being stuffed, and a clamping device which is used to extract the sheet from the container. Various methods can be utilized to provide extract force, e.g., winch, tow bar, etc.

Status: Slip Sheets underwent engineering tests at Belvoir and the Defense Ammunition Center and proved to be feasible.

Program Plan: Action suspended pending redefinition of the user's needs.



11-3



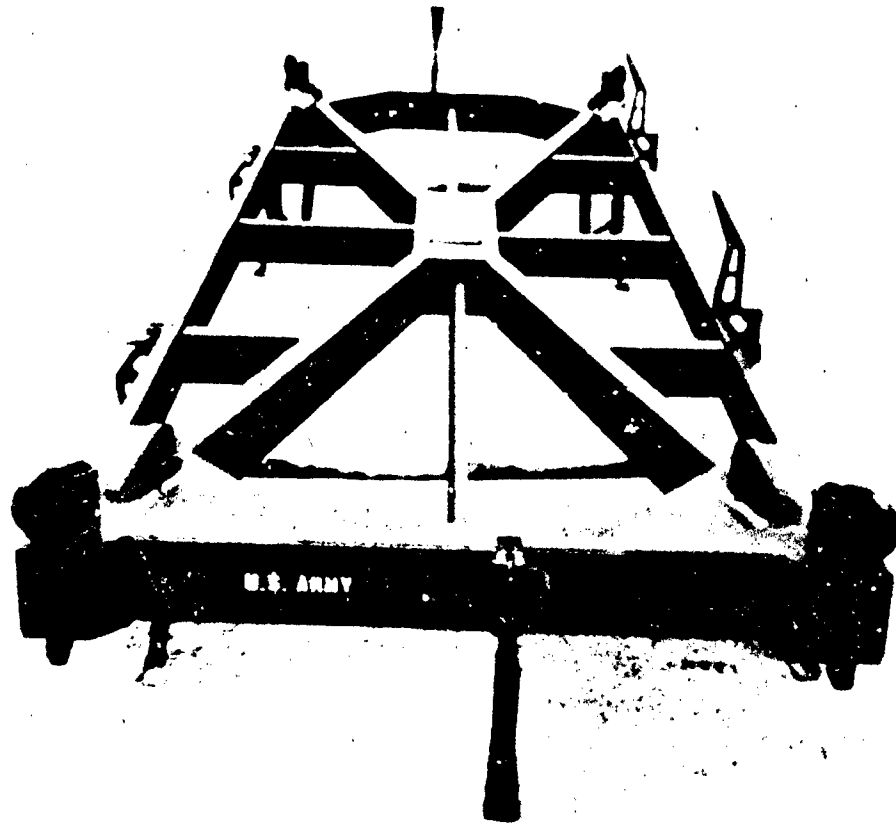
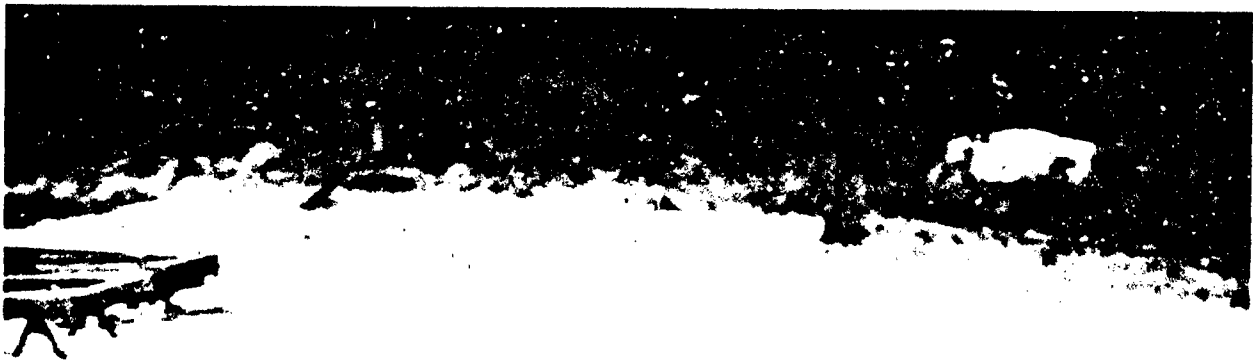
Title: Palletized Loading System (PLS)

Point of Contact: Rodrick, E., Mr., US Army Belvoir RD&E Center,  
STRBE-FMR, Fort Belvoir, VA 22060-5606,  
Autovon 354-1143/Commercial (703)664-1143

Item Description: The Palletized Loading System (PLS) consists of a medium mobility truck chassis; an integral hydraulic load handling mechanism; a compatible trailer and a number of flatracks. The system is capable of self-loading and unloading the flatracks from the ground onto the truck chassis using the integral load handling system. The vehicle mounted load handling system also has the capability to load and unload flatracks onto the companion trailer. The system is being evaluated in two sizes, a heavy PLS with 15 ton payload and a medium PLS with 7-1/2 ton payload.

Status: Three heavy PLS have been undergoing evaluations for 2 years with ADEA and the 9th ID at Ft Lewis, WA. Three additional heavys and 15 medium PLS were delivered during 2Q85 for continued evaluation. ADEA will complete its program during 2Q86.

Program Plan: No further activity by ADEA after 2Q86. Under a separate program the Tank-Automotive Command is leasing 46 PLS of 10 and 15 ton payload for use in Force Development Test and Evaluation at Ft Hood, TX during 3Q86.



11-4

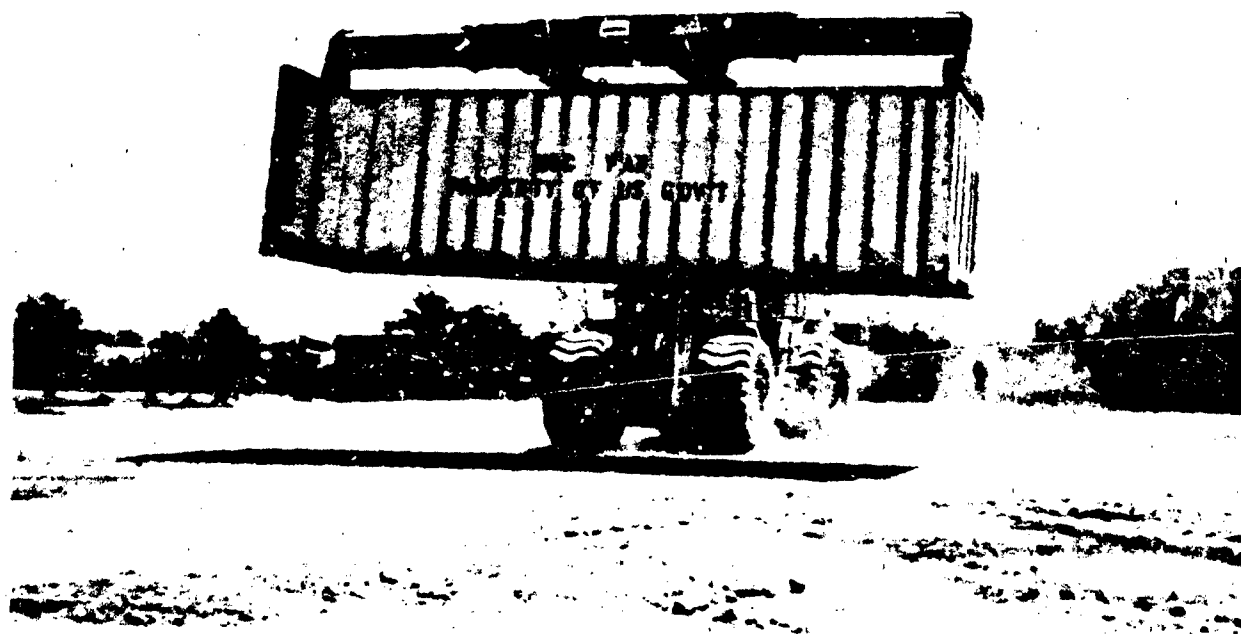
Title: Spreader Bars, Intermodal Container Handling

Point of Contact: Shively, P., Mr., US Army Belvoir RD&E Center,  
STRBE-FMW, Fort Belvoir, VA 22060-5606, Autovon 354-4490/  
Commercial (703)664-4490

Item Description: A manually operated locking frame, conforming to MIL-S-52713B(ME), used for the lifting and handling of International Standards Organization (ISO) and intermodal containers.

Status: A contract was awarded in FY81 to Line Fast Corporation for 102 spreaders. The option for an additional 100 spreader units (20-ft, 35-ft, and 40-ft) was exercised in FY82 to bring the total to 202 spreaders. Delivery of these units has been completed.

Program Plan: A contract for 20 ft, 35 ft and 40 ft spreader bars is scheduled in FY86.



11-5

Title: Spreader Bars, Intermodal Container Handling, Lightweight Expandable

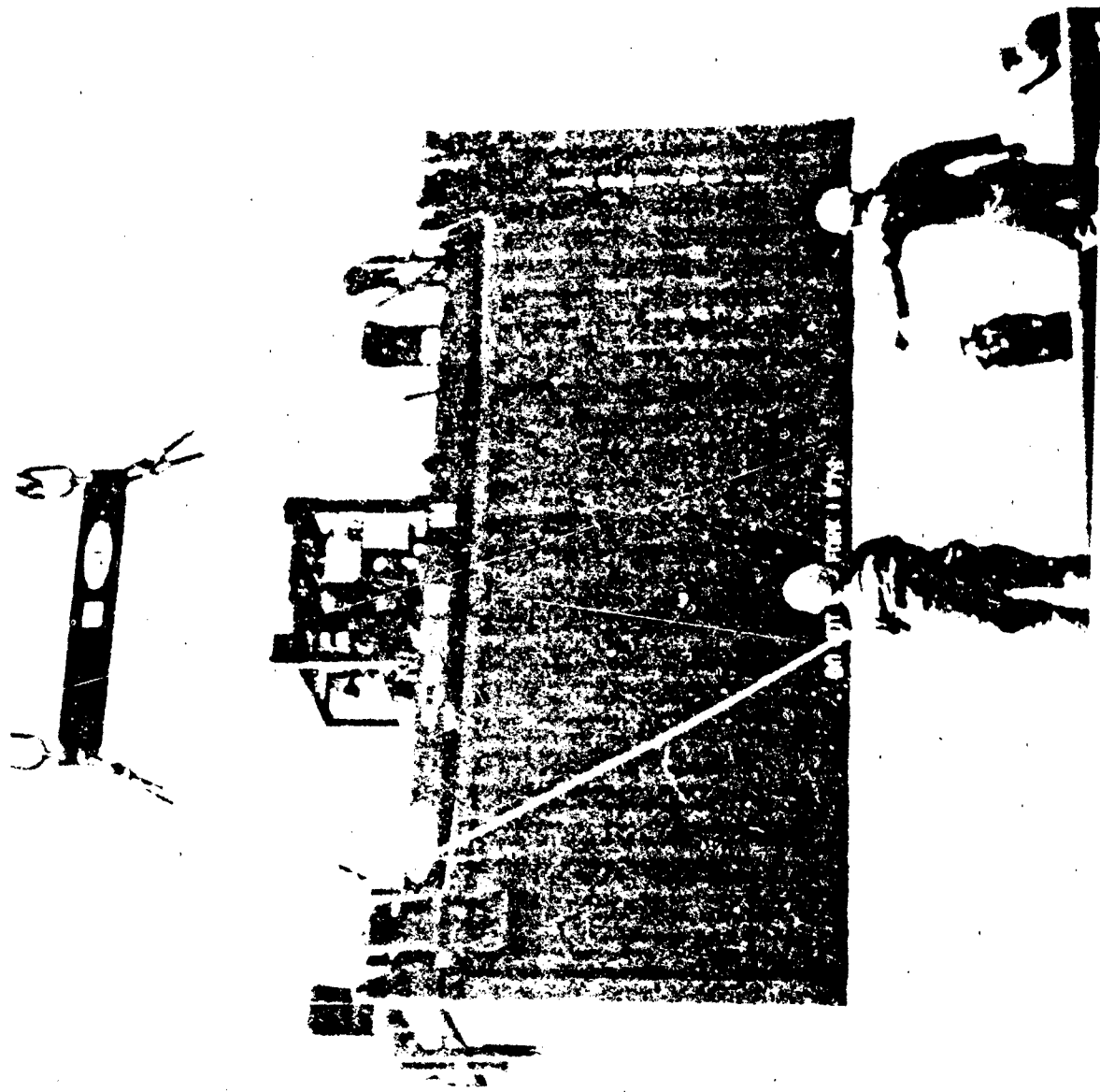
Point of Contact: Chapman, K., Ms., US Army Belvoir RD&E Center, STRBE-FMW, Fort Belvoir, VA 22060-5606, Autovon 354-4490/ Commercial (703)664-4490

Item Description: An electro/hydraulically activated expandable spreader bar is used for the lifting and handling of International Standards Organization (ISO) and intermodal containers. The spreader bar is capable of expanding longitudinally to match the size of the mating container, i.e. 20-ft, 35-ft, or 40-ft. The expandable spreader bar is designed for use with the 50,000-lb capacity Rough Terrain Container Handler (RTCH).

Status: Three lightweight expandable spreader bars have been on loan from various commercial manufacturers for test and evaluation. These spreader bars were evaluated during FY84 Joint Logistics-Over-the-Shore (J-LOTS) operations. Conceptual testing at Belvoir has been completed. The lightweight expandable spreader bar was found to be a viable replacement for the fixed length spreader bars used with the RTCH. The Transportation School at Fort Eustis, VA is performing tests and evaluations.

Program Plan: A procurement of prototype lightweight expandable spreader bars is scheduled for FY86. An Organizational and Operational Plan for the lightweight expandable spreader bars will be prepared during FY86. Test and evaluation of prototype units will be conducted to determine structural and stress parameters, during FY87.





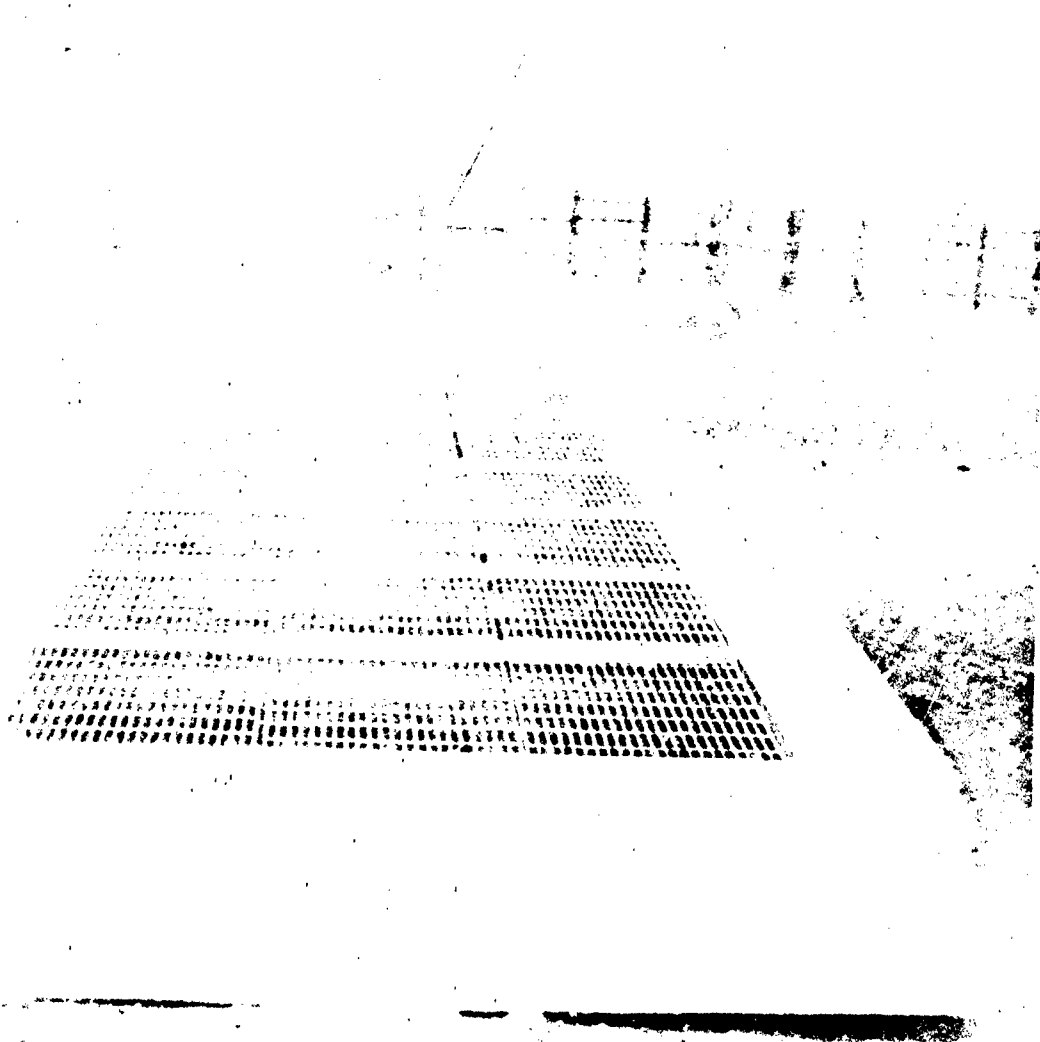
Title: Spreader Bars, Intermodal Container Handling, Remote Control

Point of Contact: Shively, P., Mr., US Army Belvoir RD&E Center, STRBE-FMW,  
Fort Belvoir, VA 22060-5606, Autovon 354-4490/Commercial  
(703)664-4490

Item Description: A diesel engine driven, hydraulically operated, remotely actuated Tocking frame used for the lifting and handling of International Standard Organization (ISO) and intermodal containers.

Status: A contract was awarded in FY82 to RPC Corporation for one 20-ft and one 40-ft radio-controlled spreader bar. These units were evaluated during Lifeline 83. Initial findings of this evaluation indicate that equipment of this type is beneficial to the Army's Logistics-Over-The-Shore (LOTS) operations.

Program Plan: Conceptual Evaluation Program testing of the radio-controlled spreader bar will be conducted by the US Army Transportation School during FY86. Results from this testing will be used to develop an Operational and Organizational Plan.



CAPACITY: 16,000 LBS.  
LENGTH: 36 FT. INCL. 6 FT. LEVEL-OFF SEC  
HEIGHT: ADJUSTABLE FROM 46 IN. TO 65 IN.

WIDTH: 8 FT. APPROX.  
WEIGHT: 6,000 LBS. APPROX.

Title: Mobile Loading Ramp

Point of Contact: Johnson, S., Mr., U.S. Army Belvoir RD&E Center,  
STRBE-FMW, Fort Belvoir, VA 22060-5606, Autovon 354-4490/  
Commercial (703)664-4490

Item Description: This item is used in conjunction with the 4,000 lb Rough Terrain Forklift Truck for stuffing and stripping the 8-ft wide family of containers when the container is on a semitrailer/chassis. The ramp is 96-in wide, 36-ft long, including a 6-ft level-off section, weighs approximately 6,000-lbs and costs approximately \$6,500. The bed height is adjustable from 45-in to 65-in.

Status: A firm fixed price contract was awarded to Magline, Inc. for 83 commercial units. The preproduction testing was completed in Mar 76. Final production delivery took place as scheduled for Jun 76 through Apr 77. A contract was negotiated with Magline, Inc. to increase the curb height to 12-in on the 83 fielded ramps to overcome safety deficiencies. Delivery of the Magline ramps has been completed. A second multi-year contract was awarded in Nov 77 to Brooks and Perkins, Inc. to provide an additional quantity of 346 ramps. Under the option in the Brooks & Perkins contract, additional quantities of 346 units were procured. All deliveries have been completed. A two-step multi-year procurement contract was awarded to Magline, Inc. in 4QFY81 for additional ramps. A total of 828 ramps were delivered.

Program Plan: Next procurement is planned for FY89 and FY90.



CAP.: 4,000 LBS. @ 24 IN. LC  
WIDTH: 79 IN.  
WEIGHT: 10,000 LBS.

LENGTH W/FORKS: 215 IN.  
HEIGHT W/ROPS: 80 IN.

Title: 4,000 lb Capacity Forklift Truck, Rough Terrain (RTFLT)

Point of Contact: McLean, J., Mr., U.S. Army Belvoir RD&E Center, STRBE-FMR,  
Fort Belvoir, VA 22060-5606, Autovon 354-1143/Commercial  
(703)664-1143

Item Description: This item provides a capability of stuffing and stripping the 8-ft wide family of containers under field conditions. The vehicle is sized to effectively operate within the container including placing two pallet loads side by side within the container. The vehicle weighs approximately 10,000 lbs, is 79-in wide, 80-in high, and 165-in long.

Status: A multi-year contract was awarded to J.I. Case Co. to provide a quantity of 1,910 forklifts to be delivered from Aug 80 through Jul 84. Initial fielding of 209 units was made to Korea and USAREUR. Additional fielding was made on call-up. As of 31 Dec 84 the contractor had produced 1,914 vehicles at a scheduled rate of approximately 66 vehicles per month. Production of vehicles under contract is complete and all trucks delivered.

Program Plan: Perform necessary actions as required to assure adequate operation in the field.



11-9

Title: 6,000 lb Capacity Variable Reach Forklift Truck, Rough Terrain  
(6K VRRFTLT)

Point of Contact: Hurley, J., Ms., US Army Belvoir RD&E Center,  
STRBE-FMR, Fort Belvoir, VA 22060-5606,  
Autovon 354-1143/Commercial (703)664-1143

Blenkle, A.J., LTC, HQ US Marine Corps/LME-1,  
Washington, DC 20380, Autovon 227-6950/  
Commercial (202) 697-6950

Item Description: This item will provide capability of stuffing and stripping of the 8-ft x 8-ft x 20-ft MILVAN and ISO containers on the ground or mounted on the M871 Trailer under field conditions. The vehicle is sized to handle the Multiple Launch Rocket System (MLRS) pods loaded four to a container requiring a 6,000 lb capacity at a reach of 15-ft and also handle 4,000 lb Ammunition Pallets in containers requiring a reach of 23.5-ft. The vehicle is expected to weigh approximately 30,000 lbs, have a width of 96-in, maximum height of 102-in, a wheel base not less than 96-in and a length, including forks, of 242-in. It will be essentially a commercially available non-developmental item and will replace the 6,000 lb Rough Terrain Forklift.

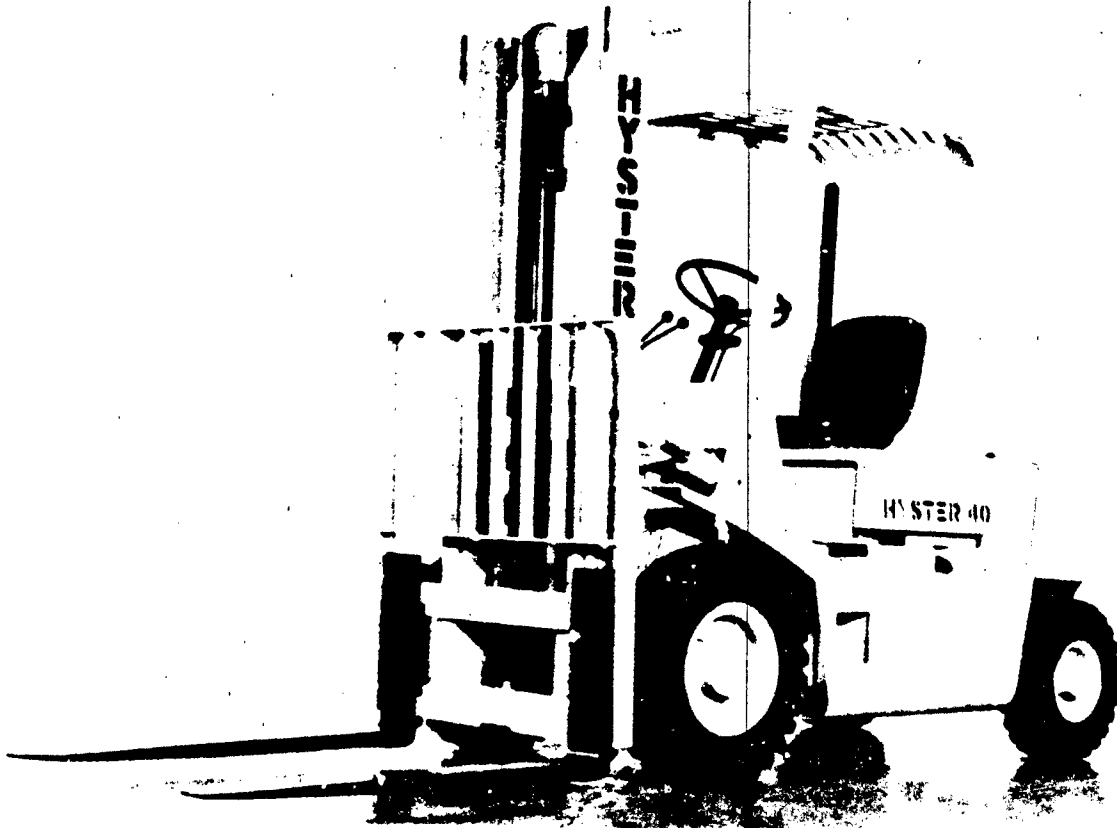
Status: The 6K VRRFTLT was Type Classified for Army use in November 1984.

The Marine Corps Development and Education Command, under its Extendable Boom Forklift (EBFL) Program, is continuing to monitor the Army's R&D effort. Evaluation will be completed during FY87.

Program Plan: The current acquisition plan is to award up to four contracts (to four different manufacturers) for four prototype trucks each, in 3QFY86. Those contractors whose truck successfully complete the prototype tests will be eligible to bid on the production contract, currently scheduled for award in 4QFY87. First unit equipped will be 2QFY88.

Marine Corps procurement will start in FY88. Fielding is expected to be completed by FY91.





II-10

Title: 4,000 lb Capacity Forklift Truck

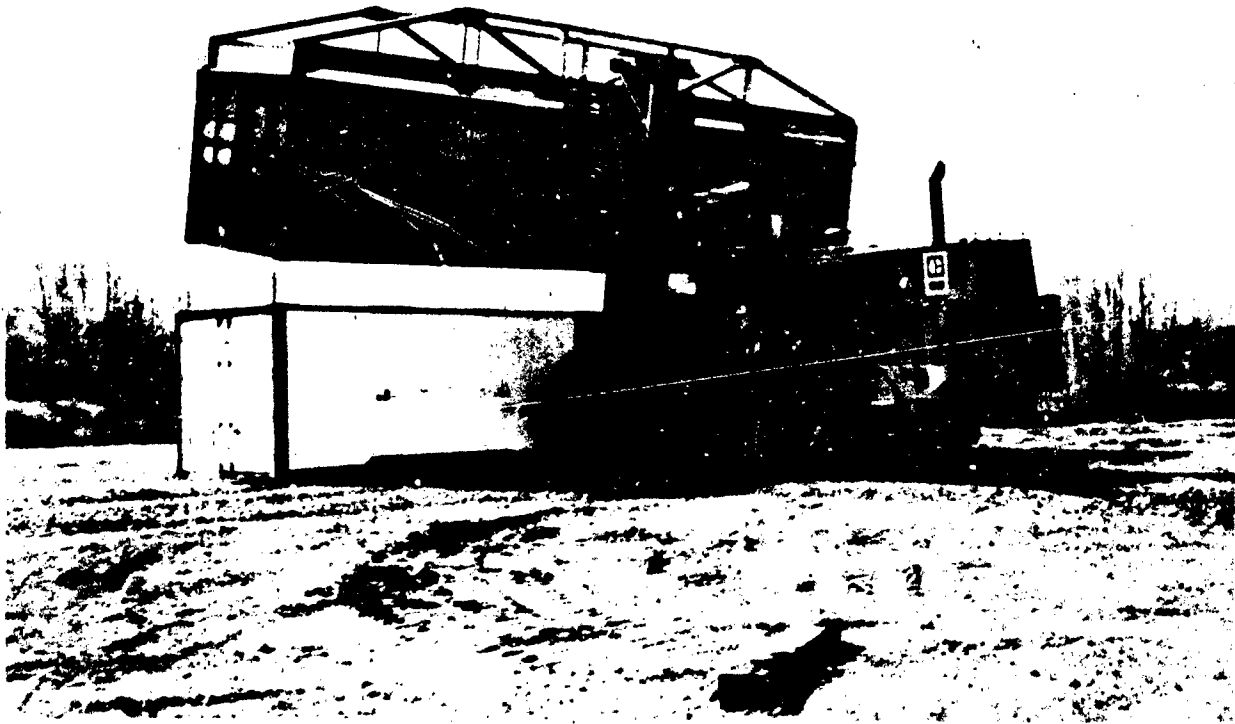
Point of Contact: Lee, T., Mr., US Army Belvoir RD&E Center, STRBE-FMW,  
Fort Belvoir, VA 22060-5606, Autovon 354-4490/Commercial  
(703)664-4490

Winter, J., LTC, HQ USAF/LETN,  
Washington, DC 20330-5130, Autovon 227-3371/Commercial  
(202)697-3371.

Item Description: This unit provides Air Force bases and the Army the capability to load and unload ISO containers. It is a commercial type forklift with a lift height of at least 144-in.

Status: The Army has an inventory of approximately 1,700 units.

Program Plan: The Army will award a 5 year contract in FY86 to procure 640 units with diesel power.



CAP.: 50,000 LBS. @ 48 IN. LC

WIDTH: 138 IN.

WEIGHT: 103,000 LBS. (W/O SPREADER)

SPREADER BARS WEIGHTS

20 FT. — 3,800 LBS.

40 FT. — 9,927 LBS.

LENGTH: 420 IN.

HEIGHT: 167 IN.

35 FT. — 9,120 LBS.

Title: 50,000 lb Capacity Container Handler, Rough Terrain (RTCH)

Point of Contact: McLean, J., Mr., U.S. Army Belvoir RD&E Center, STRBE-FMR,  
Fort Belvoir, VA 22060-5606, Autovon 354-1143/Commercial  
(703)664-1143

Winter, J., LTC, HQ USAF/LETN,  
Washington, DC 20330-5130, Autovon 227-3371/Commercial  
(202)697-3371

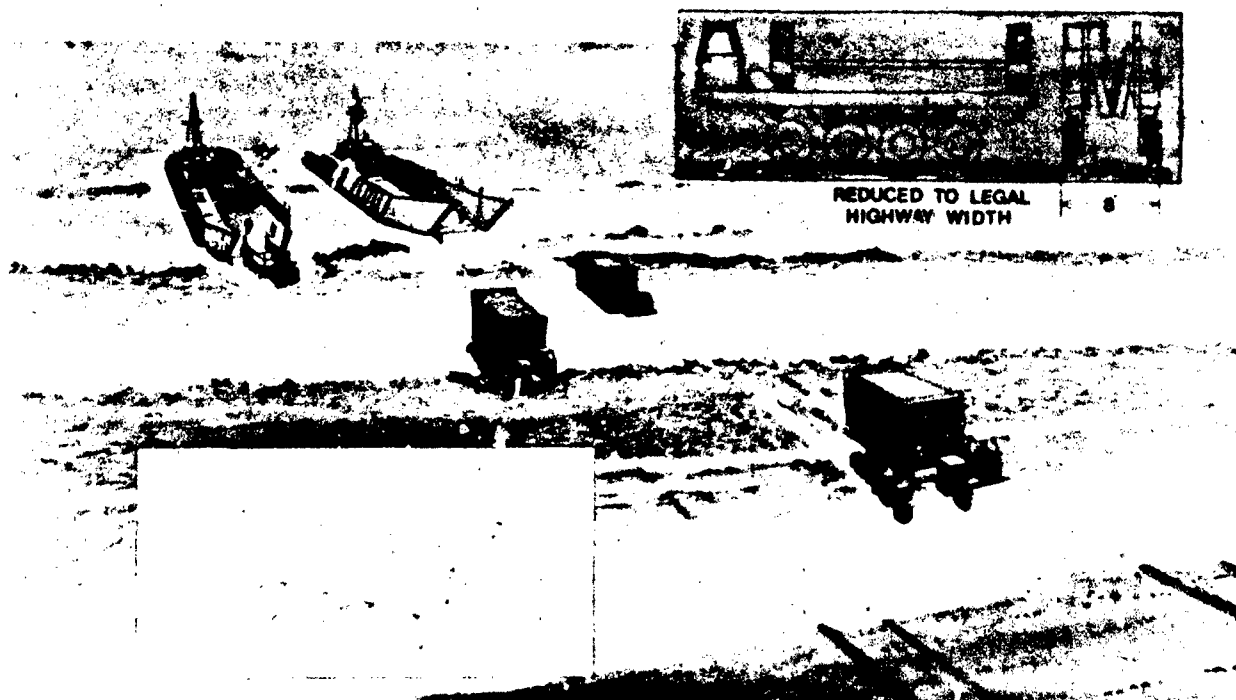
Blenkle, A.J., LTC, HQ US Marine Corps/LME-1  
Washington, DC 20380, Autovon 227-6950/Commercial  
(202) 697-6950

Item Description: This item provides a capability of handling the 8-ft wide family of containers weighing up to 50,000 lbs and 20, 35, and 40-ft in length. It is capable of operating as a rough terrain truck primarily in supply holding storage and marshalling areas by selected supply, ammunition and transportation units. The RTCH is a modified commercial design and procured to a military specification. The vehicle weighs approximately 103,000 lbs, is 138-in wide, 167-in high and 35-ft long.

Status: A multi-year contract was awarded to the Caterpillar Tractor Co. for 344 units. The Air Force procured three of these trucks for use with CAUS shipments and the Marine Corps 21 trucks. Production and delivery of all units have been completed. Funds are appropriated to the Marine Corps to increase their procurement quantity up to a total of 68 trucks. Ten trucks will be aboard each Maritime Prepositioning Ship Squadron.

Program Plan: Provide support for fielded units and to the Marine Corps as requested during their procurement action. Deliveries of these trucks to the FMF are scheduled to begin in FY87 and be completed by FY88.

# ROUGH TERRAIN CONTAINER STRADDLE TRUCK (RTCST)



**Title:** Rough Terrain Container Straddle Truck (RTCST)

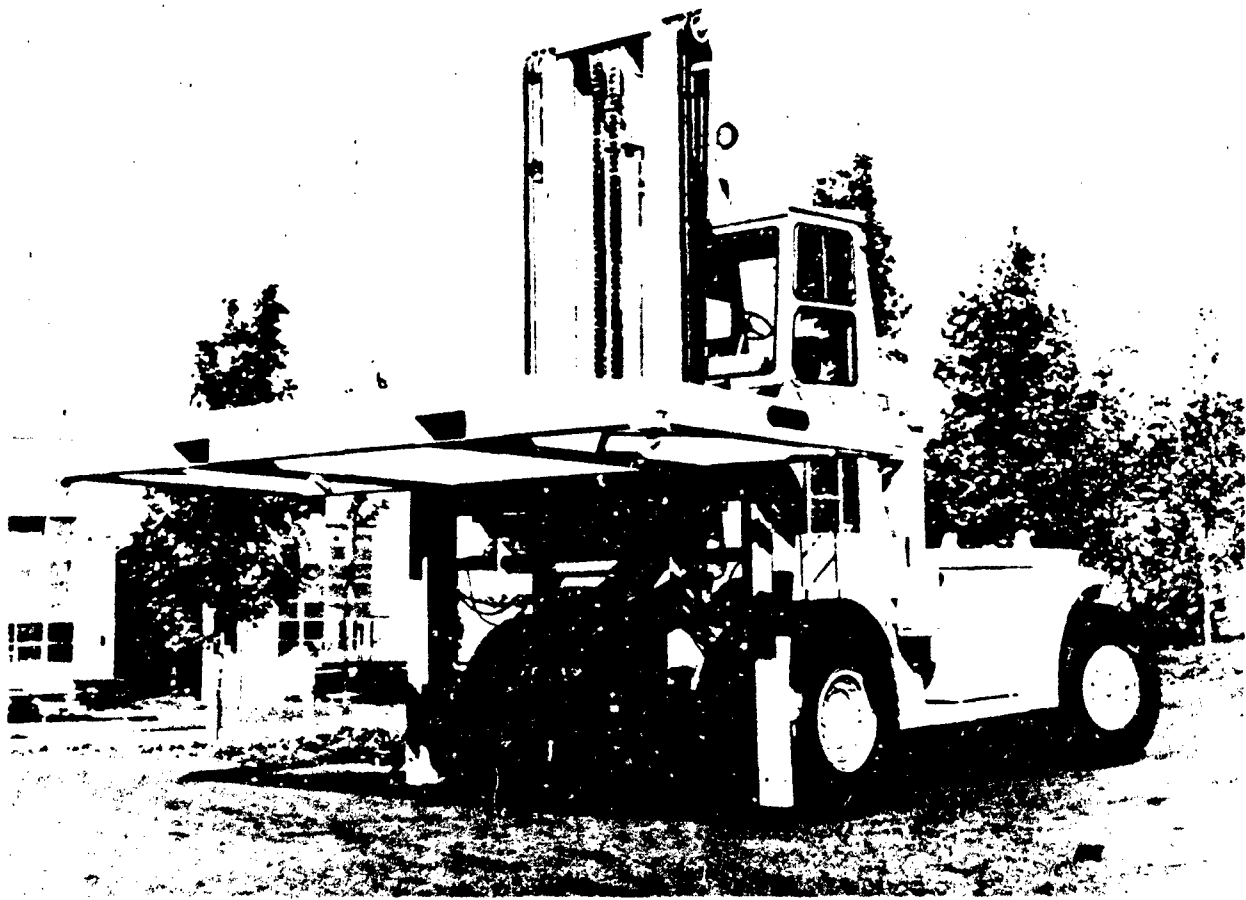
**Point of Contact:** Pollock, D., Mr., US Army Belvoir RD&E Center,  
STRBE-FMR, Fort Belvoir, VA 22060-5606,  
Autovon 354-1143/Commercial (703)664-1143

Blenkle, A.J., LTC, HQ US Marine Corps/LME-1,  
Washington, DC 20380, Autovon 227-6950/  
Commercial (202)697-6950

**Item Description:** The RTCST will self-load, transport, ground, and stack 20, 35, and 40 ft long ISO shelters and shipping containers weighing up to 67,200 lbs. It will be used by US Marine Corps units and US Army Transportation units to off-load ISO containers from beached landing craft and transport them through the surf and over land to marshalling areas in Logistics-Over-The-Shore (LOTS) operations. The RTCST will ground and stack the containers or place them on flatbed semi-trailers for transport over paved highways. The RTCST may also be used by medical units and maintenance units to deploy field hospitals and maintenance shelters in forward battle areas. The hydrostatic drive undercarriage will provide superb rough terrain mobility when transporting shelters and containers at speeds up to 25 mph. A highway speed of 45 mph will also be attainable for self-deployment in the unloaded configuration. The RTCST will weigh approximately 55,000 lbs, have a variable width ranging from 102-in to 156-in, and be air transportable on C-130 and C-141 aircraft.

**Status:** The RTCST is currently entering the concept exploration phase of the research and development process. An Operational and Organizational (O&O) Plan has been approved and a contract has been awarded for the development of the initial RTCST prototype for concept evaluation. The initial prototype will handle only 20ft ISO containers and shelters and will be fabricated in FY86.

**Program Plan:** Engineer Design Tests, Force Development Test and Evaluation and approval of the Letter of Agreement (LOA) will be accomplished in FY87. The US Marine Corps is conducting a parallel effort entitled Container Handler - All Purpose (CHAP) to evaluate a slow-moving, tracked container handler. Test data from both prototypes will be jointly evaluated by both the US Army and the US Marine Corps throughout the research and development program. The RTCST will be fielded in FY93 as a replacement for the Lightweight Amphibious Container Handler (LACH). It will also supplement the Rough Terrain Container Handler (RTCH) and the Rough Terrain Container Crane (RTCC) in LOTS operations.



CAP.: 50,000 LBS. @ 48 IN. LC  
WIDTH: 132 IN.  
WEIGHT: 80,000 LBS. APPROX.

LENGTH: 268 IN. INCL. LIFT ATT.  
HEIGHT: 230 IN.

II-13

Title: 50,000 lb Capacity Depot & Terminal Container Handler, Front Loader

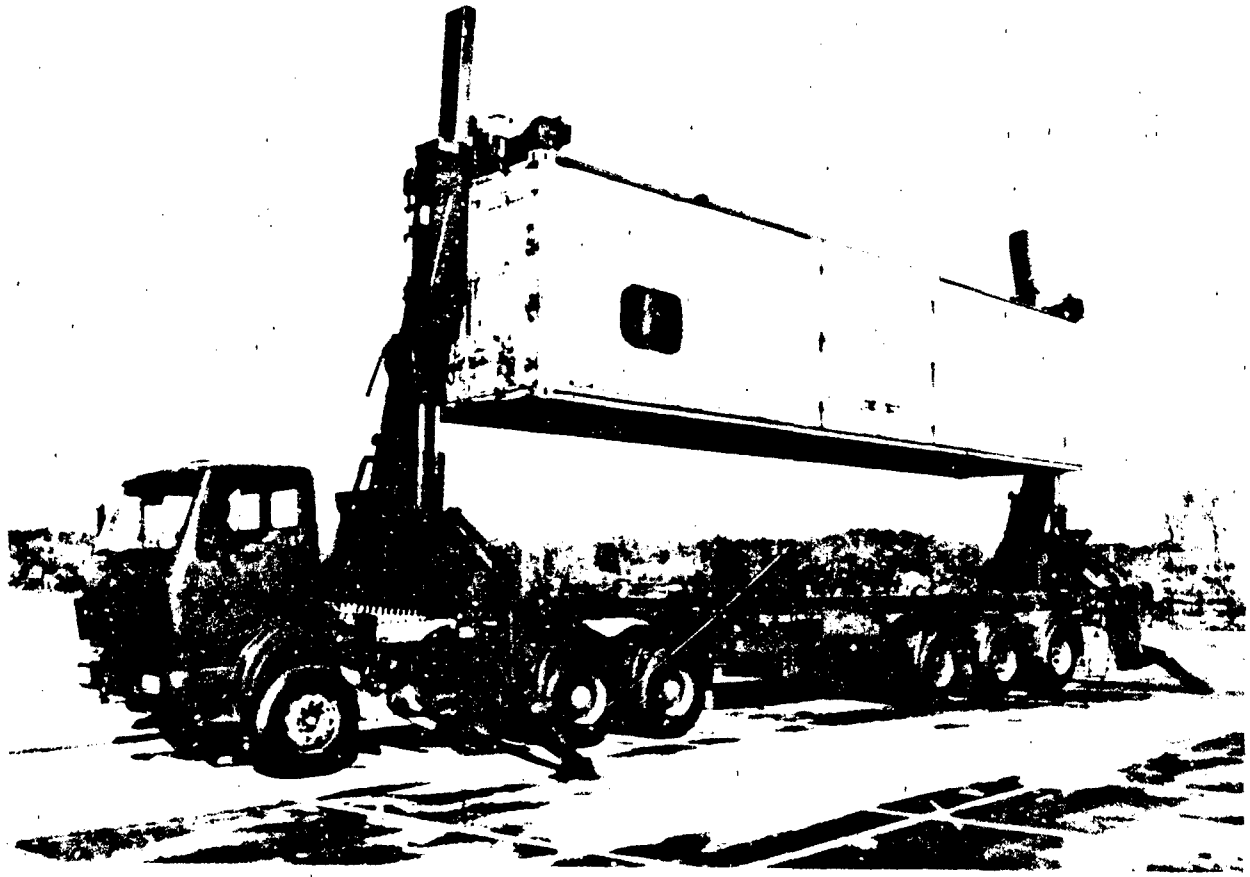
Point of Contact: Cunniffe, W., Mr., U.S. Army Belvoir RD&E Center,  
STRBE-FMW, Fort Belvoir, VA 22060-5606, Autovon 354-4490/  
Commercial (703)604-4490

Item Description: This item has a capability to handle breakbulk and the family of 8-ft wide containers weighing up to 50,000 lbs and up to 40-ft in length in CONUS and OCONUS terminals and depots. The vehicle is capable of stacking containers three high. The truck is approximately 132-in wide, 268-in long (including forklift attachment), 230-in high with mast in lowest position, weighs approximately 80,000 lbs and originally cost approximately \$90,000.

Status: A contract was awarded in Apr 73 to the Hyster Company for 15 units to meet CONUS depots' requirements. Hyster model 620 was procured with high mounted cab.

Program Plan: Procurement of additional quantities of this item is not planned. It was determined that the Rough Terrain Container Handler could also perform the CONUS/OCONUS terminal and depot mission.





II-14

Title: 20/40-Ft Container Sideloader

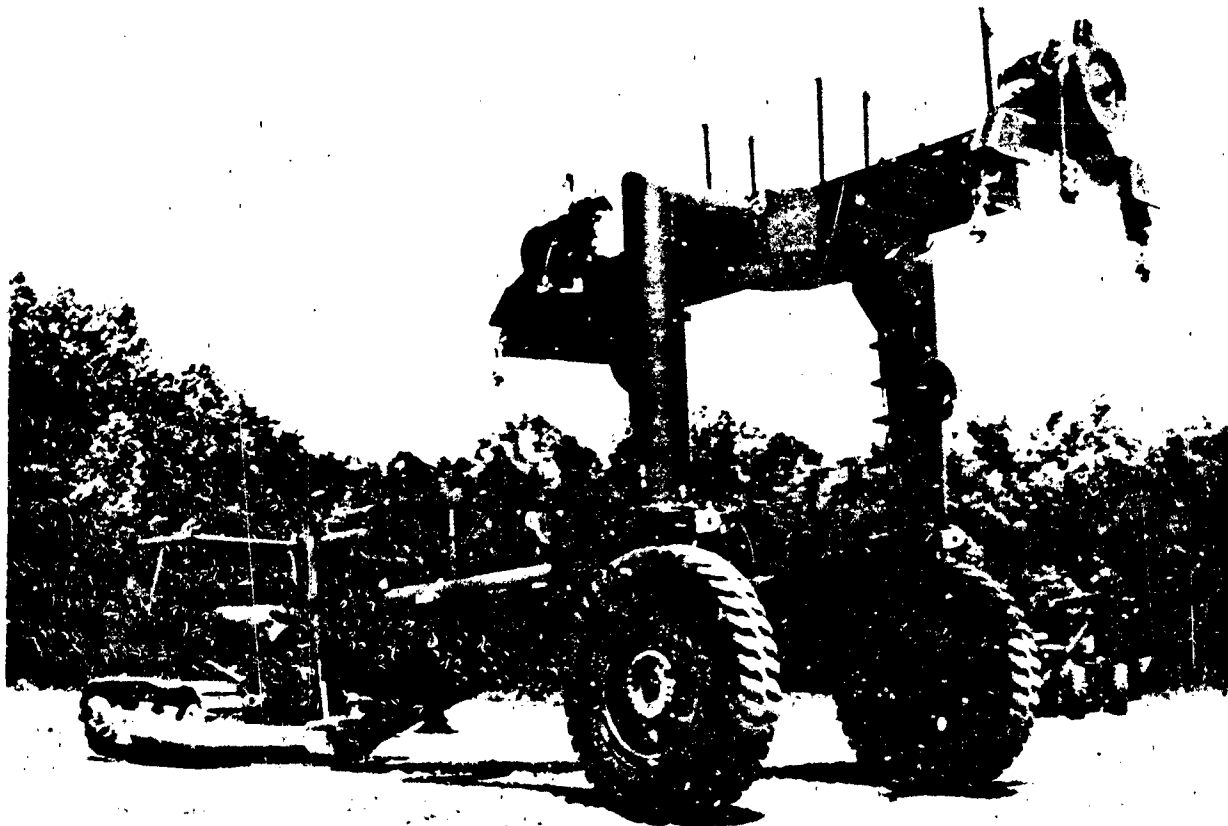
Point of Contact: Allenbacher, W., Mr, HQ US Air Forces Europe, LGTT,  
Ramstein AB, GE, APO New York, 09012  
Autovon 480-6321/7468/Commercial 06371-47-6321/7468.

Fertman, N., Mr., U.S. Army Belvoir RD&E Center,  
STRBE-FMR, Fort Belvoir, VA 22060-5606, Autovon 354-1143/  
Commercial (703)664-1143

Item Description: This diesel powered container sideloader is capable of transferring, or self-loading and transporting 20 through 40-ft ISO containers or tactical shelters. Maximum lifting capability is 66,150 lbs, with an additional 10 percent safety weight factor built-in. The unit has a telescopic spreader bar for 20, 35, and 40-ft containers, and will also operate/lift containers with slings. The sideloaders can transport containers within maximum road height limitations. It also has an air ride suspension making it viable to transport ISO containers carrying delicate equipment. The unit is self-deployable by road and possibly by C-5 military airlift. Estimated unit cost, with 26-ton tractor, is approximately \$200,000. The tractor is optional.

Status: A quantity of four Klaus handlers was procured for Miesau Army Ammo Depot in 1972 to meet an urgent requirement for container handling. A BeSima/Marmon handler and a Steadman handler were procured and evaluated by Belvoir RD&E Center in 1975-76. The Steadman handler was subsequently provided to ASP-1 Vilseck, Germany. In Aug 78, four additional Klaus handlers with tractors were procured for Army use at ASP-1. In 1982, the Air Force successfully tested the use of a sideloader (on loan from the Army) during an Air Force CADS movement to Germany. USAFE purchased two sideloaders in early 84 under the Productivity Investment Program (PIF). These sideloaders are presently assigned to Morbach munitions depot and were used successfully to support several CADS movements in both MILVANS and SEAVANS during CY84. The Program Objective Memorandum (POM) was approved for an additional 30 sideloaders for USAFE. These sideloaders will be used throughout Europe to support CADS and ISO container moves. USAFE is on schedule to receive 13 of the 30 sideloaders in FY86, with the remainder arriving through FY88. An airlift validation test will be conducted in CY86. The Army in Germany has met its inventory objective of 18 units for 20-ft container (44,800 lbs) capacity sideloaders.

Program Plan: USAFE will receive all programmed sideloaders (32 total) by FY88. The Army has no active program for this item.



II-15

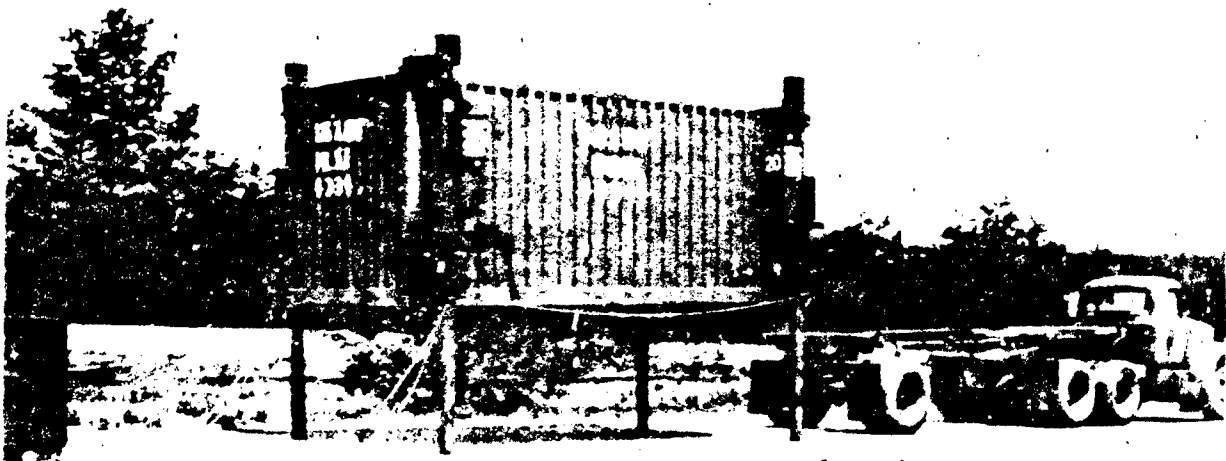
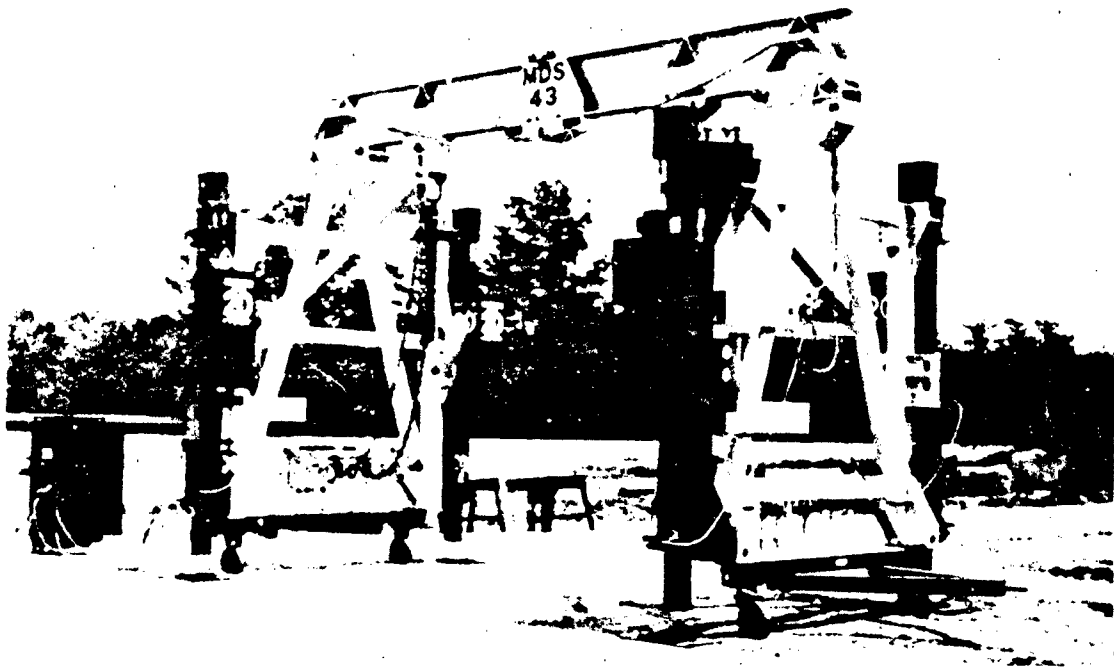
Title: Lightweight Amphibious Container Handler (LACH)

Point of Contact: Blenkle, A.J., LTC, HQ US Marine Corps/LME-1,  
Washington, DC 20380, Autovon 227-6950/Commercial  
(202)697-6950

Item Description: The LACH is a straddle-lift type, towed, two wheel mounted, container handler. The LACH is capable of lifting and carrying containers, ramp entry into large landing craft, and loading and unloading containers onto/from cargo trailers during amphibious operations. The LACH, when propelled by its prime mover (medium size bulldozer), can be maneuvered in the surf zone in up to five feet of water with a 20-ft container weighing up to 50,000 lbs.

Status: FY81 funds were appropriate for the production procurement of 56 LACH's to complete the Marine Corps inventory objective. All LACH's have been delivered to MCLB's. Each Maritime Prepositioning Ship Squadron will be equipped with four LACH's.

Program Plan: The LACH's will be distributed to operational units during FY86.



11-16

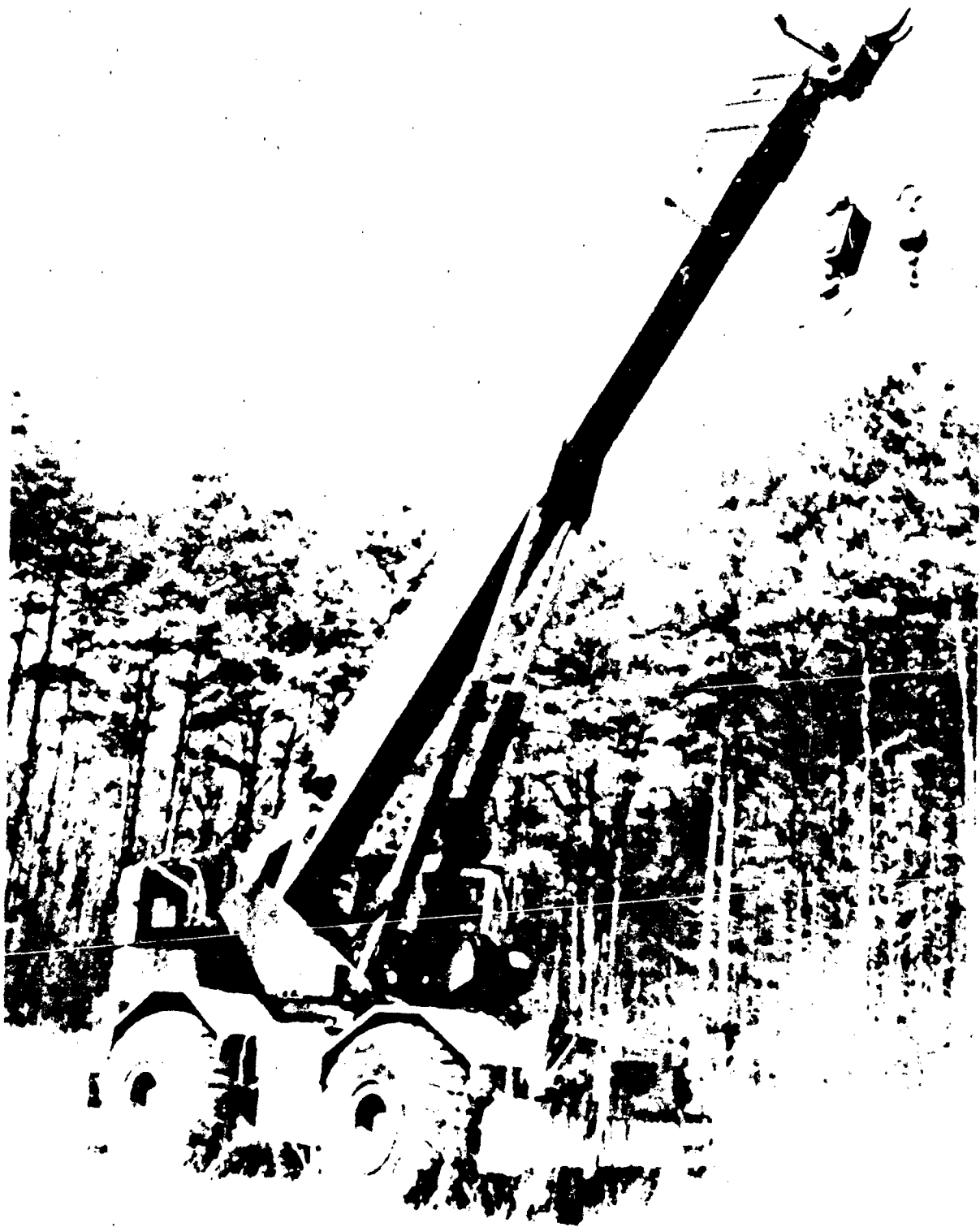
Title: Lightweight Container Handler

Point of Contact: Rodrick, E., Mr., US Army Belvoir RD&E Center,  
STRBE-FMR, Fort Belvoir, VA 22060-5606, Autovon 354-1143/  
Commercial (703)664-1143

Item Description: The lightweight container handler is a relatively low cost, low volume handler capable of mounting/demounting 20, 24, 27, 30, 35, and 40-ft long containers from chassis/trailers. It may also be used for short distance container movement for expedient type applications. The machine/device will have limited rough terrain application.

Status: A market search was conducted to ascertain the availability of commercial equipment that meets the requirements to handle 20 through 40-ft long containers in a safe and effective manner. A contract was awarded in Sep 78 to Modular Distribution Systems, Ltd. to provide two MDS-16 jacking systems and one 40,000 lb capacity gantry crane for test and evaluation. Both pieces of equipment were successfully subjected to engineering testing and then tested by HEL at Aberdeen Proving Ground. Final report titled "Modular Distribution System Model MDS-16 20 Ton Transfer Frame System and MDS-43 Gantry Frame System" dated Sep 81. A draft requirements document was prepared 29 Mar 78, Subject: Lightweight Container Handler. The requirements document was withdrawn by TRADOC Jan 82.

Program Plan: Requirements document withdrawn; action suspended.



II-17

Title: Rough Terrain Container Crane (RTCC)

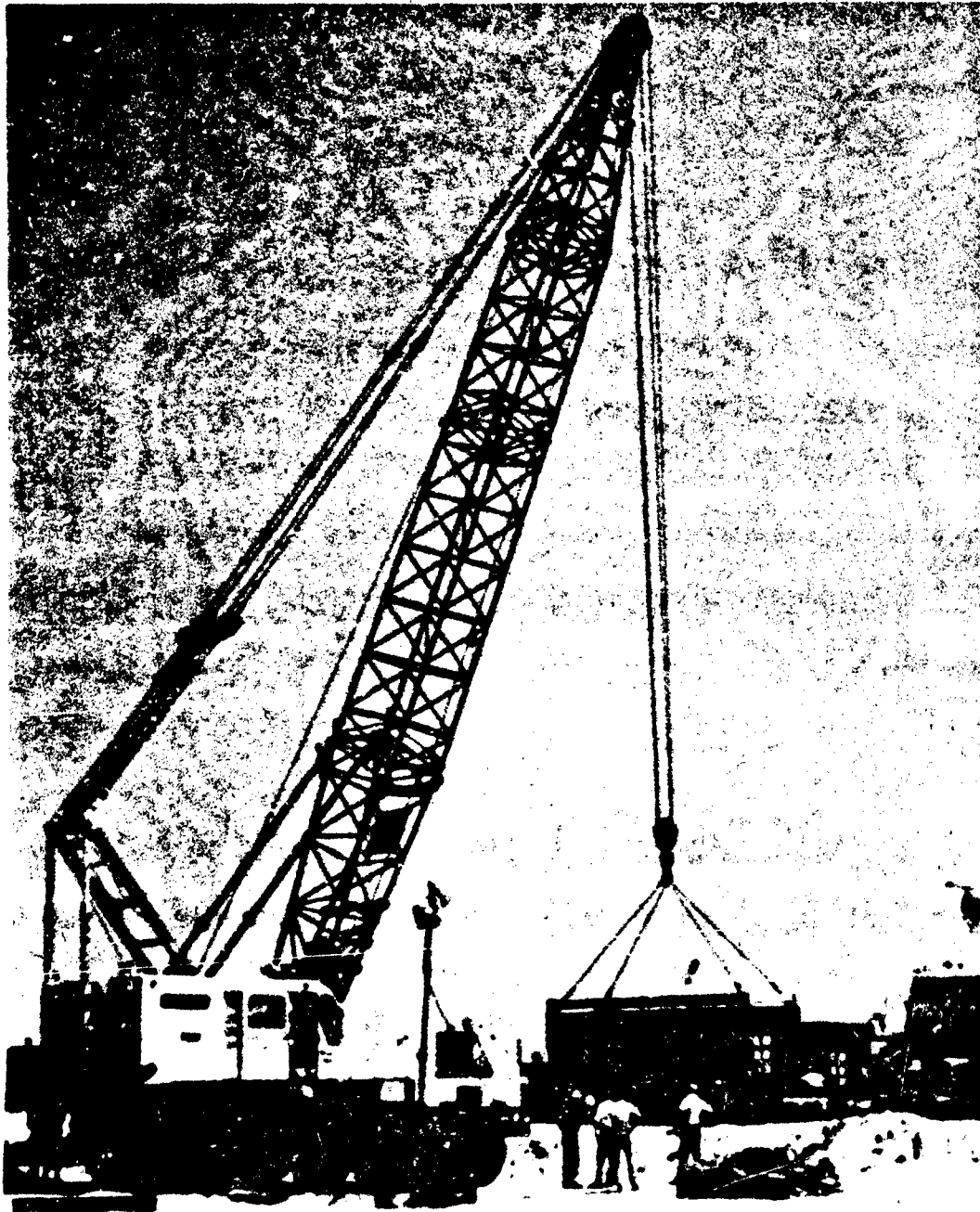
Point of Contact: McLean, J., Mr., US Army Belvoir RD&E Center, STRBE-FMR,  
Fort Belvoir, VA 22060-5606, Autovon 354-1143/Commercial  
(703)664-1143

Item Description: The crane will be commercial design, truck mounted, capable of lifting a 20-ft container weighing 44,800 lbs at a radius of 27-ft and a 35/40-ft container weighing 67,200 at a radius of 22-ft. GS Ammunition units will use the RTCC "from a fixed position" for transfer of 20-ft ANSI/ISO containers from one mode of transportation to another or to ground/load containers from/to waiting transportation in the Theater and Corps ammunition storage areas. Transportation units will use the crane to augment the 50,000 lb Rough Terrain Container Handler in the transfer and handling of 20-ft, 35-ft, or 40-ft containers and other cargo between transportation modes and in storage areas.

Status: A Market Investigation has been completed and a specification prepared. Two candidate cranes were leased and evaluated. The crane was type classified standard and was transitioned to the US Army Tank-Automotive Command (TACOM). A contract package is being prepared by TACOM.

Program Plan: TACOM plans to procure approximately 280 units in FY86.





140 TCN MOBILE CRANE

LENGTH: W/50' BOOM: 873 IN.    WEIGHT: W/120' BOOM: 195,000 LBS.  
CAP: 140 TONS @ 12'            WIDTH: 132.5 IN  
HEIGHT: 157.8 IN.

II-18

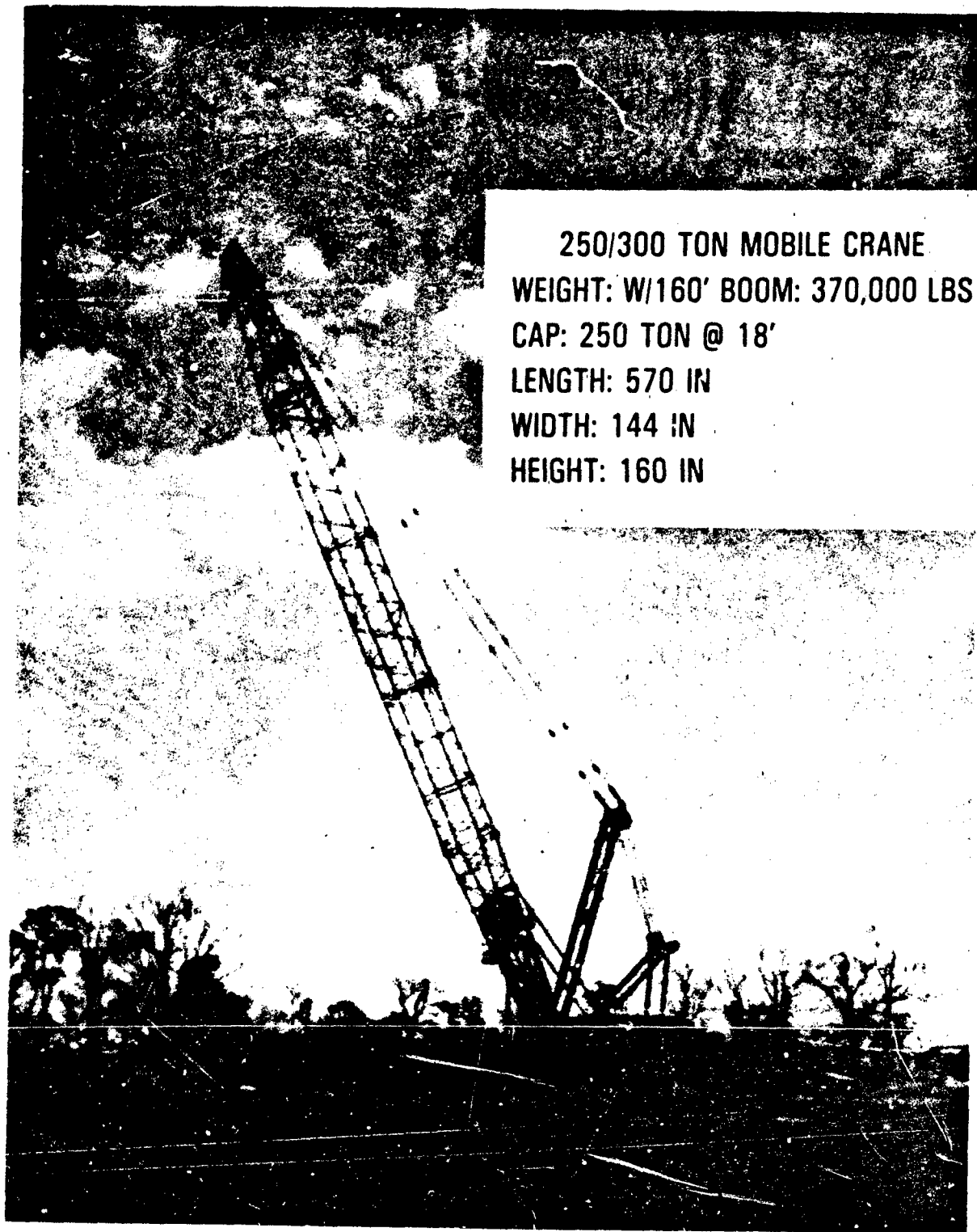
Title: 140 Ton, Truck Mounted, Container Handling Crane

Point of Contact: Shively, P., Mr., U.S. Army Belvoir RD&E Center,  
STRBE-FMW, Fort Belvoir, VA 22060-5606, Autovon 354-4490/  
Commercial (703)664-4490

Item Description: The crane is a commercial design, truck mounted, 140 ton maximum capacity crane. It has an 8 x 4 truck chassis and a 50-ft basic boom which can be extended in length up to 130-ft with the use of various length boom extensions. The crane is used in the discharge/retrograde of containers from ships in a fixed port operation or landing craft in a Logistics-Over-The-Shore (LOTS) operation and for handling containers in a marshalling area and terminal sites.

Status: A multi-year contract was awarded to FMC Corporation in Sep 80 for 28 cranes and deliveries began in Jan 82. Delivery of these units was completed during FY85.

Program Plan: No actions are planned in FY86.



**250/300 TON MOBILE CRANE**  
**WEIGHT: W/160' BOOM: 370,000 LBS**  
**CAP: 250 TON @ 18'**  
**LENGTH: 570 IN**  
**WIDTH: 144 IN**  
**HEIGHT: 160 IN**

**II-19**

Title: 250/300 Ton, Truck Mounted; Container Handling Crane

Point of Contact: Shively, P., Mr., U.S. Army Belvoir RD&E Center,  
STRBE-FMW, Fort Belvoir, VA 22060-5606, Autovon  
354-4490/Commercial (703)664-4490

Item Description: The crane is a commercial design, truck mounted, 250 ton maximum capacity crane. It has a 12 x 6 truck chassis and a 70-ft boom which can be extended in length up to 130-ft with the use of various length boom extensions. The crane is used in the discharge/retrograde of containers from ships in a fixed port and alongside these ships on barges, piers, or floating platforms in a Logistic-Over-The-Shore (LOTS) environment. The crane is also used for the discharge/retrograde of containers from lighters over the beach in a LOTS environment.

Status: A total of eight cranes have been delivered by Harnischfeger Corporation. This satisfies the Army's total requirement. A Product Improvement Program (PIP) was approved to incorporate the Rider Block Tagline System (RBTS) developed by the Navy to minimize the pendulation problem in the sea environment. A contract to design, fabricate, install and test a RBTS prototype has been awarded. A RBTS prototype unit was installed on a 250 ton crane mounted on a "B" DeLong Barge. The RBTS was successfully tested during the FY84 J-LOTS exercise. Due to the development of the Navy TACS Ship, further development of the RBTS has been terminated.

Program Plan: Update the technical data package for the crane for future procurements.



II-20

**Title:** Crane Rotator

**Point of Contact :** Shively, P., Mr., U.S. Army Belvoir RD&E Center,  
ATTN: STRBE-FMW, Fort Belvoir, VA 22060-5606,  
Autovon 354-4490/Commercial (703) 664-4490

**Item Description:** A gasoline engine driven, hydraulically operated, crane operator actuated rotating device used for rotating International Standards Organization (ISO) and intermodal containers up to 360 degrees by a crane for easy placement and retrieval.

**Status:** A contract was awarded in FY85 to BROMMA Inc. for one gasoline engine driven, hydraulically operated crane rotator.

**Program Plan:** Concept Evaluation Program (CEP) Testing of the crane rotator will be conducted by the U.S. Army Transportation School during FY86. Results from this testing will be used to develop an Organization and Operational (O&O) Plan.



**TRANSPORTATION**

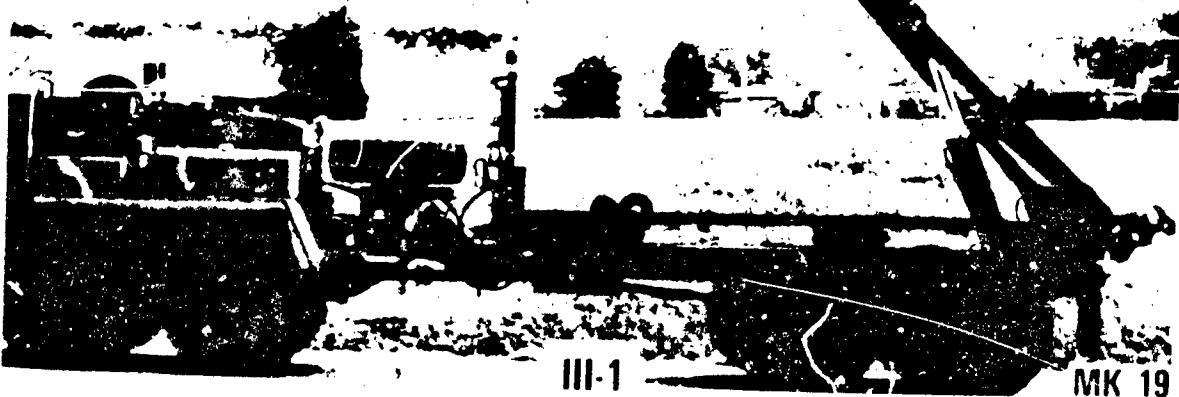
**EQUIPMENT**



MK 48/MK 14



MK 17



III-1

MK 19



Title: Logistics Vehicle System

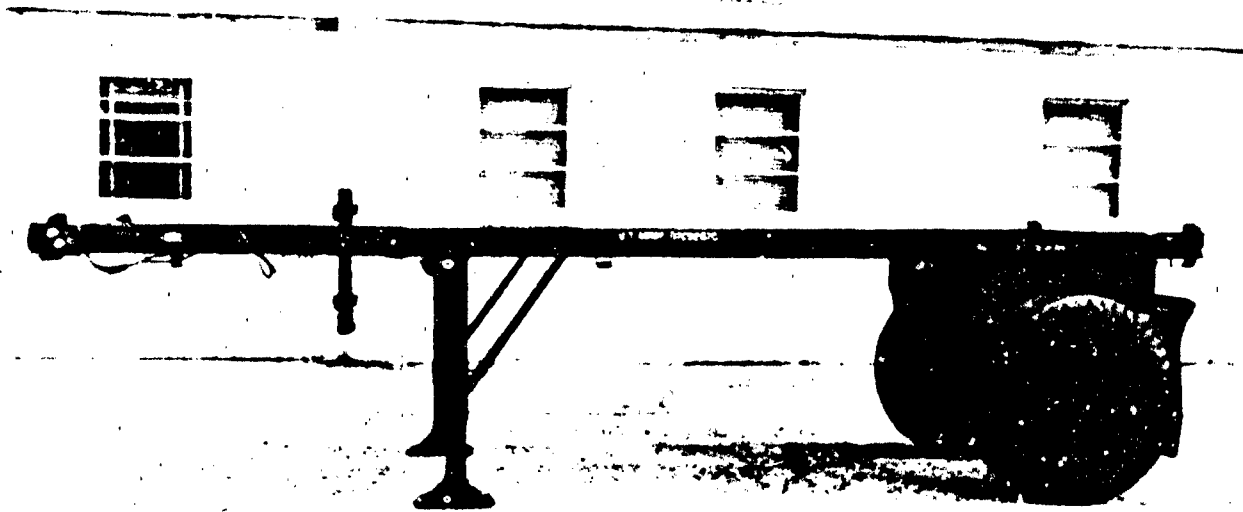
Point of Contact: Walker, J.C., Maj. HQ US Marine Corps/LME-1,  
Washington, DC 20389, Autovon 227-6950/Commercial  
(202) 697-6950

Item Description: The Logistics Vehicle System consists of one front power unit (MK48) and any one of five rear body unit configurations. The MK14, Container Hauler, is an ISO twist-lock equipped, 22.5 ton capacity, rear body unit designed to transport standard ISO 8-ft x 8-ft x 20-ft containers, shelters, and modules. The MK17, Dropside Cargo with crane, is a rear body unit with an 8-ft x 16-ft loading area that is designed as a troop carrier as well as a carrier for fuel/water modules, and 8-ft x 8-ft x 10-ft shelters/containers. The MK19 is a hydraulically powered tilt bed rear body unit designed to load and offload ISO containers, ribbon bridge components or fill material without the assistance of material handling equipment.

Status: Approval for service use for the MK48 Front Power Unit and MK14 Container Hauler Rear Body Unit was obtained in July 1982. Approval for the MK17 Dropside Cargo variant was obtained in August 1983. The MK19, Selfloading Bridge Transporter/Container Handler, is a conceptual item and is scheduled for production in FY89. A five year letter contract was signed in September 1983 for 1,610 total Logistics Vehicle Systems.

Program Plan: The Logistics Vehicle System consisting of the MK48/14/17 began delivery to selected units in August 1985 with a subsequent initial operational capability of March 1986. R&D (prototype) testing for the MK19 commences during 2nd Qtr FY86 and production contracting is scheduled for 2nd Qtr FY87.

	<u>FY82/83</u>	<u>FY84</u>	<u>FY85</u>	<u>FY86</u>	<u>FY87</u>	<u>FY88</u>
MK48	139	148	354	360	496	113
MK14	52	58	176	110	613	269
MK17	27	42	84	88	33	
MK19						154



20-FT UNIT

SINGLE BOGIE  
 LENGTH: 242 IN.  
 WIDTH: 96 IN.  
 HEIGHT: 53.5 IN.\*  
 WEIGHT: 4000 LBS.

20-FT UNIT

DOUBLE BOGIE  
 LENGTH: 242 IN.  
 WIDTH: 96 IN.  
 HEIGHT: 53.5 IN.\*  
 WEIGHT: 5850 LBS.

40-FT UNIT

DOUBLE BOGIE  
 LENGTH: 484 IN.  
 WIDTH: 96 IN.  
 HEIGHT: 53.5 IN.\*  
 WEIGHT: 8000 LBS.

\*WEIGHT WHEN UNLOADED AND SUPPORTED ON LANDING LEGS WITH DECK LEVEL

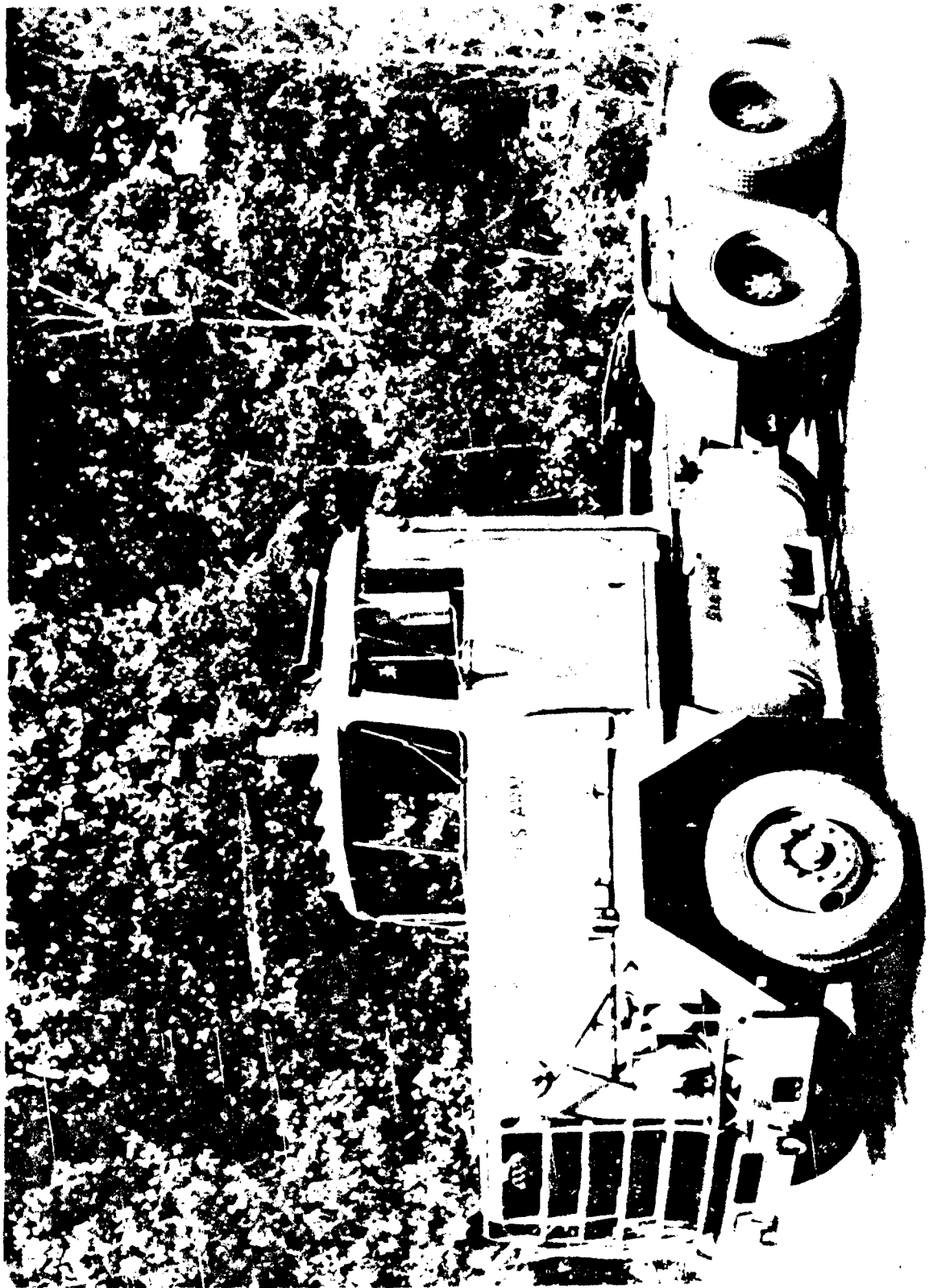
Title: Chassis, Semitrailer: Coupleable, MILVAN Container Transporter  
(MILVAN)

Point of Contact: Glaza, E., Mr., US Army Tank-Automotive Command,  
AMSTA-UEC, Warren, MI 48397-5000, Autovon 786-5969/  
Commercial (313)574-5969

Item Description: The MILVAN chassis were procured to attain a military owned centrally controlled fleet for movement of military cargo over primary hard surface roads principally in CONUS. The chassis consists of a 20-ft frame, landing gear, and single-axle bogie. The bogie is movable along the length of the frame. The frame has provisions for coupling two 20-ft units to form a 40-ft chassis, with the bogies under the rear frame to form a tandem-axle configuration. Each frame has twist locks to accept International Standards Organization (ISO) containers. There is provision for lowering the twist locks flush with the top of the frame so that 40-ft containers can be transported on a coupled chassis. The single bogie chassis configuration is 96-in wide, 53.5-in high, 242-in long, and weighs 4,000 lbs. The MILVAN chassis were competitively procured from industry utilizing a performance military specification.

Status: The MILVAN chassis is currently deployed. From 1969-1971, 5,620 chassis were produced; 5,106 chassis are currently in inventory. These will be used as an interim vehicle to haul the refrigerator container in USAREUR.

Program Plan: There is no current plan to procure additional units. A four year overhaul program for 700 units began in FY84.



III-3

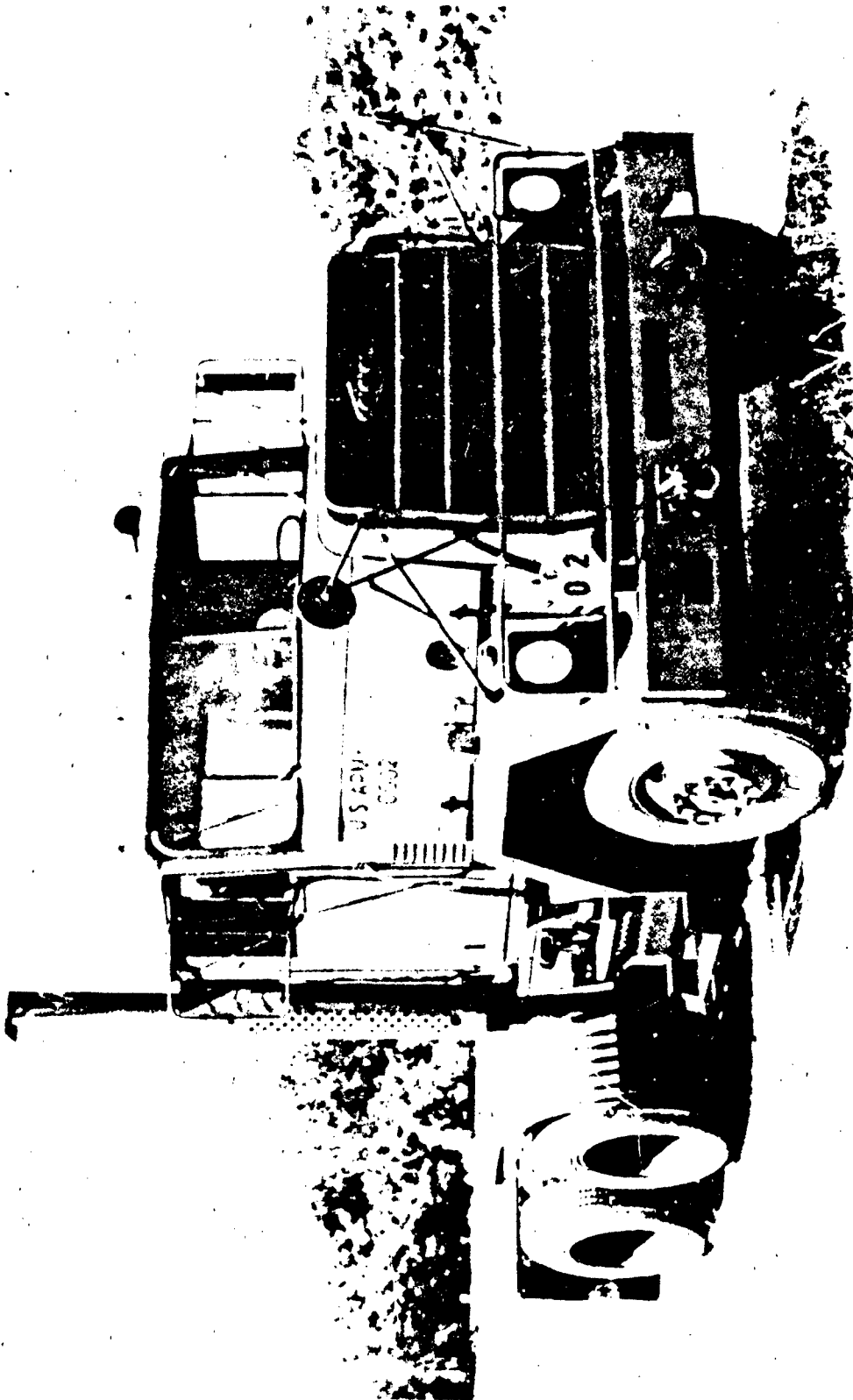
Title: Truck Tractor, Linehaul 6X4, M915

Point of Contact: Musotto, M., Mr., US Army Tank-Automotive Command,  
AMCPM-TVHA, Warren, MI 48397-5000, Autovon 786-8065  
/Commercial (313) 574-8065

Item Description: The M915 is the on-road prime mover for the M872 Breakbulk/Container Transporter Semitrailer (105,000 pound Gross Combination Weight Rating) and is used in linehaul operations from the port of debarkation to the division rear boundary. It partially replaces or augments the M818/M931 5-ton Tactical Tractor fleet. The M915 is part of a single procurement action which fielded a six vehicle family. The other vehicles within the combined procurement are the M916 Light Equipment Transporter, M920 Medium Equipment Transporter, M917 20-Ton Dump Truck, M918 Bituminous Distributor and M919 Concrete Mobile.

Status: Initial production vehicles were satisfactorily tested at Aberdeen Proving Ground, MD; Yuma Proving Ground, AZ; Belvoir R&D Center, VA; and the Cold Regions Test Center, AK, during the period Mar 78 through Mar 79. Four vehicles with companion M872 semitrailers satisfactorily completed Force Development Test and Evaluation (FDTE) at Ft. Campbell, KY between Jan and Apr 79. Production was completed in Jun 80 and the entire fleet of 2,498 vehicles has been fielded.

Program Plan: Provide support for fielded items.



III-4

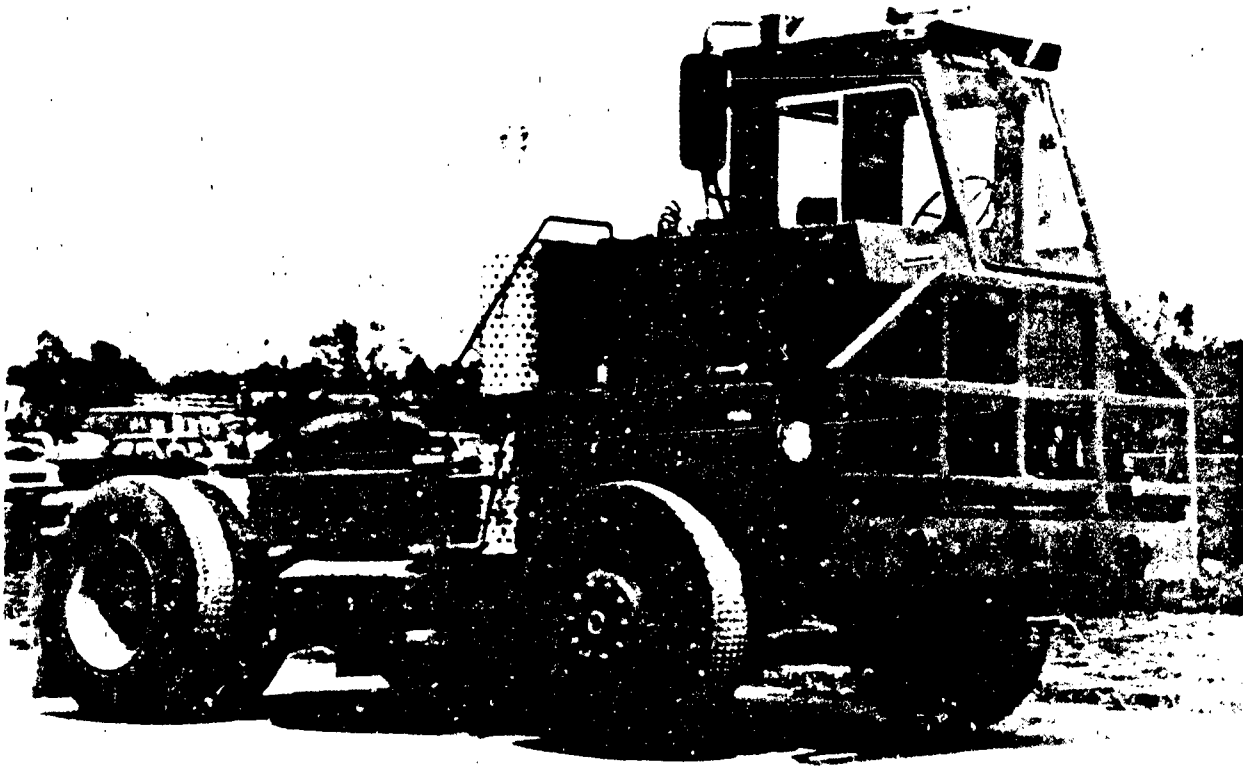
Title: Truck Tractor, Linehaul 6X4, M915A1

Point of Contact: Musotto, M., Mr., US Army Tank-Automotive Command,  
AMCPM-TYHA, Warren, MI 48397-5000, Autovon 786-8065/  
Commercial(313)574-8065

Item Description: The M915A1 is a military adaptation of a commercial 6X4 tractor and is a rebuy of the M915. It has been improved to include state-of-the-art advances in heavy truck technology. It is intended for linehaul operation from the port of debarkation to the division rear boundary. While the M915A1 is used primarily with the M872 semitrailers, it is capable of operating with a variety of military and commercial trailers.

Status: AM General produced 2,342 M915A1s. Deployment to USAREUR, US Army Reserve and Army National Guard was made between Aug 83 and Jul 84 to 37 Medium Transportation Companies.

Program Plan: Provide support for fielded items.



CURB WEIGHT: 16,280 LBS.  
OVERALL LENGTH: 182.5 IN.  
OVERALL WIDTH: 98.125 IN.

OVERALL HEIGHT: 120 IN.  
WHEEL BASE: 116 IN.  
FIFTH WHEEL HEIGHT: 48 IN. TO 64 IN.

III-5



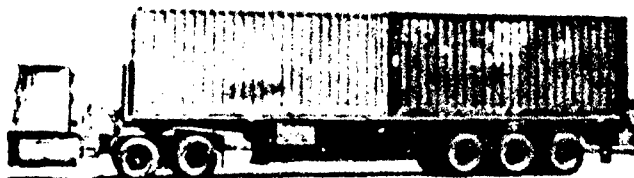
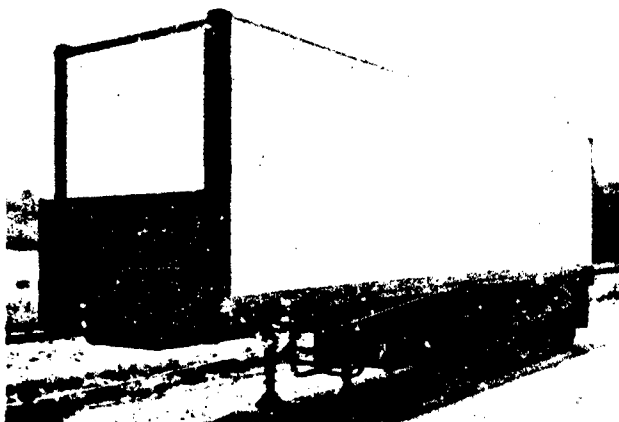
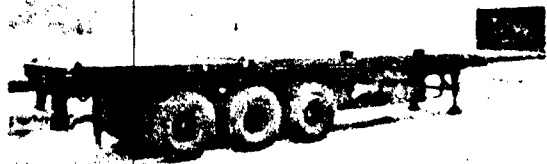
Title: Truck Tractor, Yard Type, 4X2, M878A1

Point of Contact: Carlisle, G. Mr., U.S. Army Tank-Automotive Command,  
AMSTA-FTM, Warren, MI 48397-5000, Autovon 786-8500  
/Commercial (313)574-8500

Item Description: The yard type truck tractor is primarily used to provide a capability to shuttle semitrailers loaded with containers or breakbulk cargo within fixed ports, prepared beaches Logistics-Over-the-Shore (LOTS), or trailer transfer areas. The vehicle is a highly maneuverable commercial tractor with an automatic locking, hydraulic-lift fifth wheel which facilitates semitrailer coupling and disengagement, and allows movement of the semitrailer/chassis without retracting landing legs.

Status: Twenty-eight trucks were competitively procured from Ottawa Truck Company for use during Joint-Logistics-Over-the-Shore (J-LOTS) testing in 1977. Based on the favorable results of this test, 16 additional trucks were ordered. The truck has passed its First Article Test and a third buy contract was awarded to Ottawa Truck for a quantity of 175 trucks. Of these 175 trucks, 56 were issued in 1983 to meet initial CONUS requirements. Full release of the M878A1 was approved in Oct 1985. Forty three trucks are scheduled for deployment to USAREUR during Jan - Sep 86. Remaining trucks are in long-term depot storage and will be used to fill future additional worldwide authorizations.

Program Plan: Provide support for fielded vehicles.



**CURB WEIGHT: 17,400 LBS.**  
**RATED PAYLOAD: 67,200 LBS.**  
**GROSS WEIGHT: 84,600 LBS.**  
**OVERALL LENGTH: 489 IN.**  
**OVERALL WIDTH: 96 IN.**  
**PLATFORM HEIGHT: 59 IN.\***  
**FIFTH WHEEL HEIGHT: 50 IN. (LOADED)**

**TIRES: 10:00 x 20 TUBE TYPE**  
**BRAKES: CAM/AIR**  
**ELECTRICAL: 12/24 VOLT**  
**LANDING GEAR: HAND/MECHANICAL**  
**SIDE PANEL HEIGHT: 48 IN.**  
**CONTAINER LOCKS: 20', 35', 40',  
24', 5, 6 $\frac{3}{8}$ , AND 10'**

**\*HEIGHT WHEN UNLOADED AND SUPPORTED ON LANDING LEGS WITH DECK LEVEL**

Title: Semitrailer, Linehaul, Breakbulk/Container, M872 Series

Point of Contact: Musotto, M., Mr., US Army Tank-Automotive Command,  
AMCPM-TVHA, Warren, MI 48397-5000, Autovon  
786-8065/Commercial (313)574-8065

Item Description: The M872 Semitrailer Series are commercial design flatbed semitrailers of 34 ton capacity that are used in the linehaul of containers, breakbulk cargo and M113 APC's. The M915/M915A1 truck tractor is the prime mover.

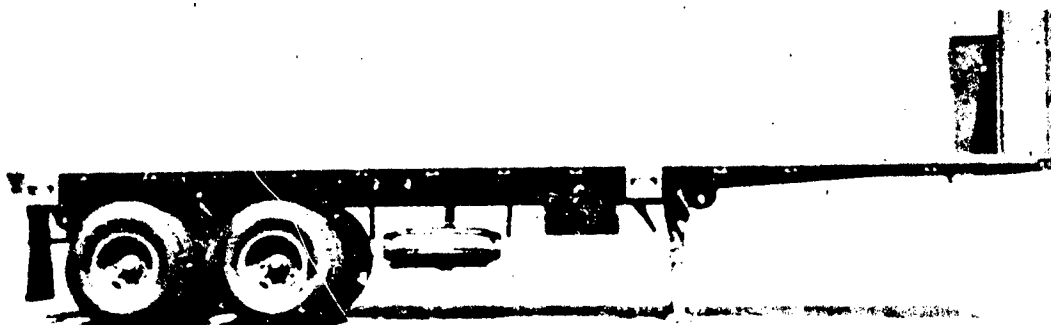
Status: Procurement of the total requirement of 8,656 semitrailers was accomplished by five separate contracts as follows:

<u>MODEL</u>	<u>CONTRACTOR</u>	<u>QUANTITY</u>
M872	Theurer	1,364
M872	Southwest	1,304
M872A1	Theurer	2,713
M872A1	Heller	212
M872A2*	Theurer	125
M872A2*	Heller	125
M872A3	Southwest	2,813
		<u>8,656</u>

\* Model M872A2 has a tapered gooseneck configuration which has been modified by installing a saddle to the gooseneck.

All contracts except the Southwest contract are complete. Southwest is currently in production at a rate of 110/month. Upon completion of this contract all medium transportation companies will have 100% fill of the M872.

Program Plan: Perform necessary actions as required to complete overall production contracts.



RATED PAYLOAD: 44,800 LBS.

OVERALL LENGTH: 358 IN.

OVERALL WIDTH: 96 IN.

PLATFORM HEIGHT: 55 IN.\*

TIRES: 11:00 x 20

ELECTRICAL: 12/24 VOLT

LANDING GEAR: HAND/MECHANICAL

SIDE PANEL HEIGHT: 48 IN.

CONTAINER LOCKS: 20', 10'  
6 $\frac{2}{3}$ ', AND 5'

\*HEIGHT WHEN UNLOADED AND SUPPORTED ON LANDING LEGS WITH DECK LEVEL

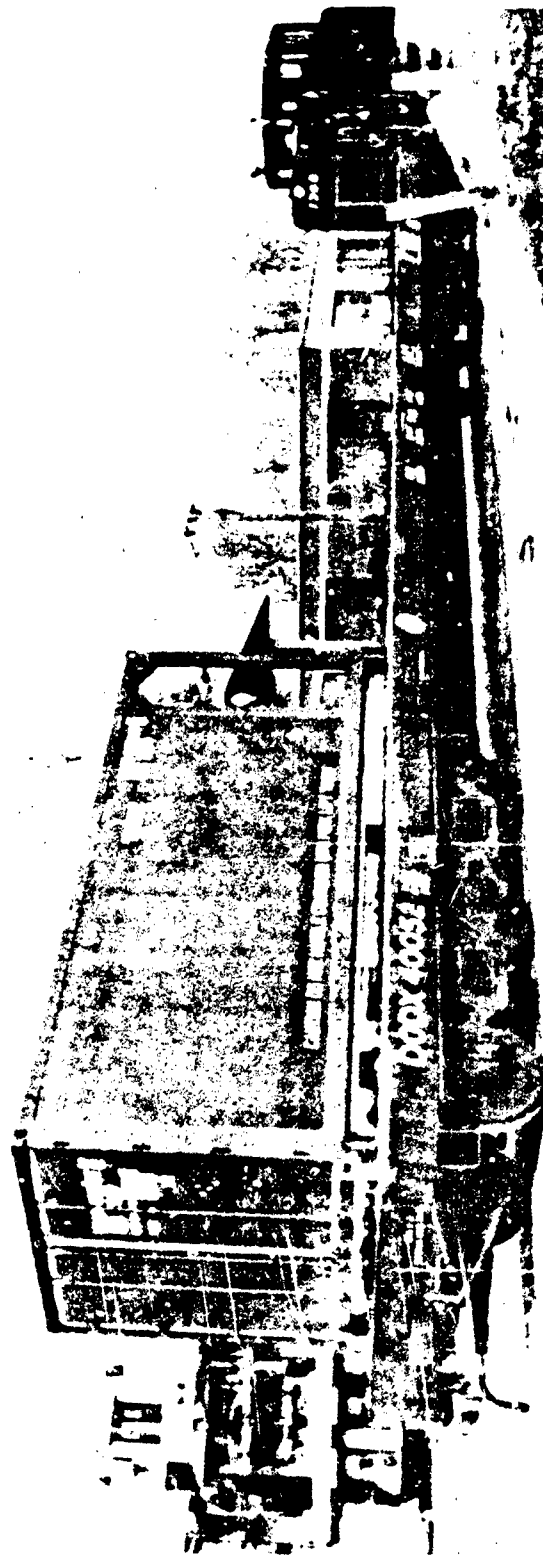
Title: Semitrailer, Tactical, Dual Purpose Breakbulk/Container  
Transporter 22-1/2 Ton, M871

Point of Contact: Musotto, M, Mr., US Army Tank-Automotive Command,  
AMCPM-TVHA, Warren, MI 48397-5000, Autovon 786-8065/  
Commercial (313)574-8065

Item Description: The M871 is a commercial design tactical semitrailer whose primary application will be the delivery and retrograde of containers and shelters up to 20-ft in length and breakbulk cargo in an overseas theater of operation between the Corps General Support Supply Activities (GSSA) and the Division Support Command (DISCOM). On occasion it may also be used to deliver containers to forward distribution points or to using units. The prime mover in these roles will be the M818, M915 and M932 truck tractors. The tactical semitrailer will also be used on the linehaul mission as a means of clearing 20-ft or smaller containers from the port area. The prime mover in this role will normally be the M915 linehaul tractor.

Status: A flatbed configuration was selected by the Logistics Center in Dec 77, after consideration was given to the conflicting requirements dictated by breakbulk and container transport mission. A five-year multi-year contract was awarded to Southwest Truck Body in Mar 79 for a quantity of 2,349 trailers. Initial Production Testing was completed Aug 80 and initial delivery to Anniston Army Depot for storage started in Jun 80. The option was exercised to procure an additional unit with the missile tie-down fixtures.

Program Plan: A contract for 193 M871's was awarded to Schoals American Industries, Inc. in May 85. The vehicle is currently undergoing Initial Production Testing. Deployment is planned to USAREUR and Army Interchange Customers.



III-8

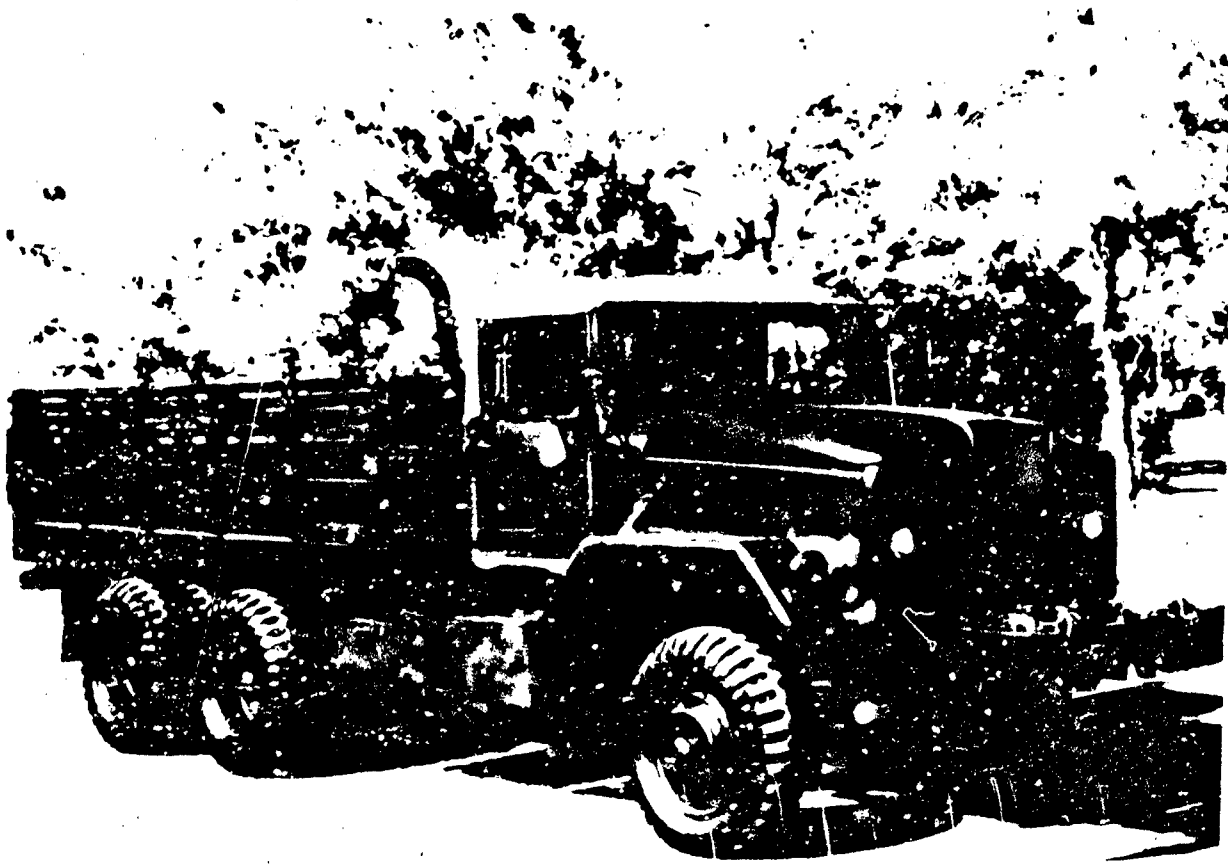
Title: Railway Car, Flat, (Heavy Duty) 140 Ton Capacity, DS

Point of Contact: Boynton, M., Ms., US Army Belvoir RD&E Center,  
STRBE-FMM, Fort Belvoir, VA 22060-5606, Autovon 354-5581/  
Commercial (703)664-5581

Item Description: The 140 ton flat car is designed for unrestricted interchange use while transporting both oversized tracked vehicles and multiple ANSI/ISO Containers loaded with Class A explosives and other commodities. Of welded construction, the all-steel car is equipped with integral securement systems to restrain both kinds of lading. For intermodal containers, the securement system will accommodate a single 40-ft container, three 20-ft containers, or a combination of both sizes. The tiedown units are of the pedestal type that lock automatically when the container is set in place and release automatically when the containers are lifted. The flat car is approximately 68-ft long and 10-ft 5-in wide and is supported by two three-axle trucks. The car is designed to carry up to a 140 ton load.

Status: Three production contracts yielding 569 cars have been completed.

Program Plan: Another contract for 123 cars is scheduled for award in FY89. This will fulfill mission requirements as presently identified.



III-9



Title: 5-Ton Truck Bed with ISO Configured Locking Devices

Point of Contact: Walker, J.C., MAJ, HQ US Marine Corps/LME1,  
Washington, DC 20380, Autovon 227-6950/  
Commercial (202) 697-6950

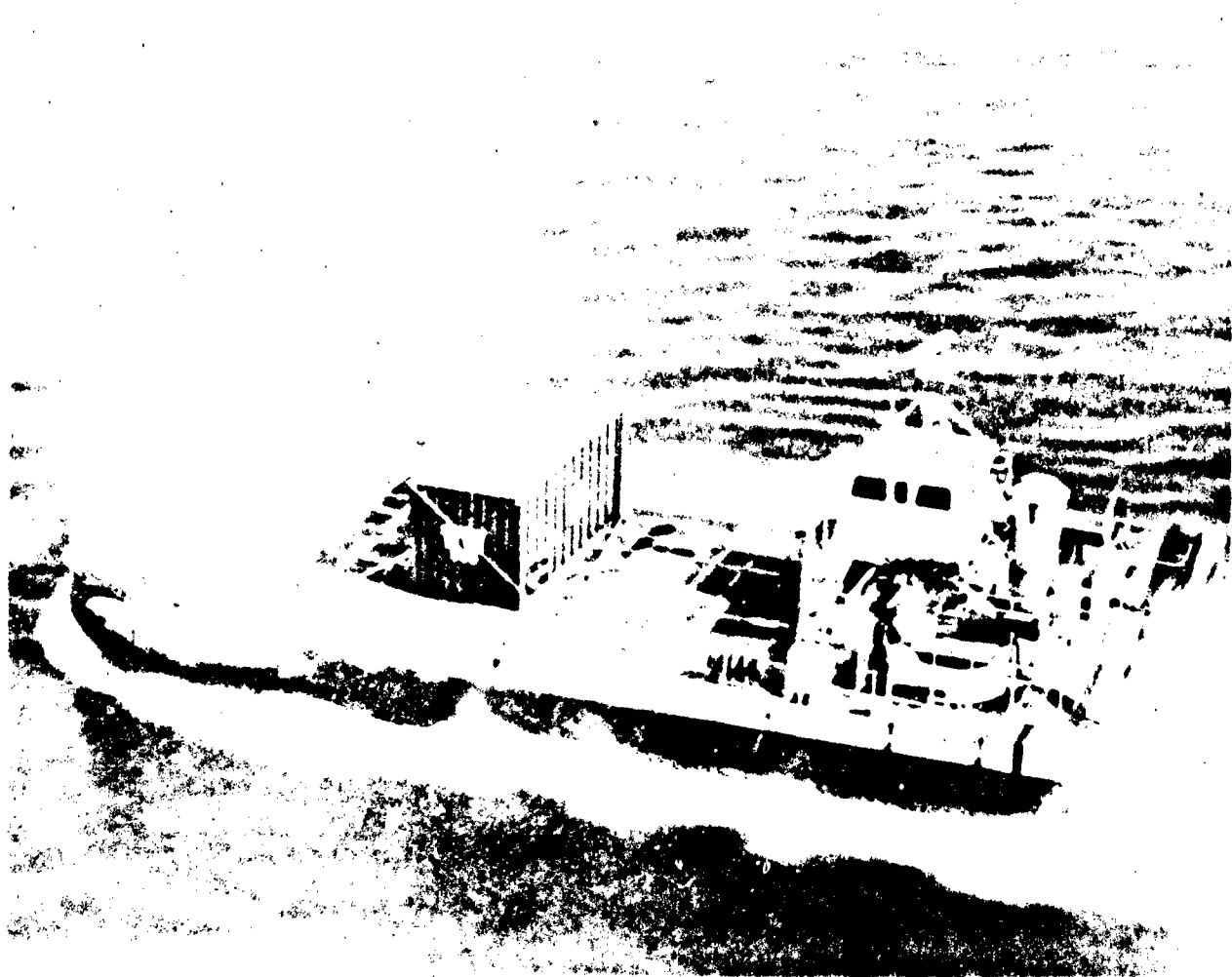
Item Description: The ISO configured locking devices is a modification that will be installed on 5-ton trucks to facilitate the transport of ISO configured cargo up to 8-ft x 8-ft x 10-ft containers.

Status: Initial procurement and installation began during October 1985. 1182 M809 series 5-ton trucks will be configured with these ISO locking device beds. Fielding will be completed for these vehicles during FY89.

Program Plan: 740 M939 series 5-ton trucks are also scheduled for reconfiguration during the mid-life rebuild during FY93. Upon completion of this program, a total 2922 5-ton trucks will have the ISO configured locking device beds.

**LOTS, HARBOR, &  
CONTAINER OFFLOADING  
AND  
TRANSFER EQUIPMENT  
SYSTEM**





LENGTH: 76 FT. 3 IN.  
WIDTH: 36 FT. 8 IN.  
DECK LENGTH: 51 FT. 6 IN.  
DECK WIDTH: 32 FT. 6 IN.  
HEIGHT (HOVERING): 11 FT. 6 IN.  
CARGO DECK HEIGHT: 11 FT. 6 IN.

DESIGN GROSS WEIGHT: 57,344 LBS.  
SPEED AT MAX CONTINUOUS POWER:  
40 MPH @ ALL-UP WEIGHT  
ENDURANCE: APPROX 5 HRS OF  
LOGISTICS-OVER-THE-SHORE W/25  
TON PAYLOAD

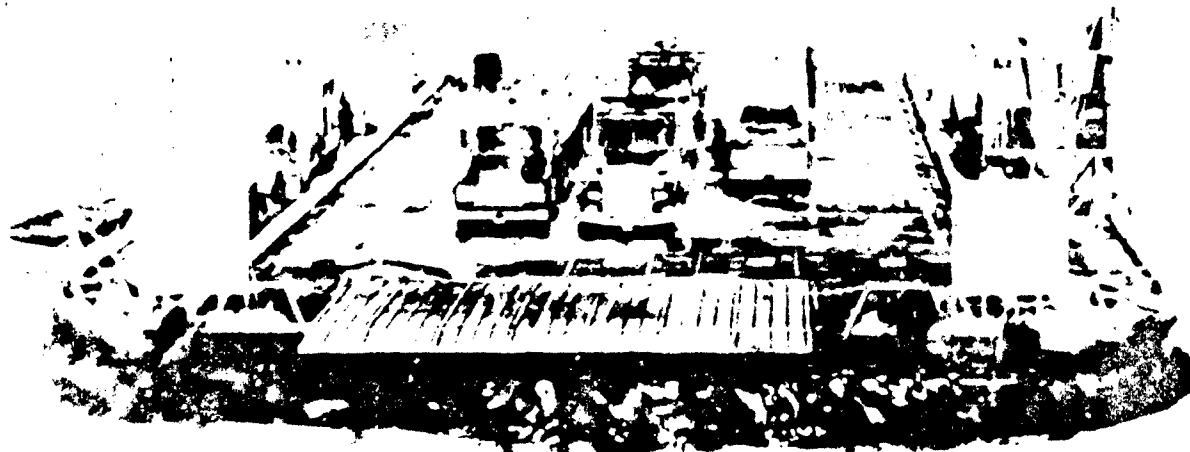
Title: Lighter Air Cushion Vehicle, 30 Ton (LACV-30)

Point of Contact: Perkins, J., Mr., U.S. Army Belvoir RD&E Center,  
STRBE-FRD, Fort Belvoir, VA 22060-5606, Autovon 354-5498/  
Commercial (703)664-5498

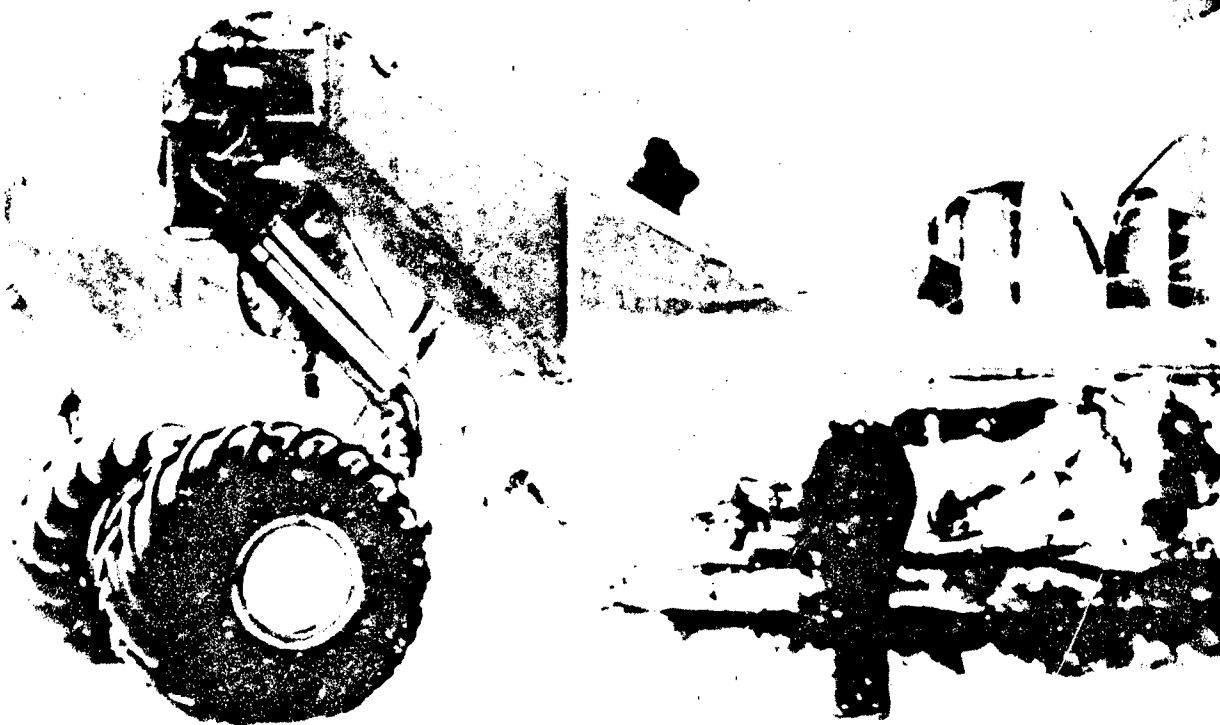
Item Description: This vehicle is a military adaptation of the Bell Aerospace Co. air cushion vehicle "Voyageur" for use primarily in Logistics-Over-the-Shore (LOTS) operations. It is used to provide the logistical system with a rapid lift capability of moving cargo and equipment over water, marginal areas, beaches, ice, snow and land. The LACV-30 provides a method of augmenting congested port facilities or replacing lost or reduced port capabilities. The LACV-30 is also intended to support secondary missions such as coastal, harbor, inland waterway operations, support of amphibious operations, ship-to-shore operations, transport operations and search and rescue operations. The LACV-30 can negotiate sea state 2 and 8-ft plunging surf.

Status: Two prototype craft were built and successfully passed operational and development tests. The LACV-30 has been approved for Army use. A contract for 12 craft was awarded Bell Aerospace Textron and Bell Aerospace Canada Textron in 1979. Production of the first 12 craft is finished. The first 12 production craft are operational with initial operational capability achieved in Sep 82. A second contract for LACV-30's was awarded to Bell Aerospace in Sep 82. The first 12 craft were turned over to 331 Transportation Company at Fort Story. Follow-on evaluation was conducted in FY83.

Program Plan: Turn over next 12 crafts to new Transportation Company to be organized at Fort Story.



WINCH PROPELLED AIR CUSHION BARGE



WHEEL PROPELLED AIR CUSHION BARGE

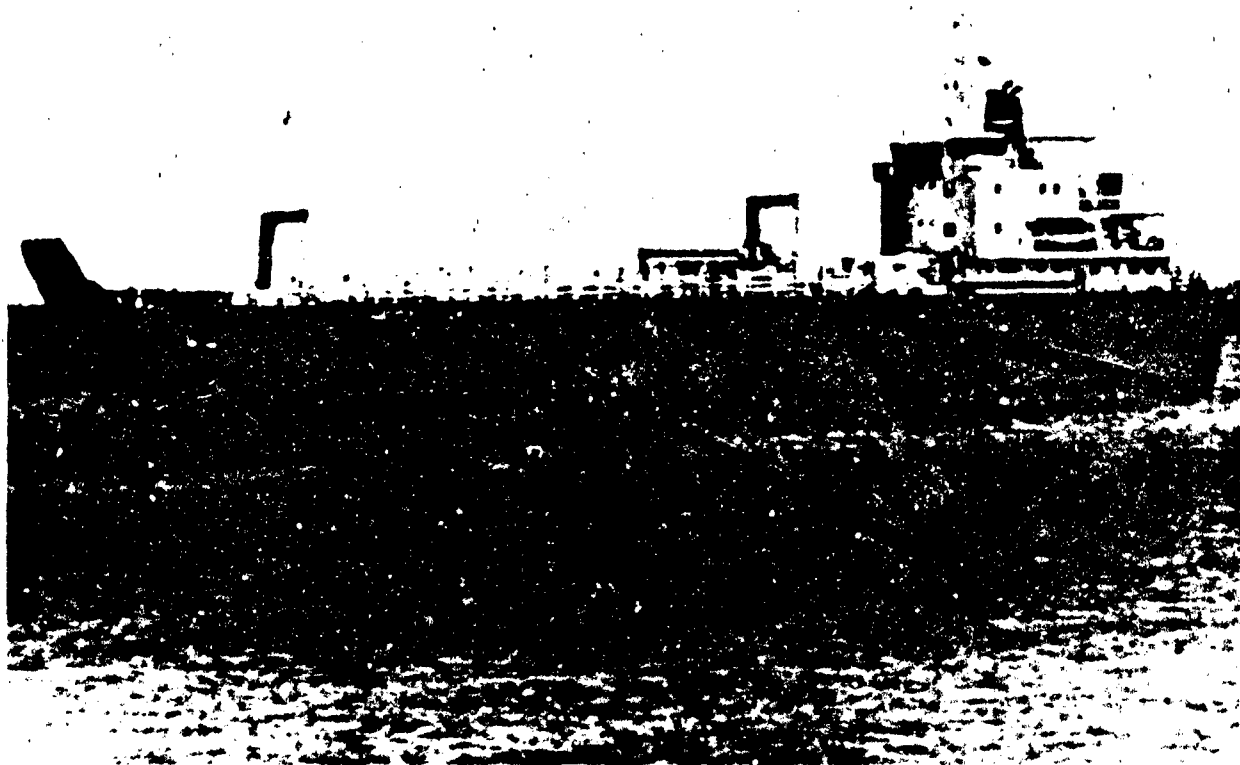
Title: Lighter, Amphibian, Heavy-Lift (LAMP-H)

Point of Contact: David, B., Mr., U.S. Army Belvoir RD&E Center, STRBE-FRD,  
Fort Belvoir, VA 22060-5606, Autovon 354-5498/  
Commercial (703)664-5498

Item Description: The US Army Trans-Hydro craft study 1975-1985 identified and validated a requirement for a heavy lift amphibious lighter. The lighter will have the basic mission in movement of beach cranes, front end loaders, and other outsized materials handling equipment to establish beach operations. It will also have the mission of resupply of tanks, vehicles, and containers. The craft will be an air cushion type to insure negotiation of beach barriers with an open cargo deck to accept load transfer from a cargo ship and equipped with a ramp for Roll On/Roll Off (RO/RO) discharge systems. The LAMP-H will replace the LARC-LX.

Status: A Letter of Agreement (LOA) was approved 24 May 1982. A concept evaluation of existing craft was conducted during the FY83-84 timeframe to determine the optimum candidate to satisfy the requirements on the assumption of using the modified non-developmental approach to accelerate acquisition and fielding. A modified air cushion barge configuration proved to be the optimum candidate in satisfying the Army requirements.

Program Plan: A Required Operational Capability (ROC) for the LAMP-H is scheduled for completion 2QFY87. A prototype contract award is scheduled for 3QFY86. Testing and evaluation will be conducted during FY88-89. Production quantities of 14 LAMP-H vehicles is planned for the FY90-91 timeframe.



IV-3

Title: Logistics Support Vessel (LSV)

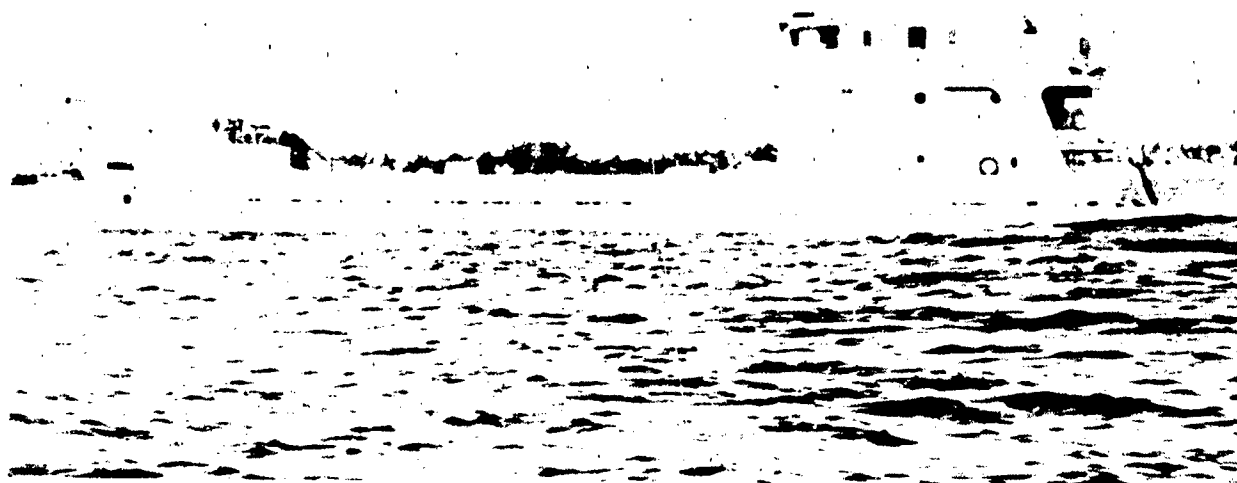
Point of Contact: Lipari, M., Mr., US Army Belvoir RD&E Center,  
STRBE-FRS, Ft Belvoir, VA 22060-5606  
Autovon 354-4267/Commercial (703)664-4267

Item Description: The LSV will have the capability of intratheater line haul of cargo to support the unit deployment/relocation, tactical and sustained resupply to remote, undeveloped areas along coastlines and on inland waterways. Mission requirements include the capability to assist in discharging and backloading ships in a Roll-On/Roll-Off (RORO) or Logistics-Over-The-Shore (LOTS) operations, particularly with container handling equipment, vehicular and other oversize, overweight cargo, as well as the capability to load, transport and off-load bulk liquid cargo. The vessel will have a self-delivery range of 5500 nautical miles at full load and 12 knot service speed. Displacement of the LSV will range between 3000-5500 Long Tons, with a maximum length and beam of 300' and 60' respectively. Minimum cargo deadweight in the full load condition is 2000 short tons. The LSV will have beaching capability, twin or triple screw diesel propulsion, bow and stern ramps, and deck sockets for accomodating containerized cargo.

Status: Issue of the Request for Proposals is expected during 1Q86, with a projected Contract Award date of 3Q86.

Program Plan: The LSV program plan includes procurement of four ships, the last of which is projected for delivery in 1989.





IV-4

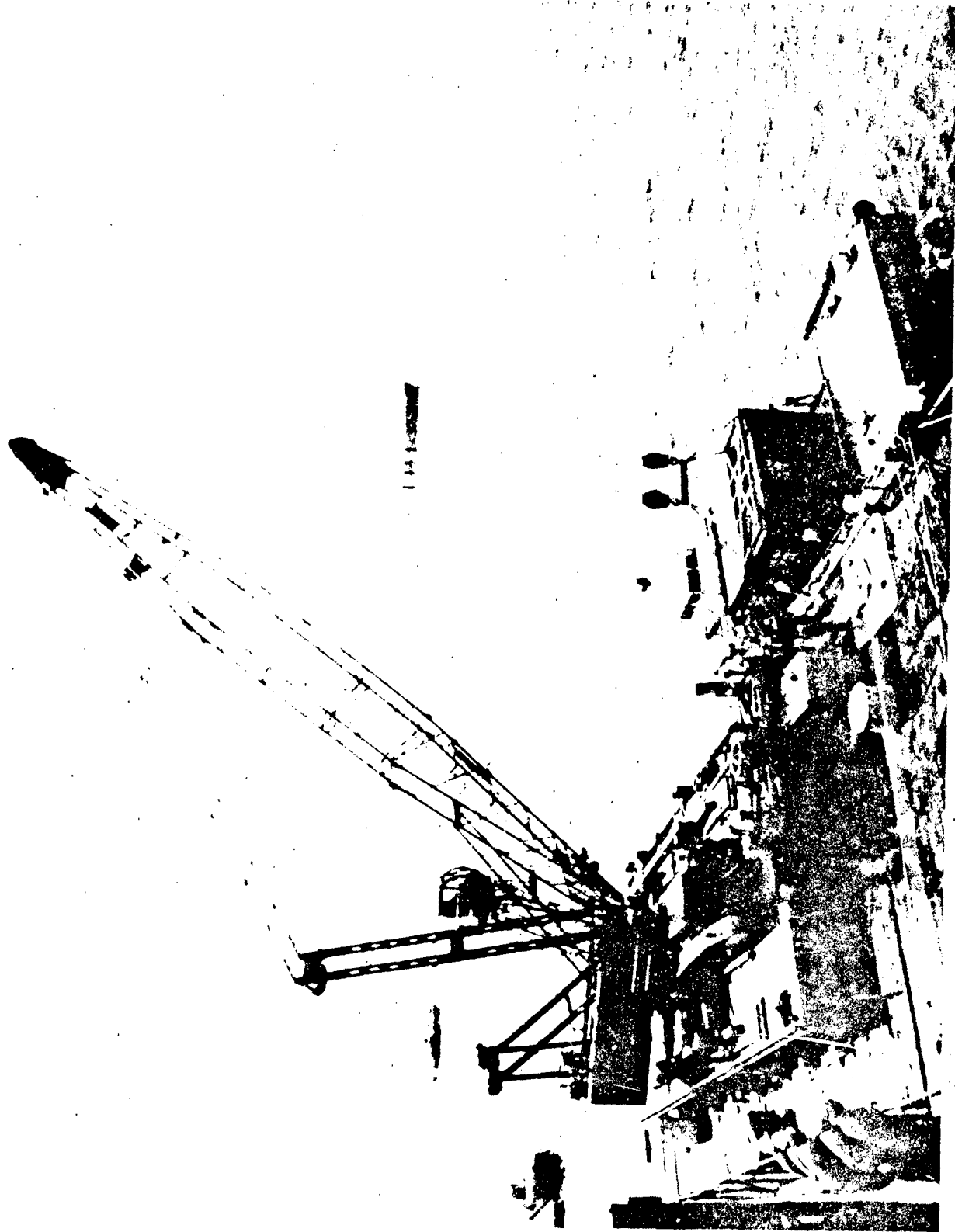
Title: Landing Craft, Utility (LCU)

Point of Contact: Lipari, M., Mr., US Army Belvoir RD&E Center,  
STRBE-FRS, Fort Belvoir, VA 22060-5606,  
Autovon 354-4267/Commercial (703)664-4267

Item Description: The Non-Development Item (NDI) LCU will be used to transport tracked and wheeled vehicles, as well as general cargo and containers in ocean, coastal and inland waterway operations involving landing on remote, underdeveloped coastlines. The vessel will have the capability to assist in discharging and backloading ships in a Roll-On/Roll-Off (RORO) or Logistics-Over-The-Shore (LOTS) effort by lightering cargo between ship and shore and terminal areas not accessible to deep draft oceangoing vessels. The LCU will have a self-delivery range of 4500 nautical miles at full load and 10 knot minimum service speed. Cargo deadweight in the full load condition is 350 short tons, with a maximum length of 155' and beam of 36'. The LCU will have a minimum 2000 square feet of cargo deck area which will be fitted with flush type sockets to allow for maximum loading of ISO standard freight containers.

Status: The Request for Proposal was issued in FY85. Source selection and evaluation activities are in process, with an expected contract award date in 2086.

Program Plan: The LCU program plan includes procurement of 25 craft, with an option for 15 additional, the last of which is projected for delivery in 1990.



IV-5

Title: Temporary Container Discharge Facility (TCDF)

Point of Contact: Shively, P., Mr., US Army Belvoir RD&E Center,  
STRBE-FMW, Fort Belvoir, VA 22060-5606,  
Autovon 354-4490/Commercial (703) 664-4490

Stevens, C., Mr., Naval Facilities Engineering Command  
(FAC-032B), Alexandria, VA 22332, Autovon 221-8533/  
Commercial (703) 325-8533

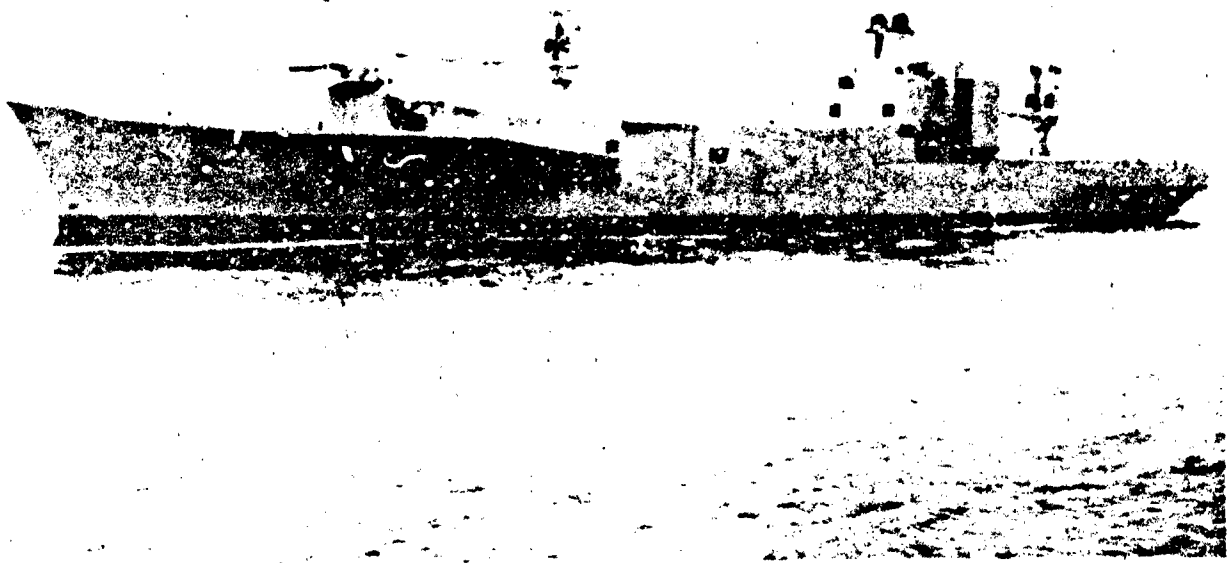
Item Description: The TCDF is comprised of the Army's 250-ton, truck mounted, container crane mounted on a 'B'-DeLong barge. The crane is supported on two bridging beams and uses the reduced load bearing Malkiel Float assembly. The crane on barge configuration has the mission requirement to handle 67,200 lbs at 65-ft in sea conditions up to and including sea state 3.

A SEABEE class surface vessel will be used to transport the TCDF to its operating theater as the 'B'-DeLong barge is structurally inadequate for safe ocean tow with a mounted crane. The SEABEE ship will transport and discharge the TCDF by utilizing the 2,000 LT capacity elevator at the stern. The elevator submerges so that barge cargo can be floated over it for hoisting.

The TCDF is to be used for the discharge of containers from non-self sustaining containerships within a non-port environment. Containerships are moored off-shore with the TCDF along side, separated by fenders. Containers are transported from the containership to lighterage, using the TCDF's crane, for shipment to shore.

Status: A securing system was implemented to the TCDF for overseas transport on a SEABEE class surface vessel. The securing system was implemented by VSE Corporation based on a study conducted by J.J. Henry Co., Inc. This effort was completed on 1 Apr 84. The securing system was successfully tested during the deployment phase of the FY84 J-LOTS II exercise, 15 Apr 84 - 4 May 84. The Technical Data Package (TDP) for the securing system was finalized in Jun 85.

Program Plan: TDP will be utilized to procure an additional securing system for the Army's remaining TCDF during FY86. This procurement will be dependent upon availability of funding.



IV-6

Title: Fast Logistic Ship Program (T-AKR)

Point of Contact: Lisiewski, R., Mr., Naval Sea Systems Command  
(PMS-377W), Washington, DC 20362-5101,  
Autovon 222-8517/Commercial (202)692-8517

Item Description: The Fast Logistic Ship (T-AKR) program includes the procurement of eight SL-7 class high-speed containerships and their subsequent conversion to a cargo configuration specifically designed for rapid load/unload of military vehicles and equipment, including tanks and helicopters. T-AKR ships will enhance the ability to quickly deploy military equipment and supplies from the continental United States to potential objective areas throughout the world. The conversion design includes installation of decks midship to permit Roll-on/Roll-off of vehicles, addition of a flight deck for helicopter operations, and retention of the existing container cells aft. The T-AKR provides the capability to transport in the aft part of the ship 78 special-purpose heavy-duty flatracks, 53 (35'L x 8'W x 13.5'H), 22 (35'L x 8'W x 10.25'H), 3 (35'L x 8'W x 8.5'H), 46 containers (20'L x 8'W x 8'H)\*, and 8 SEASHEDs (35'L x 25'W x 12.5'H). The 35-ft special-purpose flatracks were designed specifically for use on-board the T-AKR and are capable of carrying an M-1 tank (134,000 lb) across two adjoining flatracks. These flatracks have been designed with hinged edge flaps installed along one side to provide the ability to span the gaps between flatracks in container cells resulting basically in a series of "tween decks". The 35-ft SEASHED has an installed capacity of 134,400 lb.

Status: Contracts for conversion of four SL-7 ships were awarded in September 1982 to three shipyards with options for four additional ship conversions: Avondale Shipyards Inc. (ASI) (one firm, two options), National Steel and Shipbuilding Co. (two firm, one option) and Pennsylvania Shipbuilding Co. (one firm, one option). The options for conversion of the remaining four ships were exercised on 31 October 1983. Seven of the eight ships have been redelivered as follows: USNS ALGOL (T-AKR 287) 6/84; USNS CAPELLA (T-AKR 293) 6/84; USNS ALTAIR (T-AKR 294) 7/84; USNS BELLATRIX (T-AKR 288) 9/84; USNS REGULUS (T-AKR 292) 8/85; USNS DENEbola (T-AKR 289) 10/85; and USNS ALTAIR (T-AKR 291) 11/85. Deliveries of SEASHEDs and flatracks to the eight T-AKR ships were completed in September 1984. Each T-AKR is also equipped with two 35-ft spreaders, two 20-ft spreaders, and one 40-ft spreader to enhance load/offload operations.

Program Plan: The remaining T-AKR ship being converted by ASI, USNS POLLUX (T-AKR 290), is scheduled for redelivery to the Government by 31 March 1986.

\* 44 containers (20'L x 8'W x 8'H) on USNS ALGOL (T-AKR 287), USNS BELLATRIX (T-AKR 288) and USNS REGULUS (T-AKR 292).



Title: Auxiliary Crane Ship (T-ACS)

Point of Contact: Ferguson, A., Mr., Naval Sea Systems Command  
(PMS-377V) Washington, DC 20362, Autovon  
222-8517/Commercial (202)692-8517

Item Description: The T-ACS is a converted containership of the Ready Reserve Force (RRF) of the National Defense Reserve Fleet modified by the installation of large marine cranes. The ships will also be outfitted with auxiliary features to support the operation of the cranes. Included will be upgraded or supplementary living quarters, additional generator capacity and semi-permanent or permanent ballast, enhanced breakbulk cargo facilities by modification of container holds for future installation of 40-ft SEASHEDs, lighterage stowage, mooring and fendering capabilities.

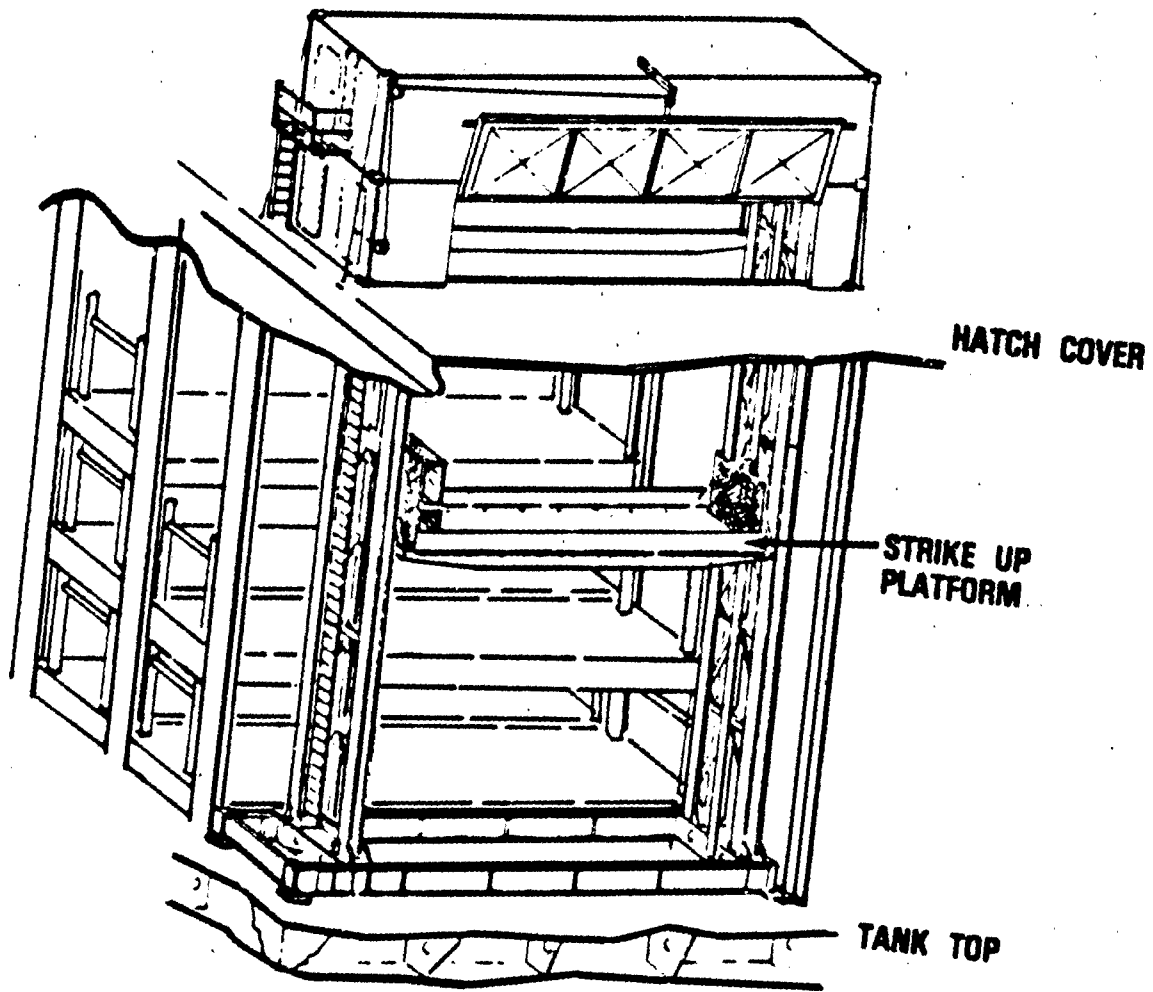
The primary mission of the ship is to unload other cargo ships brought alongside. The unloading may be done in a port where crane facilities are not available, or in the stream or offshore. The ship will also discharge its own cargo.

The cranes on the T-ACS are evolutionary variations of the level luffing type already in widespread merchant service. The installation on T-ACS 1, 2, and 3 consist of three twin-boom rotating pedestal cranes. Installation on subsequent T-ACS ships will be dependent on ships selected for conversion. The cranes will be able to lift a fully loaded cargo container (30 long tons) from the outboard cells of a ship alongside (one boom), a heavy tank (60 long tons) at 85-ft reach (two booms), and a powered causeway section (86 long tons) at 96-ft. The latter lift will be accomplished by pairing two cranes (total of four booms).

Status: T-ACS 1, SS KEYSTONE STATE, was delivered to the Government in May 1984. The ship successfully completed Joint Logistics-Over-the-Shore (J-LOTS II) exercises in October 1984. The second ship, T-ACS 2, began conversion in September 1984 at Continental Maritime of San Francisco, Inc. T-ACS 2 was delivered in Oct 85.

Program Plan: The T-ACS program calls for conversion of a total of 12 ships from the RRF. Conversion of T-ACS 3 began in Oct 85. The last ship is programmed for start of conversion in 1989.





## CONTAINERSHIP STRIKE-UP SYSTEM

IV-8

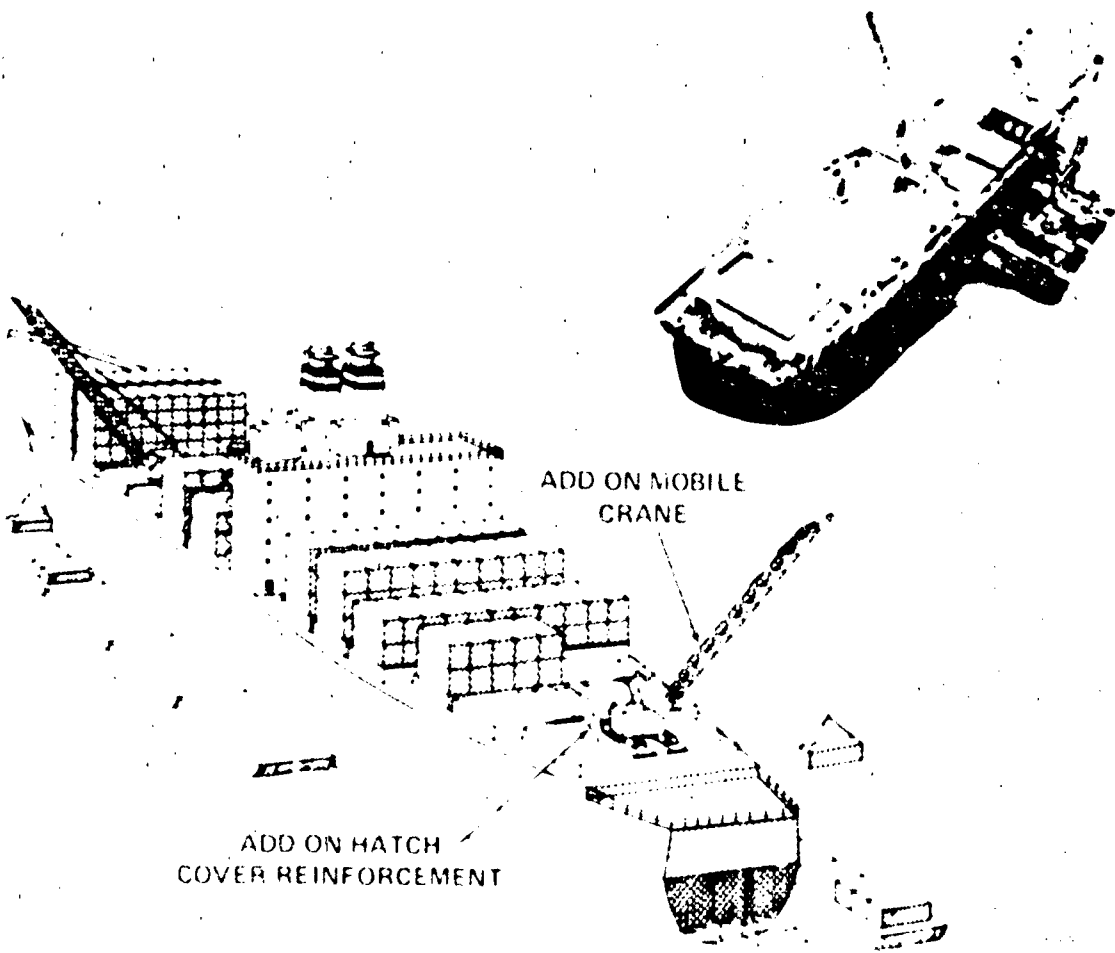
Title: Containership Strikeup System (CSUS)

Point of Contact: Fink, M., Mr., or McKay, C., Mr., Naval Sea Systems  
Command (PMS-377K1), Washington, DC 20362-5101,  
Commercial (202)746-0920

Item Description: The Containership Strikeup System (CSUS) is a modular elevator system designed to fit in one cell of a containership. The system will be composed of modular sections that will allow the system to fit in holds from 3 to 6 containers deep. The system will penetrate the hatch cover on which the access module and machinery module will rest. The weight of that portion of the system below the hatch cover rests on the container hard points. Lift capacity of the system is 20,000 pounds. The CSUS will be used in conjunction with flatracks and SEASHED's that provide temporary 'tween decks for stowage and athwartships movement of cargo. In this concept, the cargo will be broken out at sea (anchored or underway), struck up by the CSUS, and transferred at sea by a STREAM rig.

Status: First-article design production and test contract was awarded. Land based tests of the first article are scheduled to be complete by the end of FY86.

Program Plan: No current plans for follow-on production.



ADD ON HATCH  
COVER REINFORCEMENT

ADD ON MOBILE  
CRANE

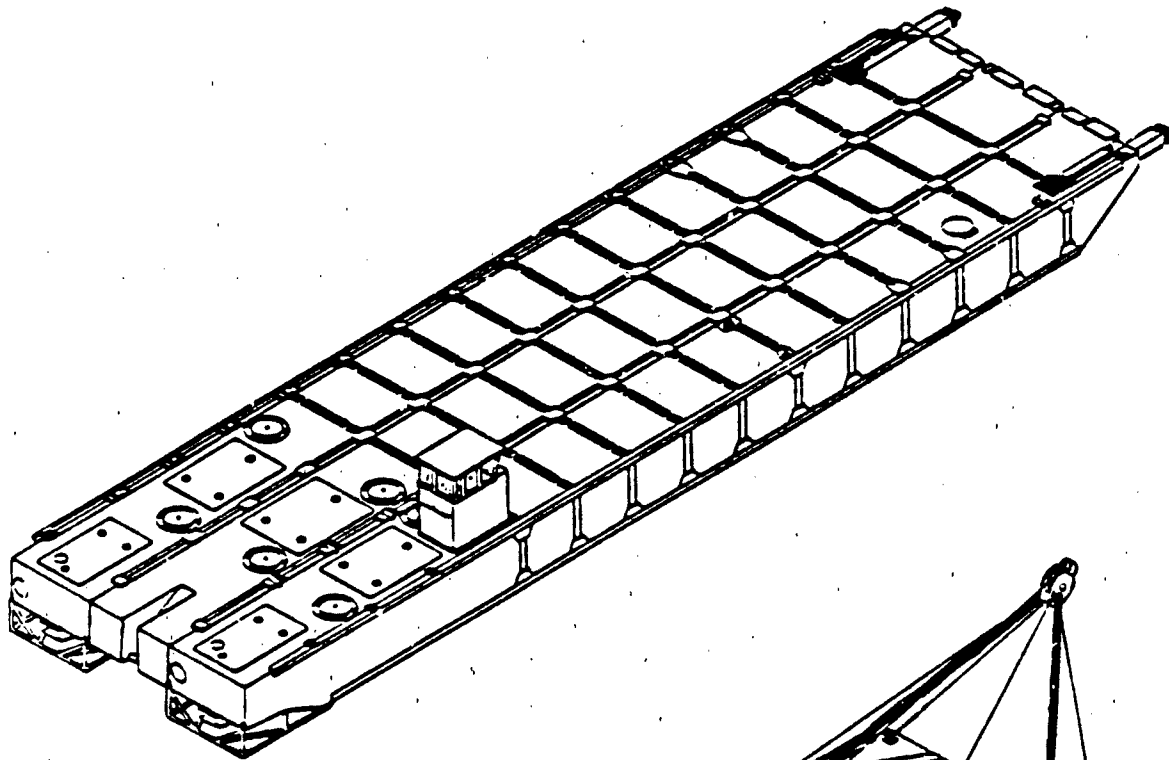
Title: Container Offloading and Transfer System (COTS); Crane-on-Deck (COD)

Point of Contact: Stevens, C., Mr., Naval Facilities Engineering Command (FAC-032B), Alexandria, VA 22332, Autovon 221-8533/ Commercial (703)325-8533

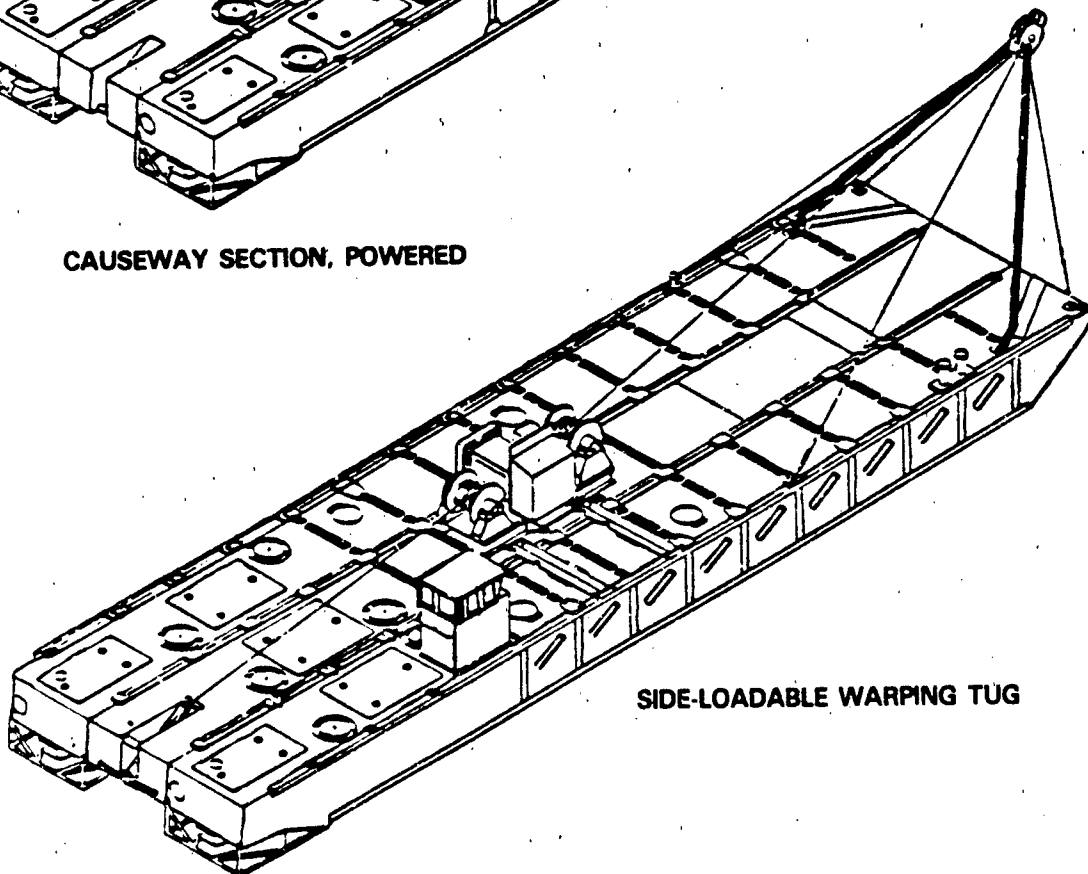
Item Description: The Crane-on-Deck (COD) approach renders non-self-sustaining containerships self-sustaining by placing two or three mobile crawler cranes on deck, each with a relocatable Hatch Cover Bridging (HCB)/COD crane support kit to distribute loads onto the hatch coamings. Each crane requires a set consisting of four made-up steel beams with wood decking 43-ft (13.1M) long, 4-ft 2-1/2-in (1.22M) wide, 3-ft 1-in (0.9M) high, weighing approximately 16 LT (16.4 MT). These beams span the coamings over the closed container cell hatches. The crawler crane sits on two of the lashed down beams using the other two beams to provide tracks for the crawler crane to move forward/aft on the ship, discharging one cell at a time. Crawler cranes are preferred to truck cranes because only bridging under the crawler tracks (four pieces in two rows) is required, while the wheel crane would require additional sets of bridging for the outriggers (eight pieces in two rows). The cranes and kits would be placed on the ship during load-out in one to two days without requiring a shipyard availability. Four commercial crawler cranes (American 9299, 9310 and Manitowoc 4000W, 4100W) having a capability to handle 40-ft (12.2M) ISO containers weighing up to 30 LT (30.5 MT), along with associated handling gear (totaling approximately 40 LT (36.3 MT) at 50-ft (15.2M) have been identified as the preferred type/size to conduct offloading operations. The 93 US Flag containership fleet has been divided into three categories of suitability/adaptability to the COD concept: 29 ships in eight class designs are preferred, 41 ships in eight class designs are acceptable, and 23 ships in eight class designs are undesirable. Criteria are based primarily on deck obstructions that would have to be removed.

Status: The technical data package to render the COD concept operational is on hand. Development beyond Joint Logistics-Over-the-Shore (JLOTS) tests in Aug 77 was suspended in preference to the Temporary Container Discharge Facility (TCDF) because of the superior economy of the TCDF and its additional benefit as a heavy lift transporter. The TCDF concept subsequently was suspended and the development of a containership offloading platform now is under the Naval Sea Systems Command Auxiliary Crane Ship (T-ACS) project. Chief of Naval Operations letter serial 40B/390605 of 5 Feb 82 pertains.

Program Plan: To be determined.



CAUSEWAY SECTION, POWERED



SIDE-LOADABLE WARPING TUG

**Title:** Causeway, Self-Powered (CSP)

**Point of Contact:** Winfrey, E., Mr., US Army Belvoir RD&E Center, STRBE-FRS,  
Fort Belvoir, VA 22060-5606 AUTOVON 354-5319/  
Commercial (703)664-5319

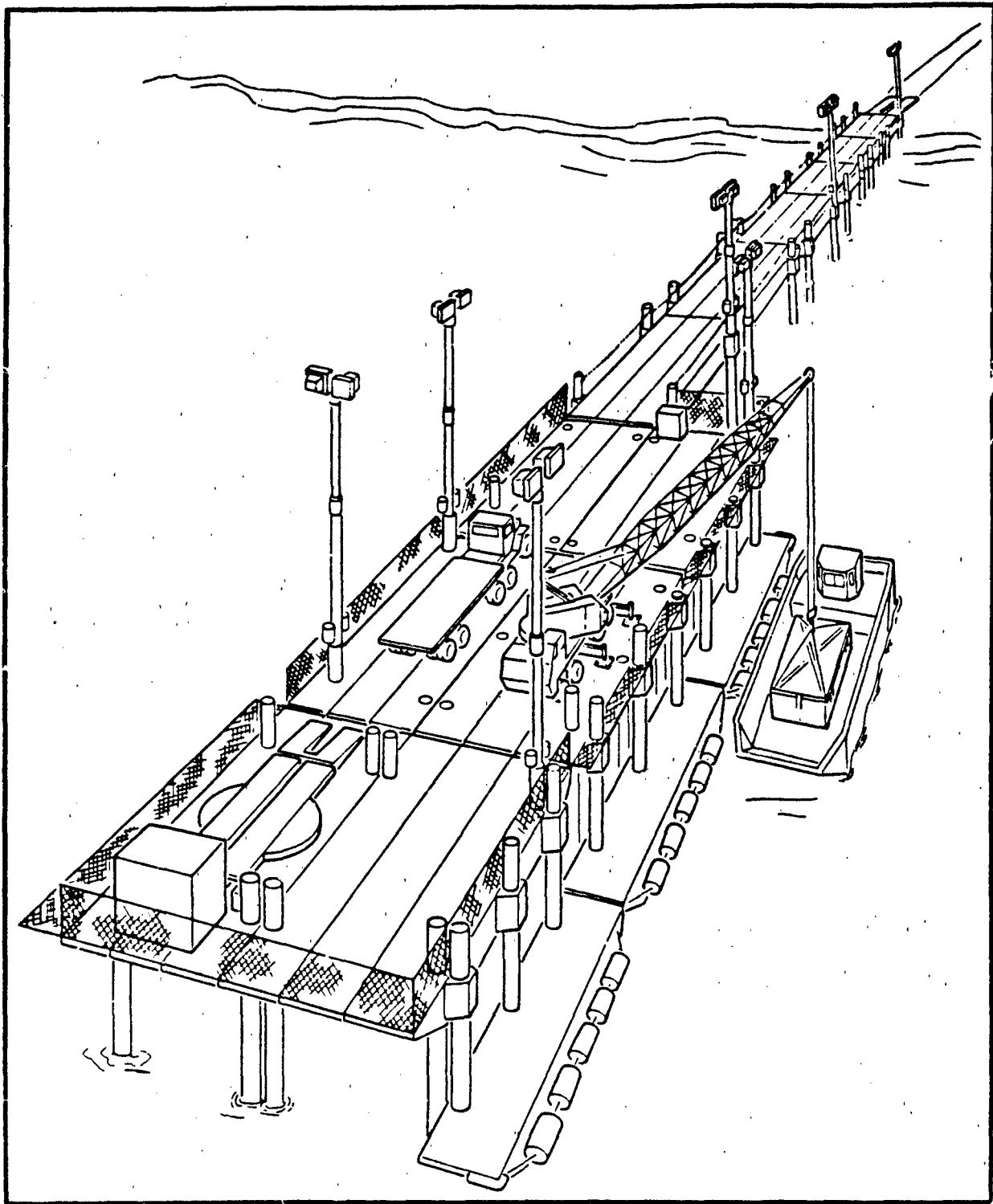
Stevens, C., Mr., Naval Facilities Engineering Command  
(FAC-032B), Alexandria, VA 22332, Autovon 221-8533/  
Commercial (703)325-8533

Karrh, B., Mr., Naval Civil Engineering Laboratory  
(NCEL-L55), Port Hueneme, CA 93043, Autovon 360-4638/  
Commercial (805)982-4638

**Item Description:** The Causeway, Self-Powered (CSP) and its component ISO modules will be procured by the Army through the Navy. The normal CSP configuration will consist of a powered causeway barge and from one to three non-powered causeway barge sections. Causeway barges will be composed of ISO containerized pontoons. Each barge will be formed by joining six ISO pontoons (approximately 40'x8'x4.5') into 80' x 24' sections that will have 100 ton cargo carrying capacity. Propulsion modules will consist of a drive engine and a waterjet propulsion assembly. Powered barges will consist of several propulsion modules with inherent propulsion subsystems and a control station. ISO module units will be stored, transported and assembled on commercial containerships. They can be lifted from the container cells with standard container spreader bars. The system will operate in the movement of RO/RO cargo and containers. Upon arrival in the objective area, the modules will be unloaded and assembled into appropriately sized system. The CSP system will be capable of being converted into a Side Loadable Warming Tug (SLWT) by attaching an A-frame and hydraulic winch.

**Status:** An Army Draft Operational and Organizational Plan has been prepared for the ISO modular Causeway Self-Powered System. System design and development will be conducted by the Navy for the Army.

**Program Plan:** The Navy plans to procure 120 units for the Assault Follow-on Echelon in FY85-90. The CSP/SLWT is being type classified for Army use by Belvoir as support items to the Roll-On/Roll-Off Discharge Platform and Floating Causeway. Type classification will be achieved around 3QFY88. Sixteen Causeway Self-Powered Systems will be procured by the Army with funds set aside in FY87-90.



IV-11

**Title:** Cantilevered Elevated Causeway (CANTELCAS)

**Point of Contact:** Winfrey, E., Mr., US Army Belvoir RD&E Center, STRBE-FRS,  
Fort Belvoir, VA 22060-5606, AUTOVON 354-5319/  
Commercial (703) 664-5319

Stevens, C., Mr., Naval Facilities Engineering Command  
(FAC-032B), Alexandria, VA 22332, Autovon 221-8533/  
Commercial (703)325-8533

Hromadick, J., Mr., Naval Civil Engineering Laboratory  
(NCEL-L55), Port Hueneme, CA 93043, Autovon 360-5719/  
Commercial (805)982-5719

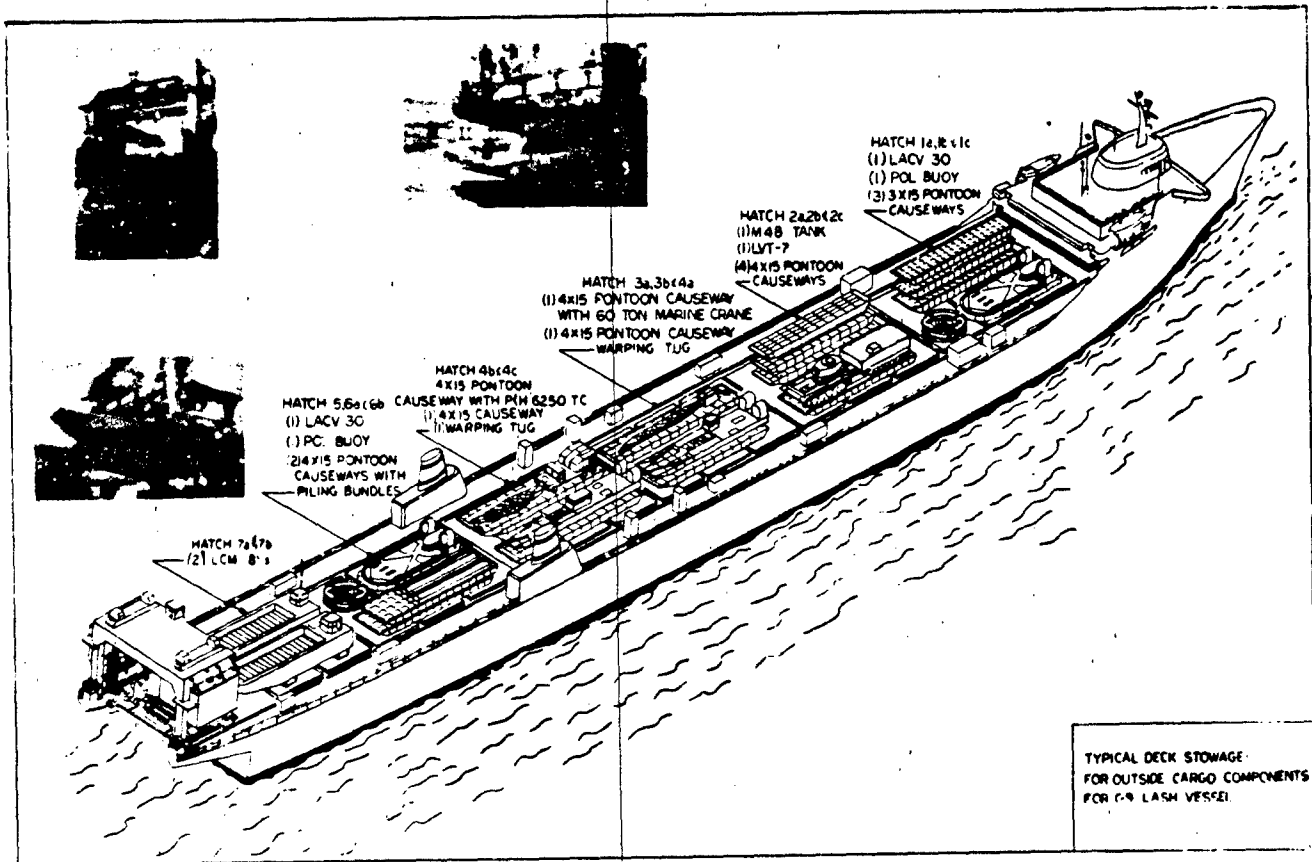
**Item Description:** The Elevated Causeway (ELCAS) is a pier facility, composed of ISO containerized modules, that provides an interface between cargo carrying lighterage and shore. The platform roadway and pierhead of the ELCAS will consist of six 40' x 8' x 4.5' ISO pontoons. The ELCAS facility will be capable of being constructed to extend 3000' from shore. ELCAS barges will be elevated and pinned to previously driven steel piles attached to the barges by external spudwells. The barge elevation is conventionally performed using a lift system consisting of hydraulic chain jacks and associated ancilliary equipment. Advances in ELCAS construction procedures will eliminate the use of a jacking system for barge elevation in which case this task will be performed by a construction/container handling crane. Emplaced on the ELCAS pierhead is a 48' air bearing vehicle turntable and inherent air compressor. A 140 ton crane will be stationed on the ELCAS pierhead to offload containers from lighters and load them onto containerhandling vehicles for subsequent transport to shore. The constructed ELCAS facility will be equipped with a lighting system. A fendering system will be provided at the ELCAS pierhead to accomodate unscathed lighter interface. Side Loading Warping Tugs will be used to install, maintain and retrieve the ELCAS system.

**Status:** Approval for Service Use (ASU) for the Navy was achieved in Nov 80. Development to enhance throughput capability with improvements to trafficability and load capacity continue.

An Army Draft Operational and Organizational Plan has been prepared for the ISO modular ELCAS. Type Classification will be achieved in the FY87-88 time frame.

**Program Plan:** The Navy plans procurement of five units for the Assault Follow-on Echelon during FY88-89. The ISO modular components will be compatible with existing NL Pontoon System. The Army plans to procure two ELCAS systems, one in each FY87 and FY88.





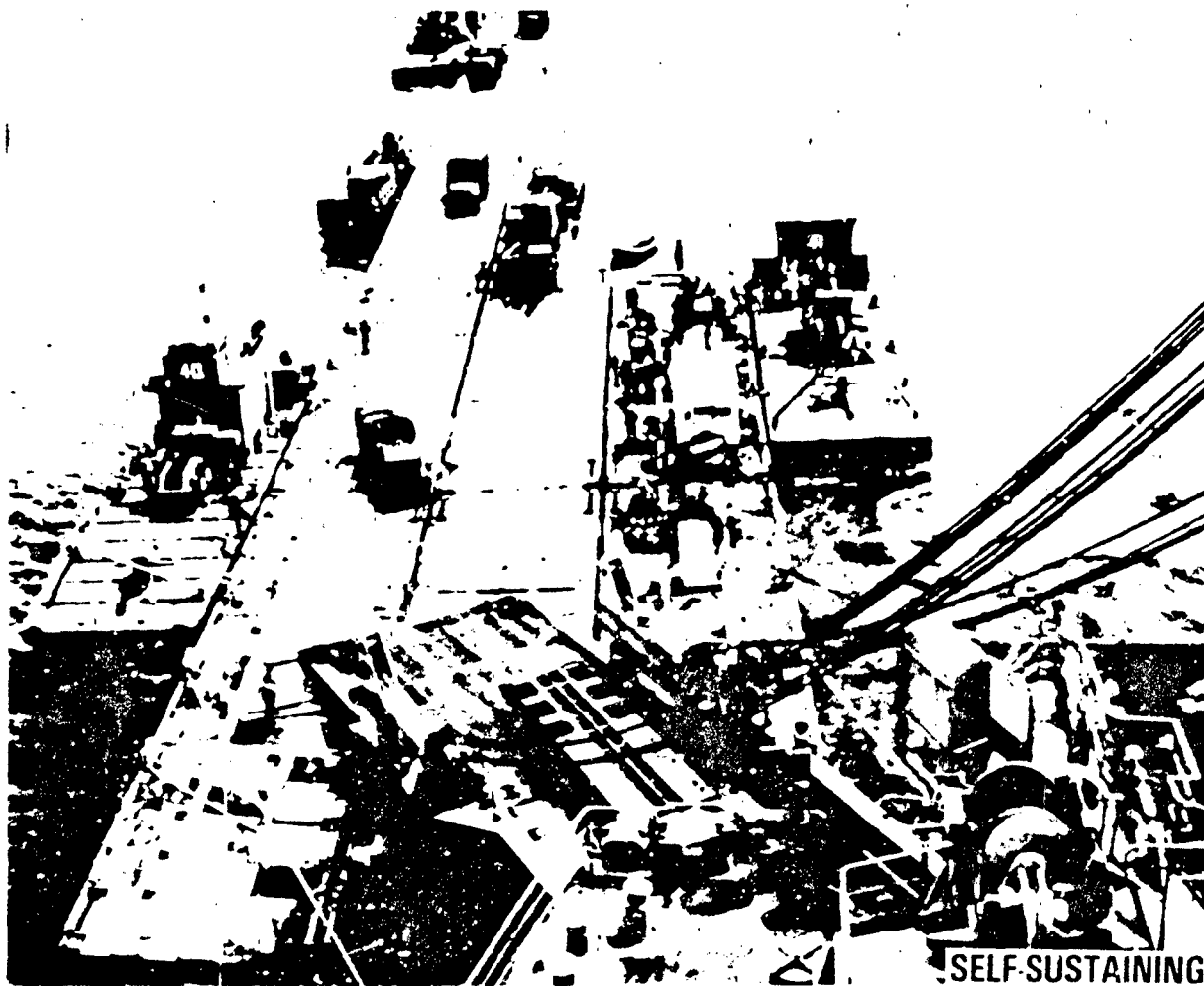
**Title:** Container Offloading and Transfer System (COTS) Cantilever Lift Beam

**Point of Contact:** Stevens, C., Mr., Naval Facilities Engineering Command (FAC-032B), Alexandria, VA 22332, Autovon 221-8533/ Commercial (703)325-8533

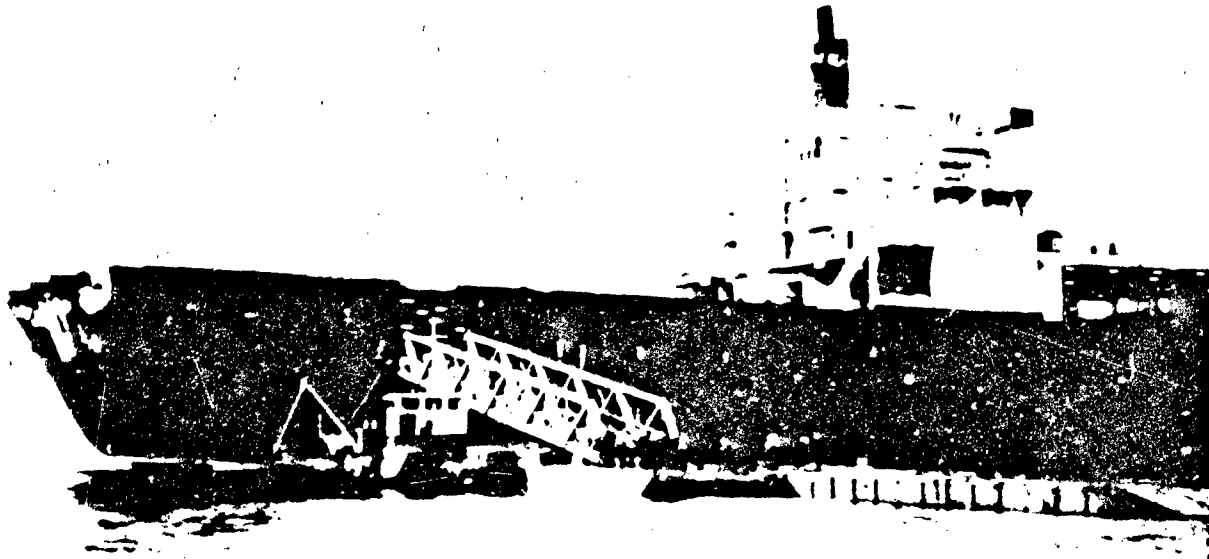
**Item Description:** Capability to deploy aboard commercial LASH vessels heavy, outsized equipment and off-load offshore. A special lifting device attaches to the LASH ship's gantry crane (designed to lift 30-ft x 60-ft barges up to 500 ST) and enables the lift of non-barge, eccentric loads up to 200 tons approximately 60-ft wide x 90-ft long. The beam was designed to be mated to the four lifting sockets of either the Morgan or Alliance lighter crane lifting frames. The design concept called the Cantilever Lift Beam has been accepted as a National Defense feature by MARAD. Certification by the American Bureau of Shipping will be based on the capacity of the eccentrically loaded crane.

**Status:** A cantilever lift beam has been provided for each of the new LASH ships built by Avondale Shipyards for Waterman with deliveries starting in 1981. Two cantilever lift beams were procured and tested in FY84.

**Program Plan:** Procure 12 units, from FY85-90, to provide one for each of the 14 existing LASH ships.



SELF-SUSTAINING



NONSELF-SUSTAINING

Title: Roll-On/Roll-Off Discharge Platform (RO/RO DP)

Point of Contact: Winfrey, E., Mr., US Army Belvoir RD&E Center, STRBE-FRS,  
Fort Belvoir, VA 22060-5606, AUTOVON 354-5319,  
Commercial (703) 664-5319

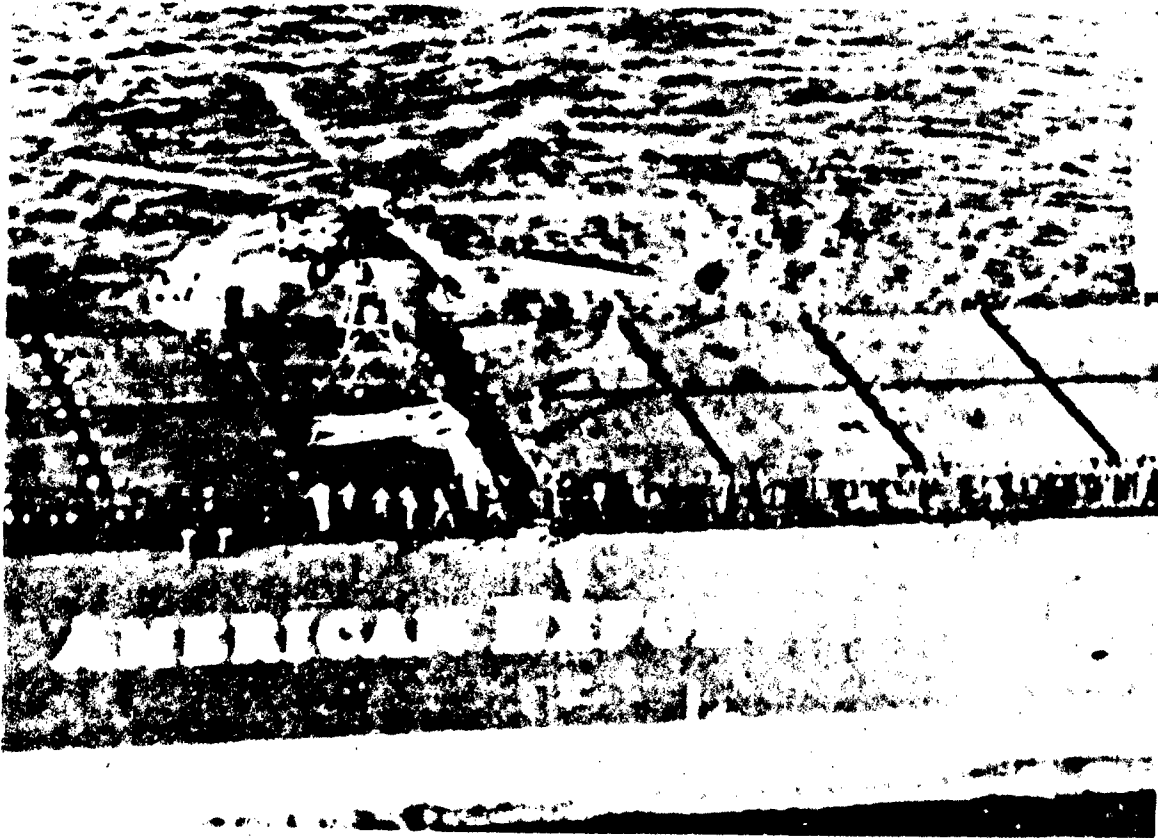
Stevens, C., Mr., Naval Facilities Engineering Command  
(FAC-032B), Alexandria, VA 22332, Autovon 221-8533/  
Commercial (703)325-8533

Vaughters, T., Mr., Naval Ship Research and Development  
Center (NSRDC-1190), Annapolis, MD 21402,  
Autovon 281-2261/Commercial (301)267-2261

Item Description: The Roll-On/Roll-Off Discharge Platform (RO/RO DP) consists of six causeway pontoon barges constructed in a 3 wide by 2 long matrix. The assembly platform will be approximately 65' wide by 180' long. The RO/RO DP will maintain a component vehicle discharge ramp (Calm Water Ramp - CWR). The Discharge Platform will provide an interface between discharging cargo ships and Army lighters. The associated CWR will allow discharge of RO/RO ships that are not self-sustaining. Discharge vehicles are driven down to the CWR or integral discharge ramp of self-sustaining cargo ships to the RO/RO DP for subsequent transfer to shore by Army lighters. The RO/RO DP will have a lighting system and a fendering system. Side Loading Warping Tugs will be used to install, maintain and retrieve the RO/RO DP in cargo transfer operations.

Status: A RO/RO DP facility was granted Army TC Limited Production Urgent in the 21 March 1985 IPR I and III for this system. Standard Code A TC of the RO/RO DP by the Army is dependent upon resolution of TRADOC issues surfaced at the IPR.

Program Plan: The Navy plans to procure nine facilities for the Assault Follow-On Echelon FY85 through FY87. Each facility consists of one Calm Water Ramp (CWR), one Causeway Platform Facility (CPF), tended by one Side-Loadable Warping Tug (SLWT) and one Causeway Section, Powered (CSP). The RO/RO is being type classified for Army use by Belvoir and four units will be procured in FY85-86.



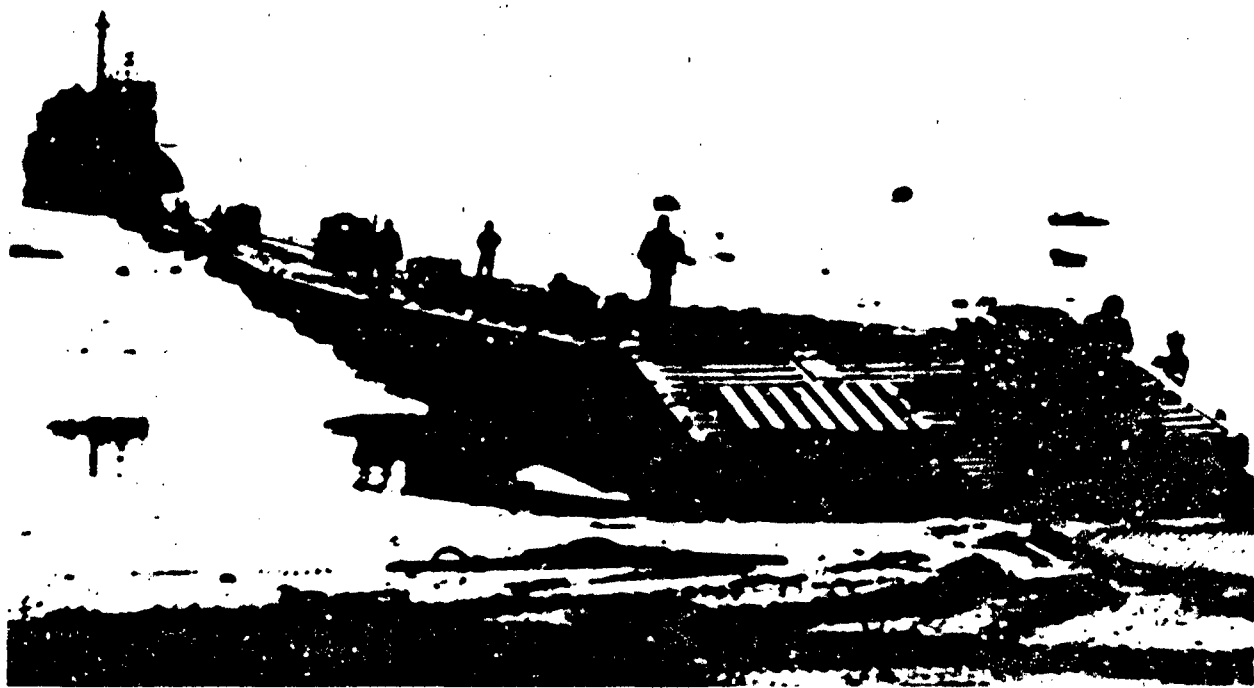
Title: Container Offloading and Transfer System (COTS): Helicopter Offloading

Point of Contact: Stevens, C., Mr., Naval Facilities Engineering Command (FAC-032B), Alexandria, VA 22332, Autovon 221-8533/ Commercial (703)325-8533

Item Description: To provide for the discharge of containers via helicopter from non-self-sustaining containerships, the identification of existing hardware and procedures and/or development of new hardware and procedures (if needed) is required. Due to the 16 ton lift capacity limitation of the CH-53E, the hazards of ship's superstructure, weight and size of hatchcovers, and relative motion, it would be necessary to employ a Crane on Deck (COD) on non-self-sustaining containerships. The crane would handle hatchcovers and position containers for ready acquisition by helicopters. Additionally, container maximum gross loads cannot exceed 16 tons. The end product is intended to be a consolidated "package" of the required equipment and procedures.

Status: The Aviation Research and Development Command (AVRADCOM) provided funds to the Applied Technology Laboratory (DAVOL-EU-ASR) at Fort Eustis, VA to enable the fabrication of two Container Lift Adapter Helicopter (CLAH) prototype devices to be tested in coordination with the CH-53 Follow On Test and Evaluation (FOT&E) and other COTS activities, in containership offloading tasks.

Program Plan: Participate in joint testing with CH-53E. Provide operational manual containing accumulated know-how from OSDOC I & II, describing equipment and helicopter containership offloading procedures. No procurement to be initiated by COTS. All interface equipment is expected to be procured by commands having cognizance over helicopter support functions.



IV-15

Title: Floating Causeway (FC)

Point of Contact: Winfrey, E., Mr., U.S. Army Belvoir RD&E Center,  
STRBE-FRS, Fort Belvoir, VA 22060-5606,  
Autovon 354-5319/Commercial (703) 664-5319

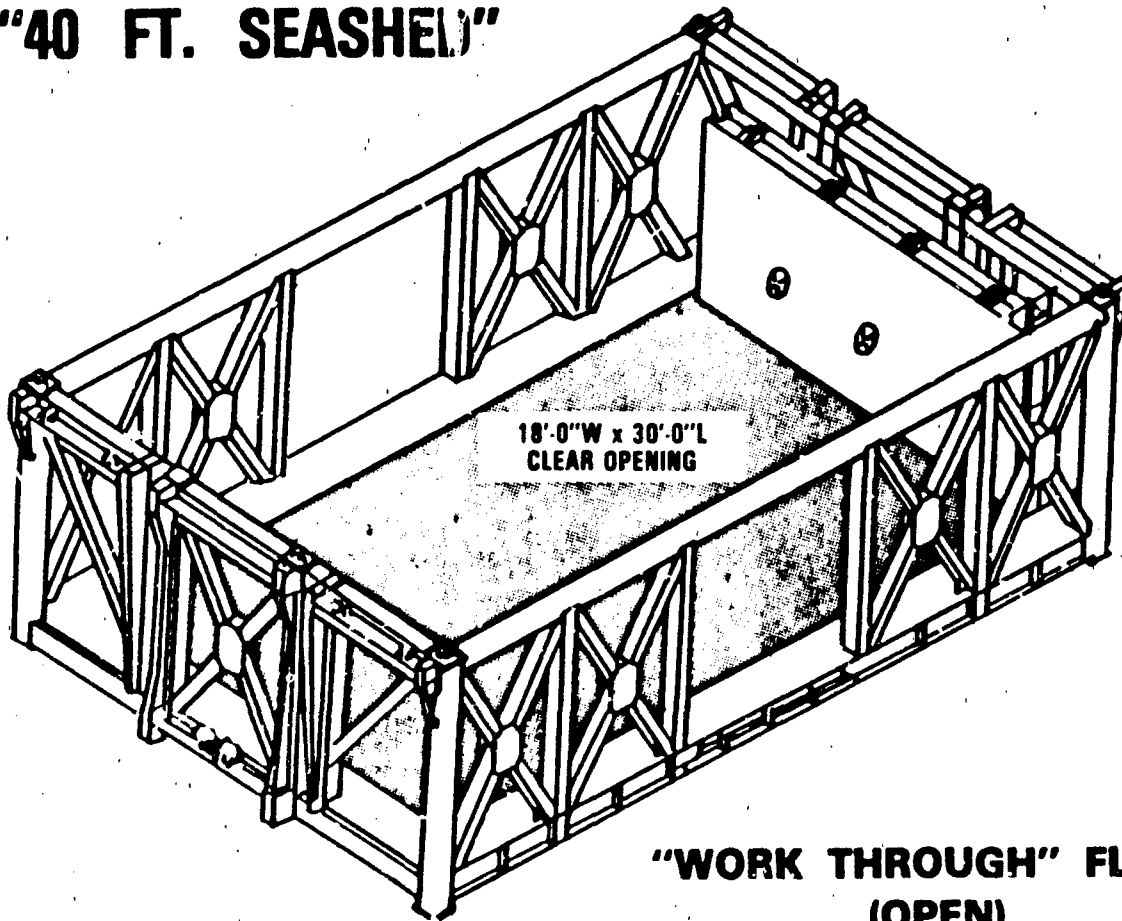
Item Description: The Floating Causeway is a buoyant roadway which consists of 17 pontoon barges; a shore ramp section, 15 conventional roadway barges, and a seaward causeway barge designed to mate with discharge vessels. Causeway barges are composed of a 3x15 matrix of NL series pontoons and are 21' wide by 90' long. The 17 section FC roadway will be 21' wide and extend approximately 1500' from shore. Two Side Loadable Warring Tugs (SLWTs) will be used to install and maintain the FC. A SLWT is a causeway barge capable of propulsion, and equipped with a winch and A-frame. The FC will enable seaward unloading of vehicles and rolling stock from lighters and LST's. Vehicles will, upon discharge, traverse the causeway roadway to shore. The FC is presently anchored by two bulldozers from shore. The seaward moor consists of a network of anchors and mooring lines which are emplaced by SLWT's.

Status: The FC facility was granted Type Classified (TC) Limited Production Urgent in the 21 March 1985 In Process Review (IPR) I & III for this system. Standard Code A TC for the FC by the Army is dependent upon resolution of TRADOC issues surfaced at the IPR.

Program Plan: Four FC systems will be procured by the Army using FY85-86 funds. The Army will procure the initial two FC systems during FY86. Army Initial Operating Capability (IOC) is expected by 2QFY87.



**"40 FT. SEASHELL"**



**"WORK THROUGH" FLOOR  
(OPEN)**

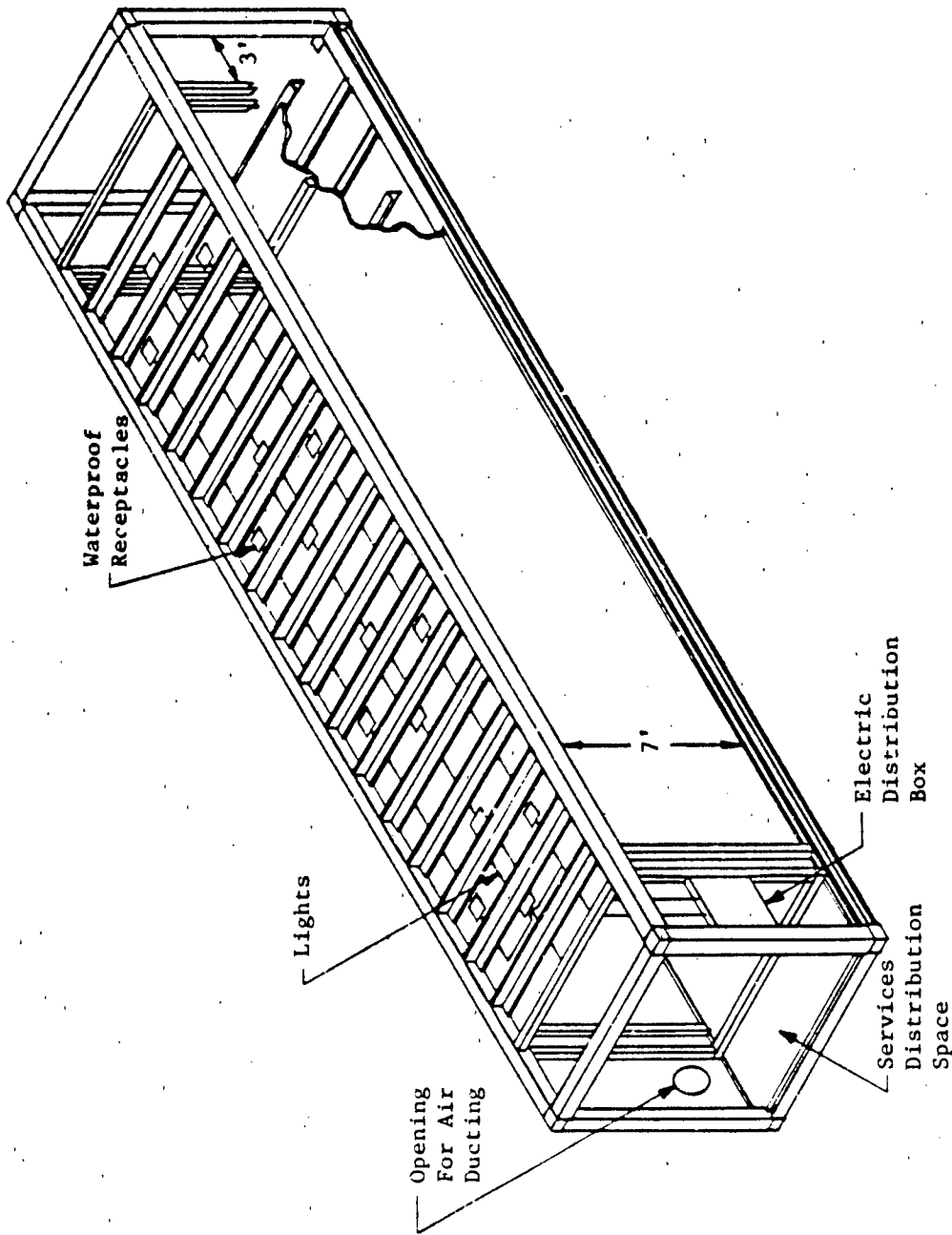
Title: SEASHED's

Point of Contact: Lisiewski, R., Mr., Naval Sea Systems Command, (PMS377W),  
Washington, DC 20362-5101, Autovon 222-8517,  
Commercial (202) 692-8517/7881

Item Description: SEASHED's are open-topped large cargo containers that fit into the container cells of a containership to provide the capability to carry large, heavy or oversized cargo such as Army and Marine Corps tanks and helicopters. Each SEASHED occupies the space of three 40-ft containers in width and has the overall height of 1-1/2 containers, having dimensions of 25-ft wide, 40-ft long, and 12-1/2-ft high. The maximum cargo capacity of each SEASHED is 220,000-lb. SEASHED's themselves weigh 76,000-lb. The quantity to be procured is to satisfy contingency logistics requirements for heavy lift shipment via Ready Reserve Force (RRF), U.S. Flag, and allied containerships.

Status: The total quantity under contract is 328 units; 140 have been delivered as of 31 December 1985.

Program Plan: Contracts for up to an additional 350 units are expected to be awarded by 31 January 1986.



BASIC 40 FT MODULE STRUCTURE

**Title:** Basic MSNAP (Merchant Ship Naval Augmentation Program) Module

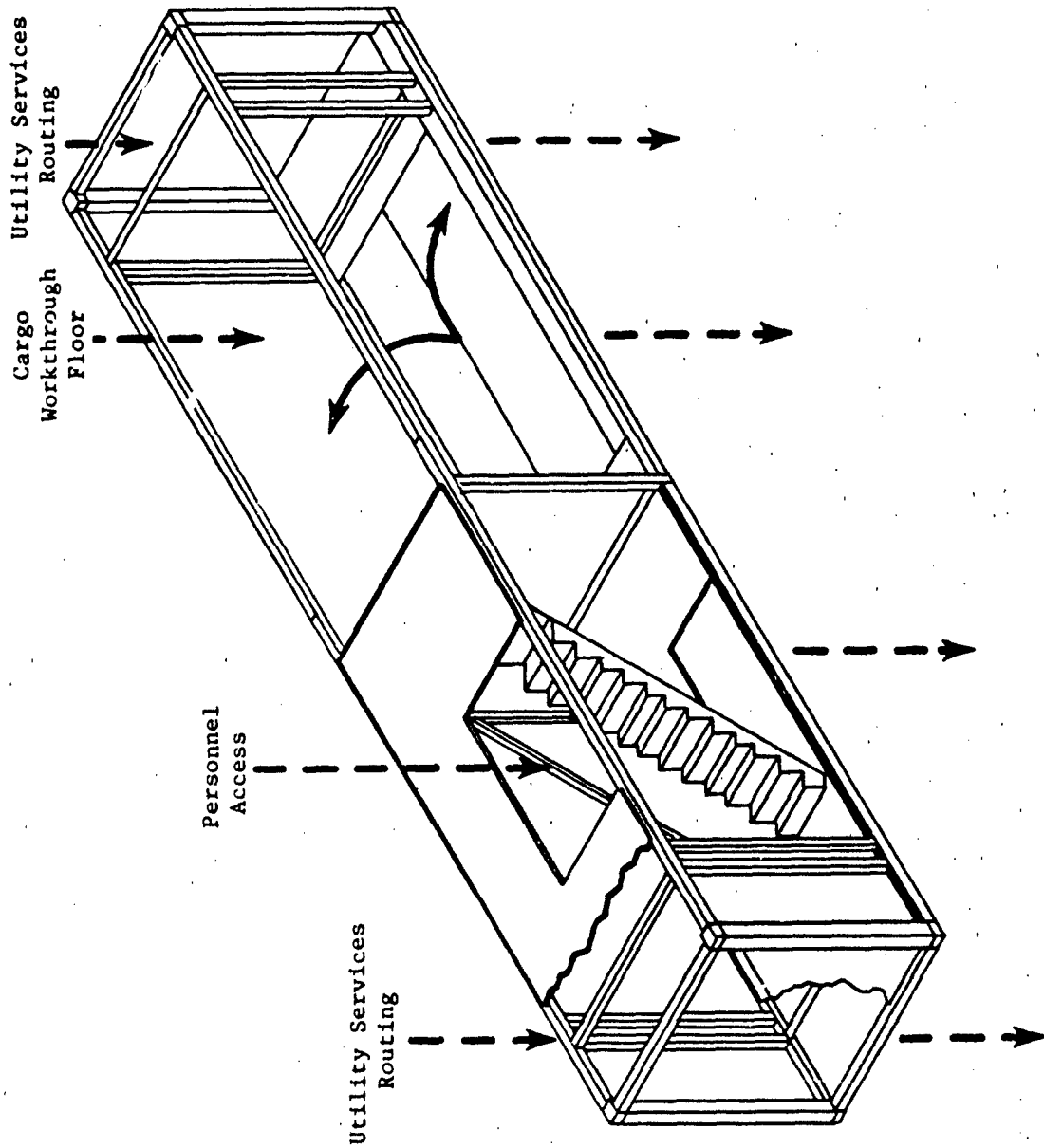
**Point of Contact:** Fink, M., Mr., Naval Sea Systems Command  
(PMS 377 K1), Washington, DC 20362  
Autovon 222-7881/Commercial (202) 692-7881

Hill, T., Mr., Naval Coastal Systems Center,  
(Code 2250) Panama City, FL 32407  
Autovon 436-5045/Commercial (904) 235-5045

**Item Description:** The 8-ft x 8.5-ft x 40-ft Basic MSNAP Module is an RDT&E development effort. The goal is an ISO compatible structure which can readily be configured to provide a live-in or work-in shelter within the hold spaces of a containership, breakbulk ship or RO/RO ship. The module features a three-foot utility compartment at either end. It can be readily outfitted with overhead lighting; a heating/cooling unit; ventilation ducting; reinforced decking; and connections for electrical, plumbing and other utilities. The structure is the basis for workshop modules of the MSNAP Modular Mobile Repair System (MMRS), and for a variety of below deck modules of the MSNAP Habitability and Utility Support System (HUSS) (described elsewhere).

**Status:** Design of the Basic MSNAP Module was completed in FY86. Fabrication and shoreside testing of advanced development models will be completed in early FY87.

**Program Plan:** Following preliminary shoreside testing, the Basic module design will be used for specific MMRS and HUSS applications. Fabrication planning limited to prototype.



IV-18

Title: Habitability and Utility Support System (HUSS)

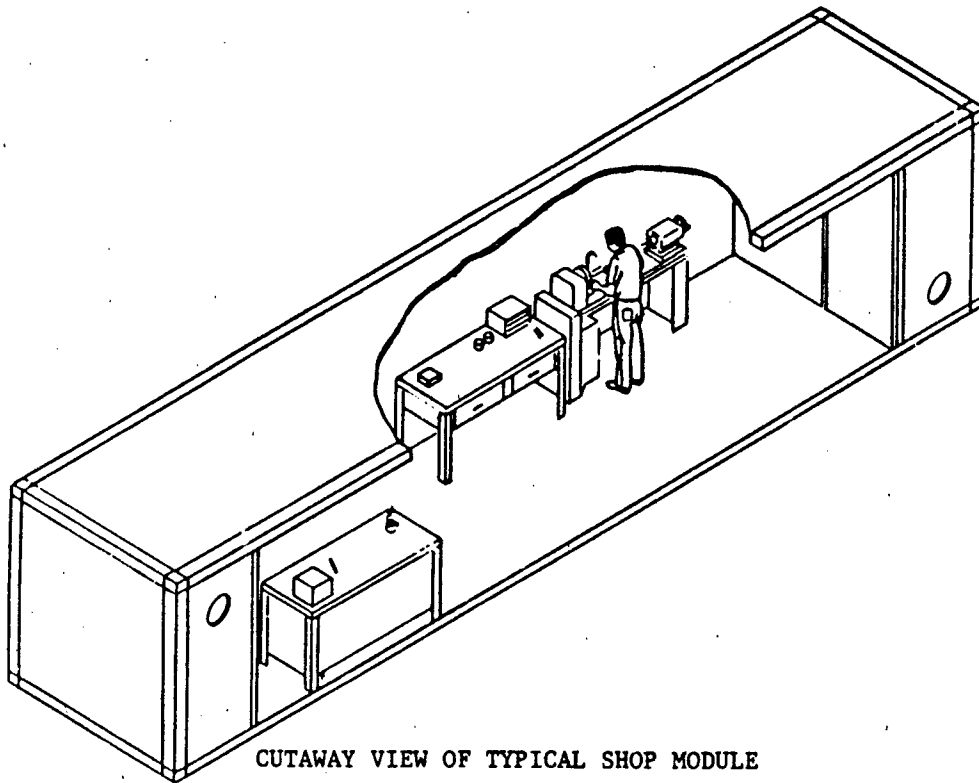
Point of Contact: Fink, M., Mr., Naval Sea Systems Command  
(PMS 377K1), Washington, DC 23062,  
Autovon 222-7881/Commercial (202) 692-7881

Hill, T., Mr., Naval Coastal Systems Center,  
(Code 2250) Panama City, FL 32407  
Autovon 436-5045/Commercial (904) 235-5045

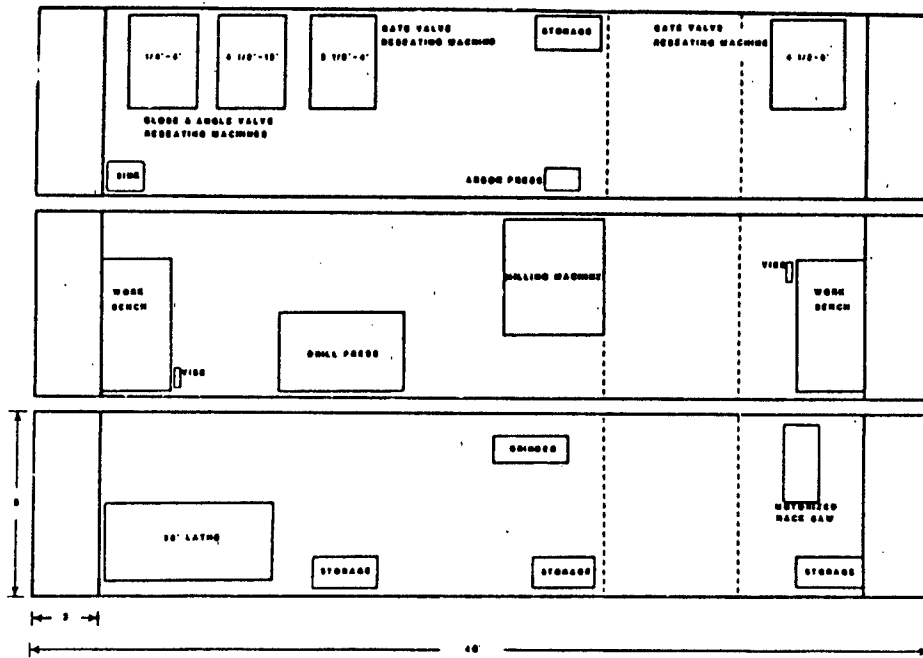
Item Description: HUSS is a system of personnel- and utility-oriented containerized modules which can be selectively installed and employed above deck and in hold spaces of Strategic Sealift containerships. The HUSS system provides integrated support to other Merchant Ship Naval Augmentation Program (MSNAP) systems installed and operating in a Fleet augmentation role. The majority of the HUSS modules will utilize the 40-foot Basic MSNAP Module design (described elsewhere). Above-deck module functions will include heating, ventilation and air conditioning; electrical power generation; system fuel storage; and personnel and equipment access for below-deck spaces. Initial below-deck module functions being designed include personnel and equipment access to all hold levels and utility distribution. Other functions being considered include berthing, head and shower, waste management, galley, messing, sickbay, laundry, administrative, recreation, and storage support.

Status: Preliminary design of HUSS access modules was completed in FY86.

Program Plan: Initial detailed design of HUSS below- and above-deck access modules will be completed in FY87. Fabrication planning limited to prototype.



CUTAWAY VIEW OF TYPICAL SHOP MODULE



MACHINE SHOP COMPLEX

**Title:** Modular Mobile Repair System (MMRS)

**Point of Contact:** Fink, M., Mr., Naval Sea Systems Command  
(PMS 377K1), Washington, DC 20362,  
Autovon 222-7881/Commercial (202) 692-7881

Hill, T., Mr., Naval Coastal Systems Center,  
(Code 2250) Panama City, FL 32407  
Autovon 436-5045/Commercial (904) 235-5045

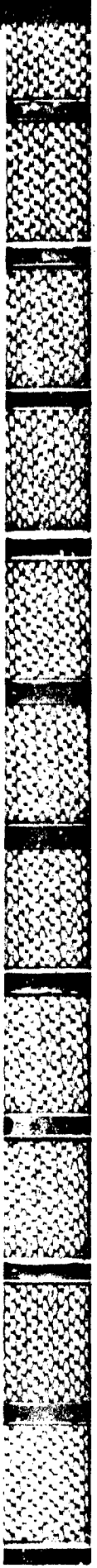
**Item Description:** The MMRS is a system of modular workshops which can be installed and operated in Strategic Sealift merchant ships to provide Fleet augmentation support. Shop equipment will be installed in the Basic MSNAP Module (described elsewhere). Deployment will provide work shop suites comprised of one or more 40-foot modules. These modules in conjunction with selected Habitability and Utility Support System (HUSS) modules (described elsewhere), make up the overall, multi-level MMRS complex.

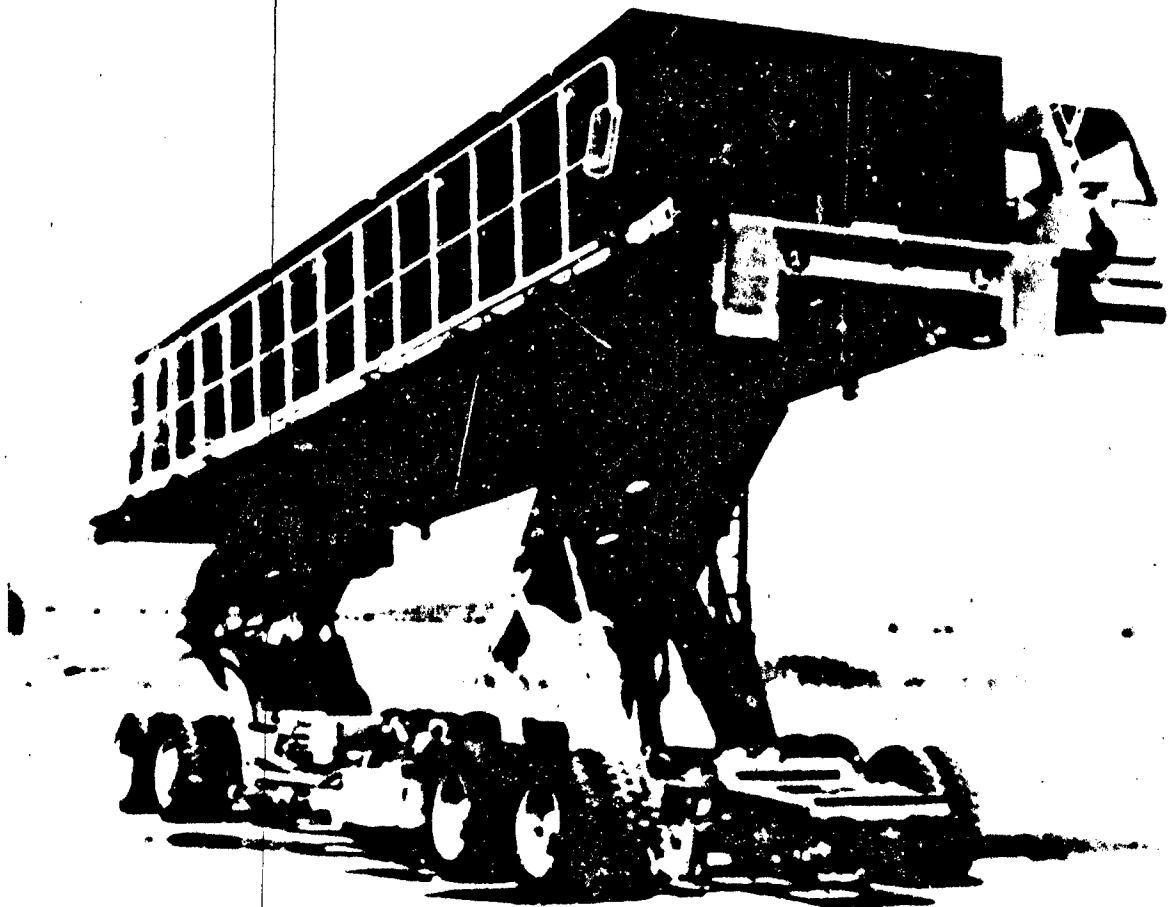
**Status:** MMRS design work commenced at NAVCOASTSYSCEN under the Merchant Ship Naval Augmentation Program (MSNAP) in FY85. Detailed design and specification of the first advanced development model was completed in early FY87.

**Program Plan:** Shoreside testing of the first three prototype workshops (electrical/electronic and machine shops comprised of two modules each, and a one-module hydraulics shop) is planned for FY87. Fabrication planning limited to prototype.



**AERIAL PORT/  
TERMINAL  
EQUIPMENT**





V-1

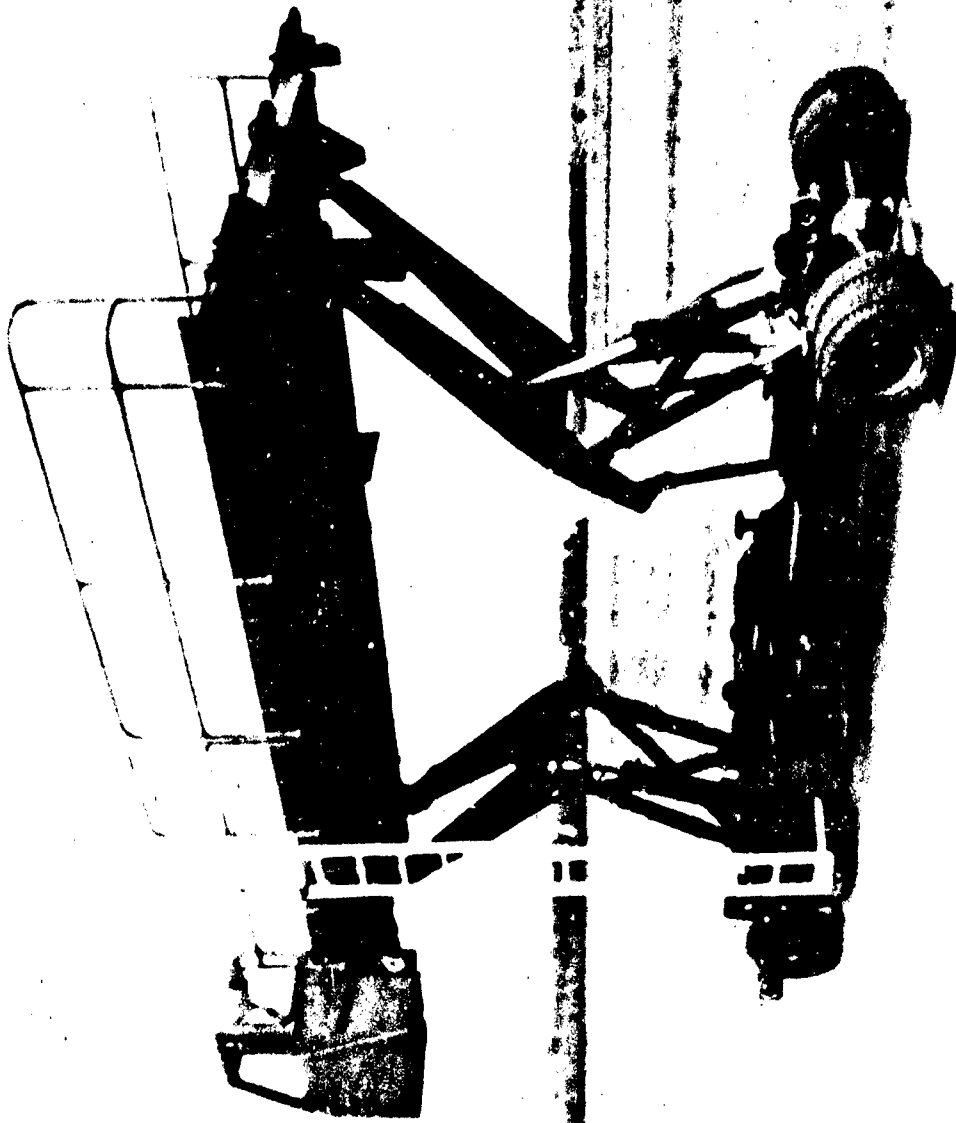
Title: 40K 463L Aircraft Loader

Point of Contact: Winter, J., LTC, HQ USAF/LETN,  
Washington DC 20330-5130, Autovon 227-3371/Commercial  
(202) 697-3371

Item Description: This aircraft loader has the capacity to transport 40,000 lb palletized loads to and from cargo aircraft. It has a platform length of 41-1/2-ft, a width of 10-ft, and a lifting range of 3-1/3-ft to 13-ft at 10 FPM. The unit will accommodate five 463L pallets. The loaders are air transportable and are available at all major aerial ports. The 40K loader can also accommodate an ISO container loaded on married 463L pallets or other adapter systems. The unit cost is \$226,444.

Status: The Air Force has 287 40K loaders on hand. In FY89 the 40K loader will be replaced by the Large Capacity Loader. This air transportable aircraft loader will also be a member of the 463L Material Handling System.

Program Plan: The inventory objective for the Large Capacity Loader is 320.



V-2

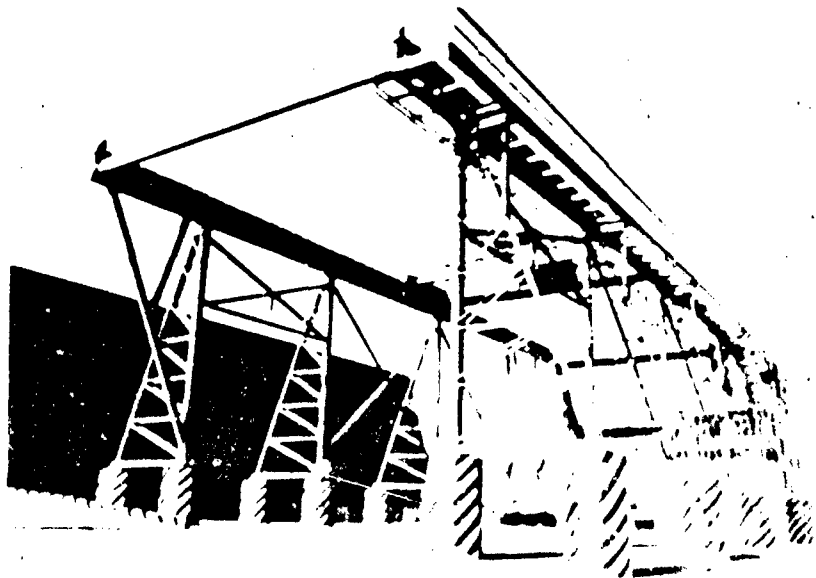
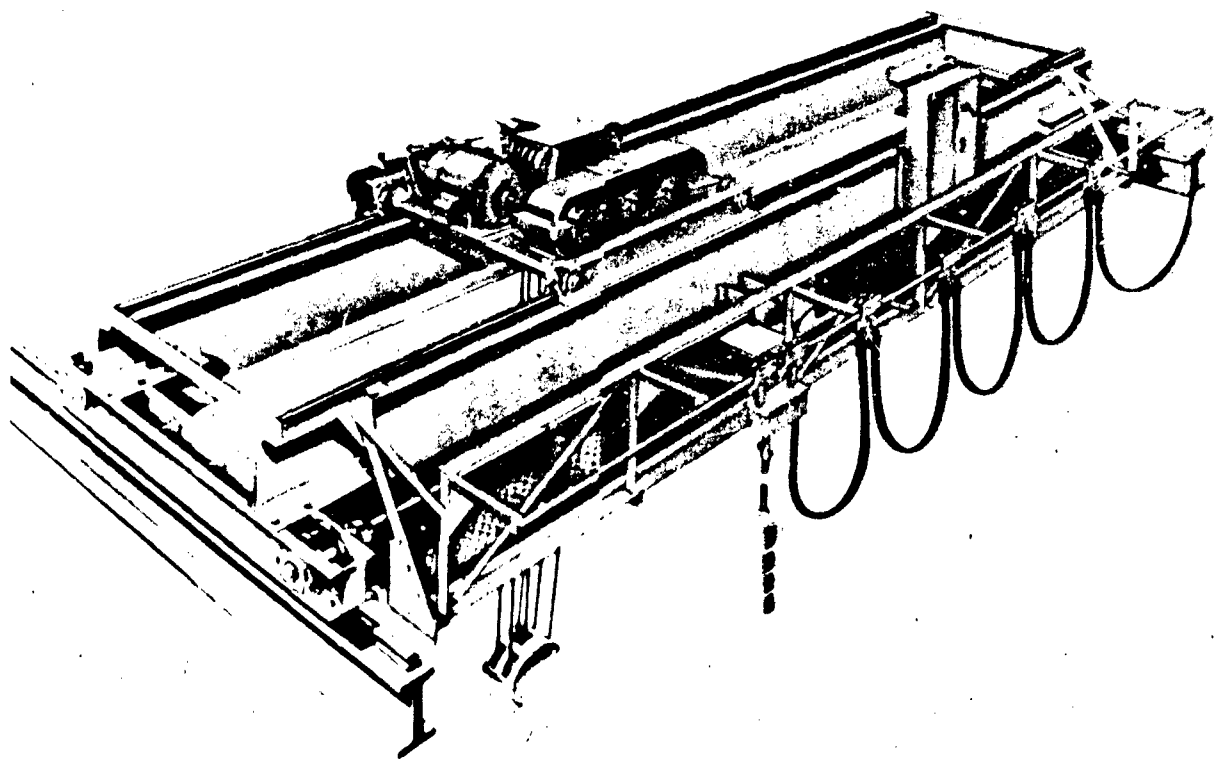
Title: 25K 463L Aircraft Loader

Point of Contact: Winter, J., LTC, HQ USAF/LETN,  
Washington, DC 20330-5130, Autovon 227-3371  
Commercial (202)697-3371

Item Description: This diesel powered aircraft loader has the capacity to transport 25,000 lb palletized loads to and from cargo aircraft. It has a platform length of 24-ft, a width of 10-ft, and can accommodate three 463L pallets. The 25K loader is air transportable by C-130 and available at major aerial ports. The 25K loader can accommodate ISO containers with gross weight, including 463L adapter systems, of 25,000 lbs. The unit cost is \$142,210.

Status: The Air Force has 520 units on hand.

Program Plan: The inventory objective is 629 units. A contract was awarded in Jul 85 for an additional 151 assets.



V-3



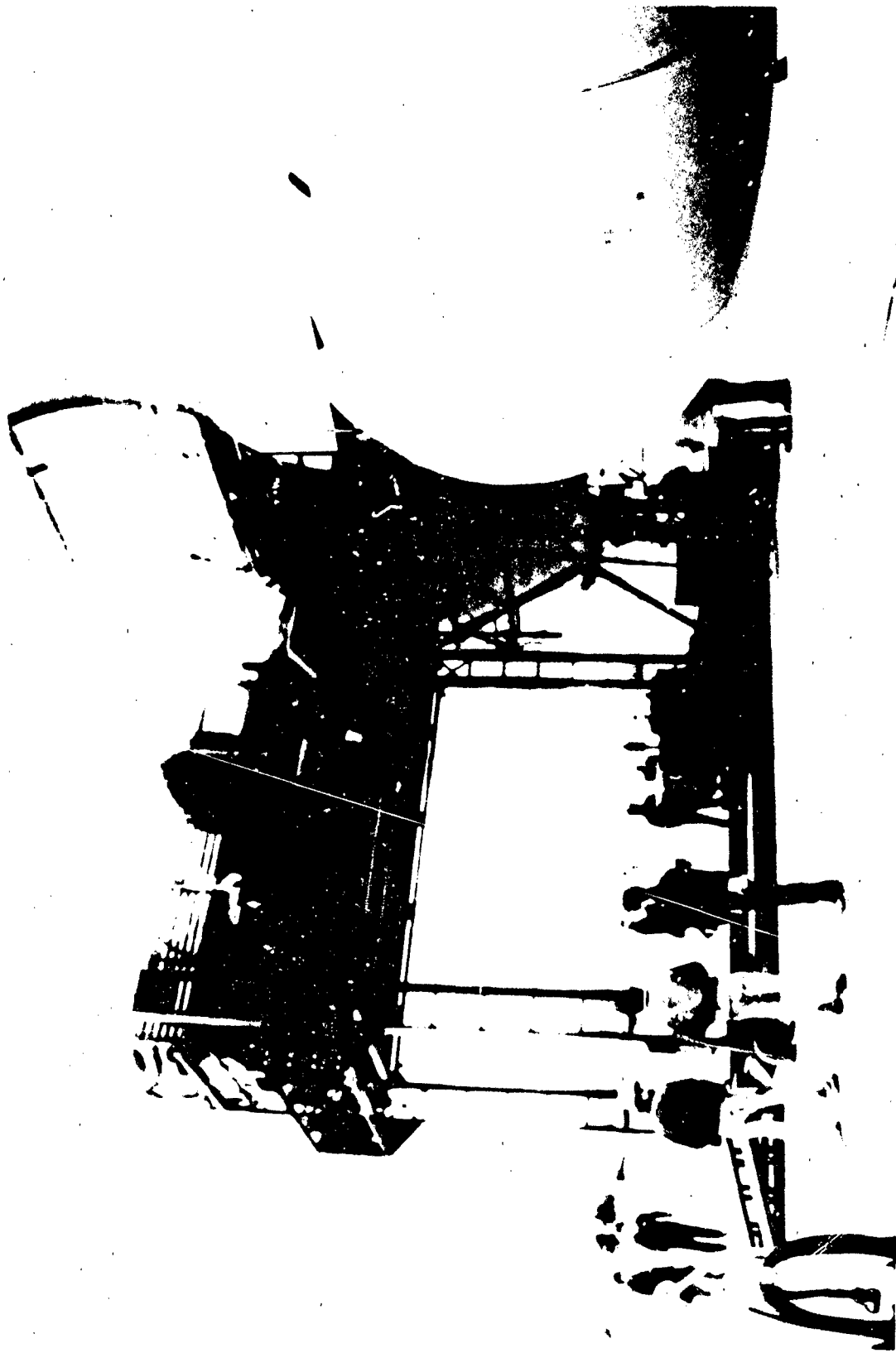
Title: 35-Ton Bridge Crane

Point of Contact: Mays, M., LTC, HQ Military Airlift Command/TRXF,  
Scott AFB, IL 62225, Autovon 638-5977/Commercial  
(618)256-5977

Item Description: This item provides major aerial ports the capability to build up pallets for air drop missions and transfer fully loaded ISO shelters, air/land or surface containers from trucks/trailers to adapter systems and aircraft loaders. The bridge crane is not mobile and provides the capability to support limited container movements.

Status: Bridge cranes are installed at the following aerial ports: Dover, Travis, Mildenhall, Ramstein, Rhein-Main, Clark, and Kadena.

Program Plan: None.



V-4



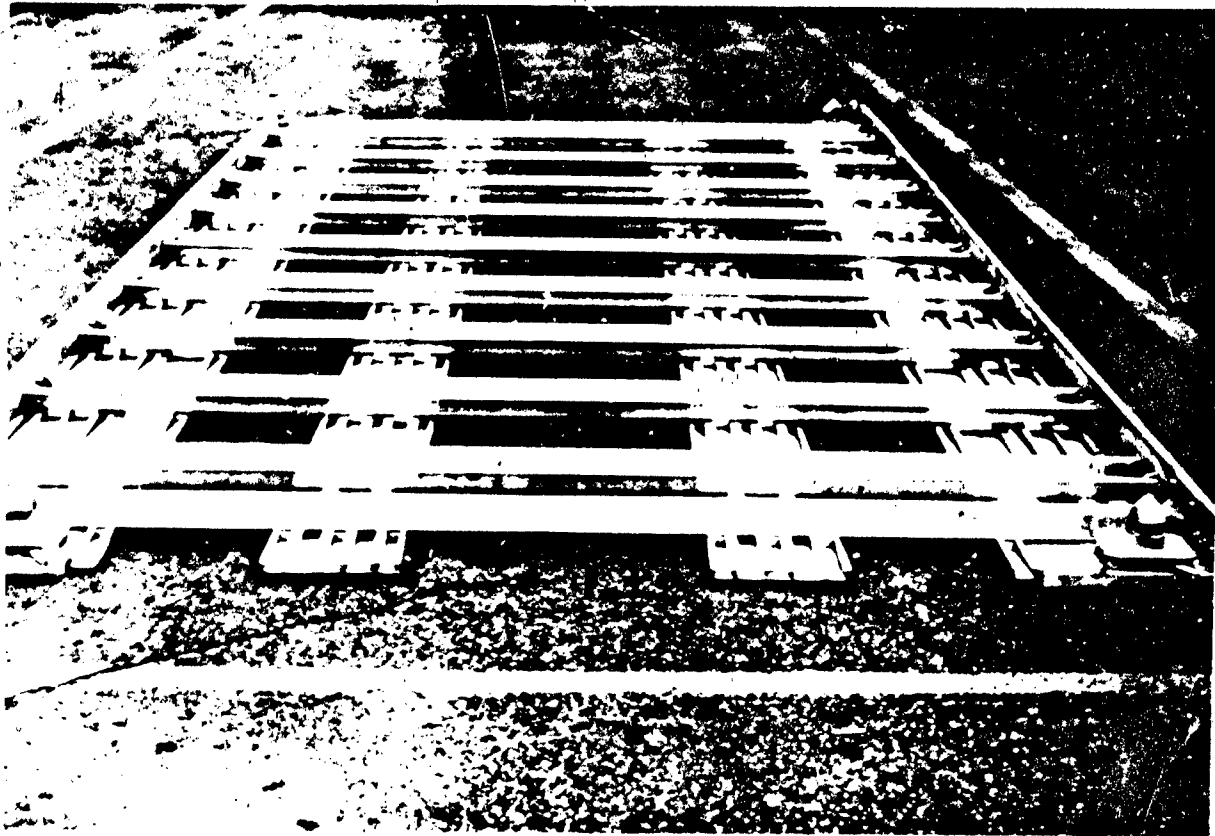
Title: Elevator Loaders

Point of Contact: Winter, J., LTC, HQ USAF/LETN  
Washington DC 20330-5130, Autovon 227-3371/Commercial  
(202)697-3371

Item Description: This item is air transportable on a C-130 aircraft. There are three models of elevator loaders currently in the Air Force inventory. The Cochran Model 316A has a two pallet, 25,000-lb capability. The Cochran Model 316E and the Wilson have a three pallet, or one air/land container, 40,000-lb capability. The elevator loader can also be used to load/unload rolling stock up to its capacity. It is compatible with wide-body aircraft upper deck nose doors and side doors, with maximum transfer height of 18-ft 6-in. It is used at major aerial ports for efficient mechanized loading/offloading of cargo between wide-body aircraft and other materials handling equipment.

Status: The Air Force has 101 elevator loaders on hand.

Program Plan: The elevator loader will be replaced by the large capacity loader currently under design study. The large capacity loader should begin production delivery in Aug 89.



V-5

Title: 463L/ISO Adapter System

Point of Contact: Winter, J., LTC HQ USAF/LETN,  
Washington, DC 20330-5130, Autovon 227-3371/Commercial  
(202)697-3371

Item Description: The adapter tactical shelters system provides a means for handling ISO air/surface containers, and, to a limited extent, surface containers in the 463L aircraft material handling system. The system adapts the ISO 96-in width to the 463L 108-in width and provides an interface with the aircraft roller system.

Status: The Air Force has tested and evaluated several adapter systems to date:

a. Two prototype open grid adapter pallets were procured and successfully tested under the MODCOM Program in 1974. A buy program for this pallet was deferred in favor of a flat platform.

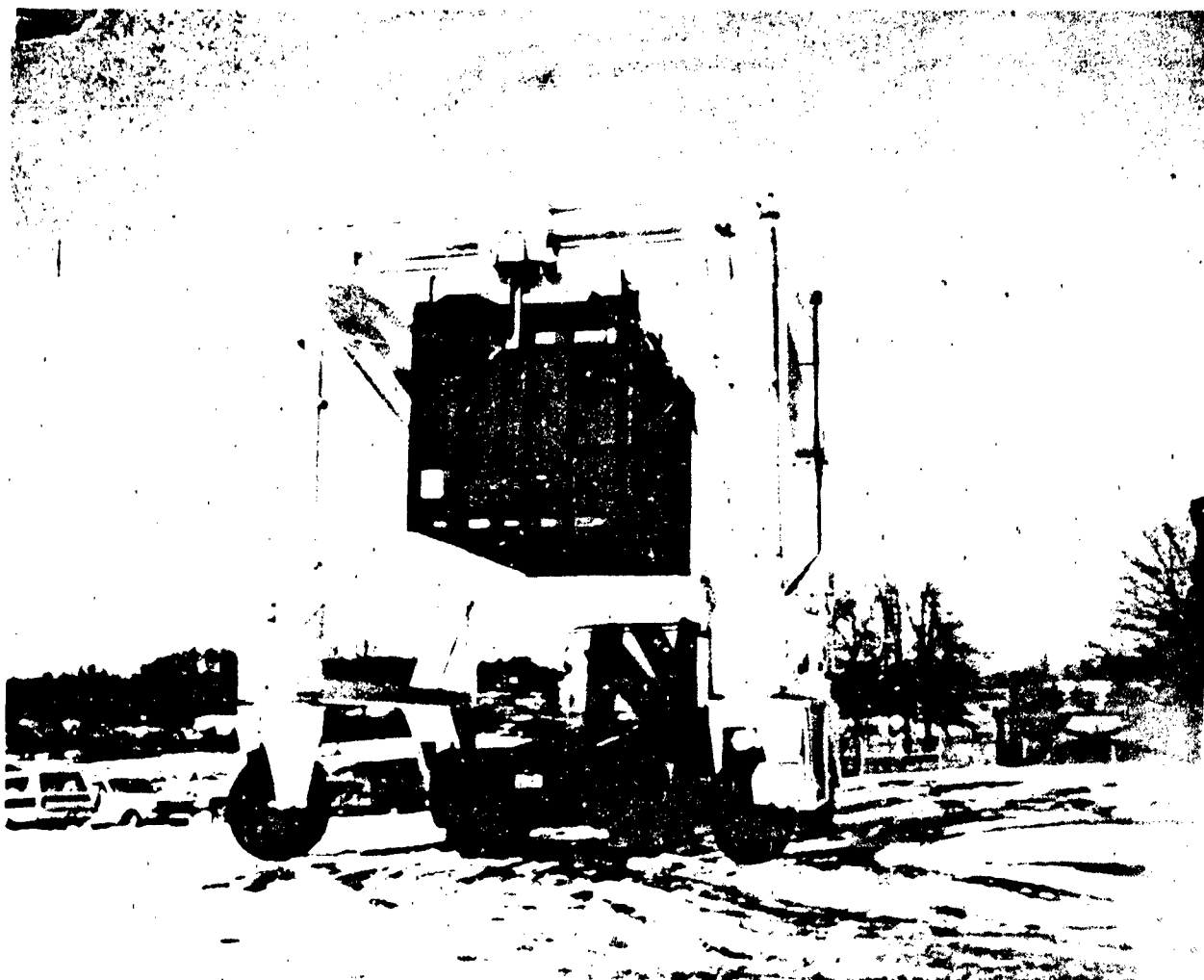
b. Brooks and Perkins, Inc. designed a system using A/E 29H1 airdrop platforms (single managed by US Army) using Brooks and Perkins side rails and end plates with installed ISO corner fittings. AFSC/ESD evaluated this alternative and determined through stress tests conducted by US Army Natick Labs, Natick, MA, that airdrop platforms do not provide adequate features to accommodate movement of containers. Therefore, this initiative was terminated.

c. The Military Airlift Command has submitted a Statement of Operational Need (SON) for an adapter system which was approved by the Air Force in Feb 83.

d. Two companies developed a solid platform adapter pallet capable of handling air/land, SEAVAN, and tactical shelters. These designs are under review.

e. The Air Force Electronic Systems Division, Hanscom Field, MA, has designed a system using two detachable rails to satisfy the requirement. Design and analysis is complete.

Program Plan: The current plan is to procure extrusion dies and two systems for testing during FY85. The total Air Force requirement for adapter systems will be 400 for peacetime and 2,500 for war reserve. Funding for test and evaluation is available in FY85 and programmed in FY86. Production money is programmed for FY86-89.



50,000 LB MOBILE STRADDLE CARRIER

V-6

Title: 50K Mobile Straddle Carrier

Point of Contact: Ganger, M., LTC, HQ Military Airlift Command/TRXF,  
Scott AFB, IL 62225, Autovon 638-5977/Commercial  
(618)256-5977.

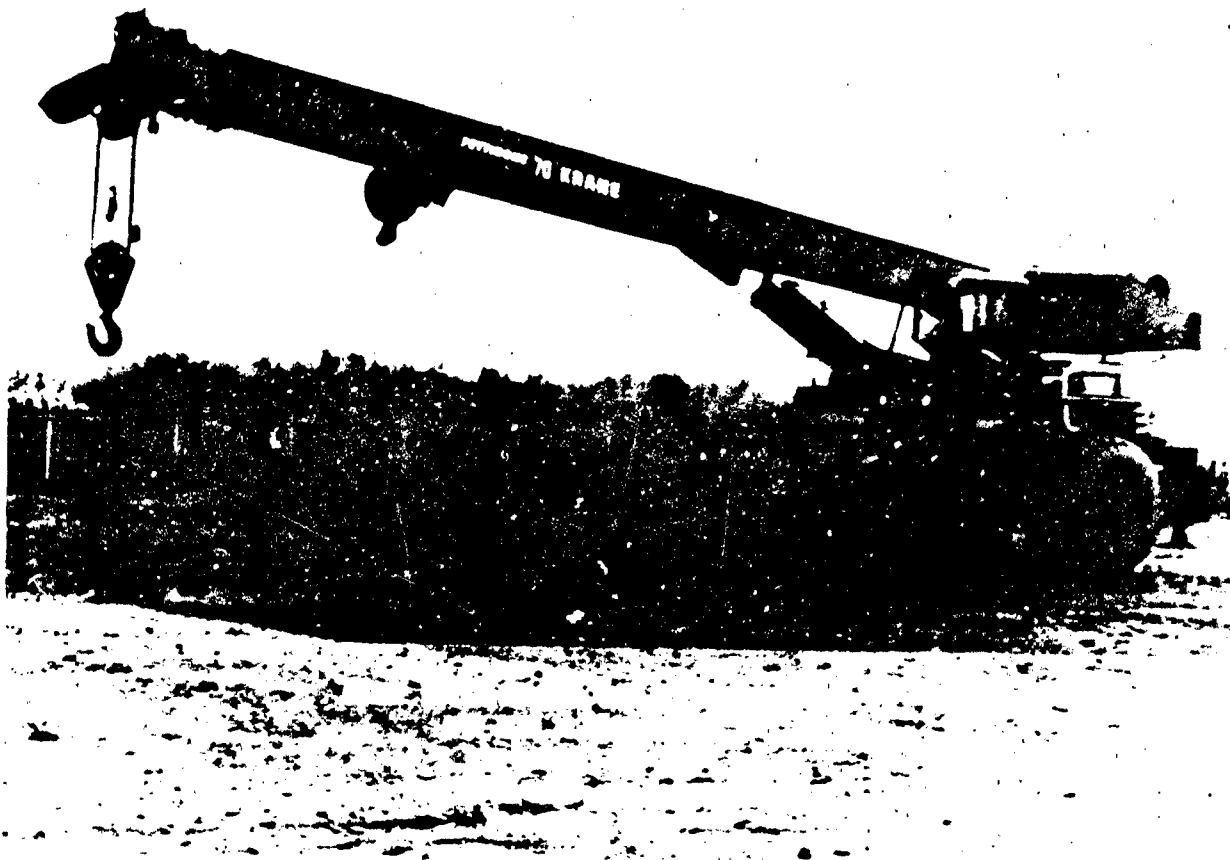
Item Description: This item is being considered primarily for use by major aerial ports to handle the movement of ISO carrier/shelters by air. The mobile straddle crane should have the capability of lifting ISO tactical shelters, surface containers, and air/surface containers weighing up to 50,000 lbs. The unit should also be able to operate within the confines of an aerial port and provide the capability to transfer shelters and containers from/to trailers, aerial port high-line docks, and 25K or 40K loaders. Two types will be required. One type is readily air transportable in a C-130 and another type for strategic aerial ports.

Status: The Air Force does not have mobile straddle cranes currently assigned. One version of the mobile straddle crane has successfully completed a test to assess its military utility as a container handling system, to determine its deployability by air, and to assess its suitability for use in military airlift operations. The test was conducted at Pope AFB, NC by the USAF Airlift Center.

It was also tested in Korea during a test shipment of Air Force containerized munitions. The mobile straddle crane was tested at the discharge pier and during the train offloading at the ammunition storage site. The test successfully demonstrated the deployability of the crane and identified constraints while working in an area not specifically designed for container operations.

The Military Airlift Command Statement of Operational Need (SON) for a mobile straddle crane was approved by the Air Force.

Program Plan: The total Air Force requirement will be for 34 strategic loaders and 16 air transportable loaders. Funding is programmed for FY85-86 to satisfy this requirement. The Air Force FY85 buy will be for 9 strategic loaders and 4 air transportable loaders.



V-7

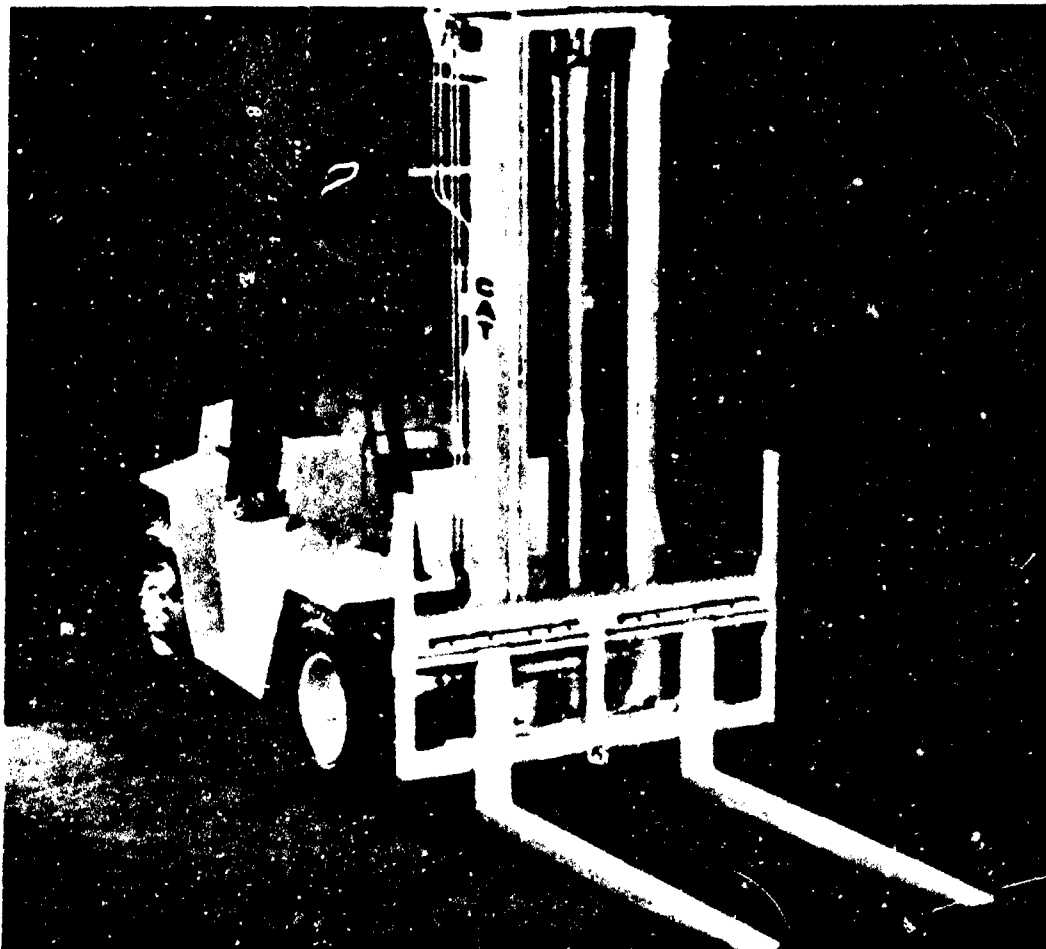
Title: 35T Cranes With Spreader Bars

Point of Contact: Noveroske, T., LTC, HQ PACAF/LGTT, Hickam AFB, HI  
96853-5001, Autcvon 449-9986/Commercial (808)449-6380.

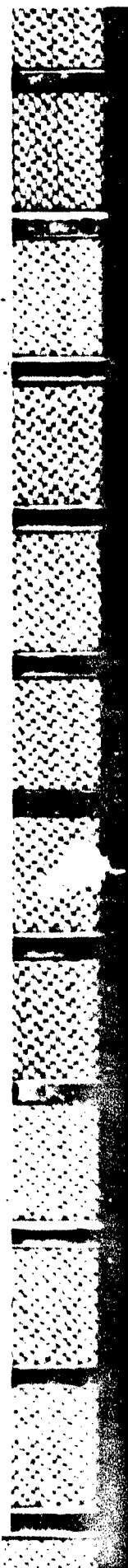
Item Description: This unit is being considered to support CADS container operations in the Pacific area. The multiple mission capability inherent in the crane is appealing. For instance, when containers are not being moved, the crane can be put to other uses.

Status: PACAF has converted its seven 50T "Big Bertha" crash recovery authorizations to 35T cranes. Spreader bars will be ordered against each 35T crane authorization. These 35T cranes w/spreader bars will provide the command the capability to handle limited CADS shipments which require downloading from the chassis or rail cars. However, as demonstrated in CADS I and CADS II tests in 1981 and 1982, the PACAF plan is to offload munitions directly from the container/MILVAN mounted on the chassis at the storage sites, rather than downloading the containers. We have 48 in the inventory.

Program Plan: No future procurements are planned.



V-8





Title: 22/33K Capacity Forklift

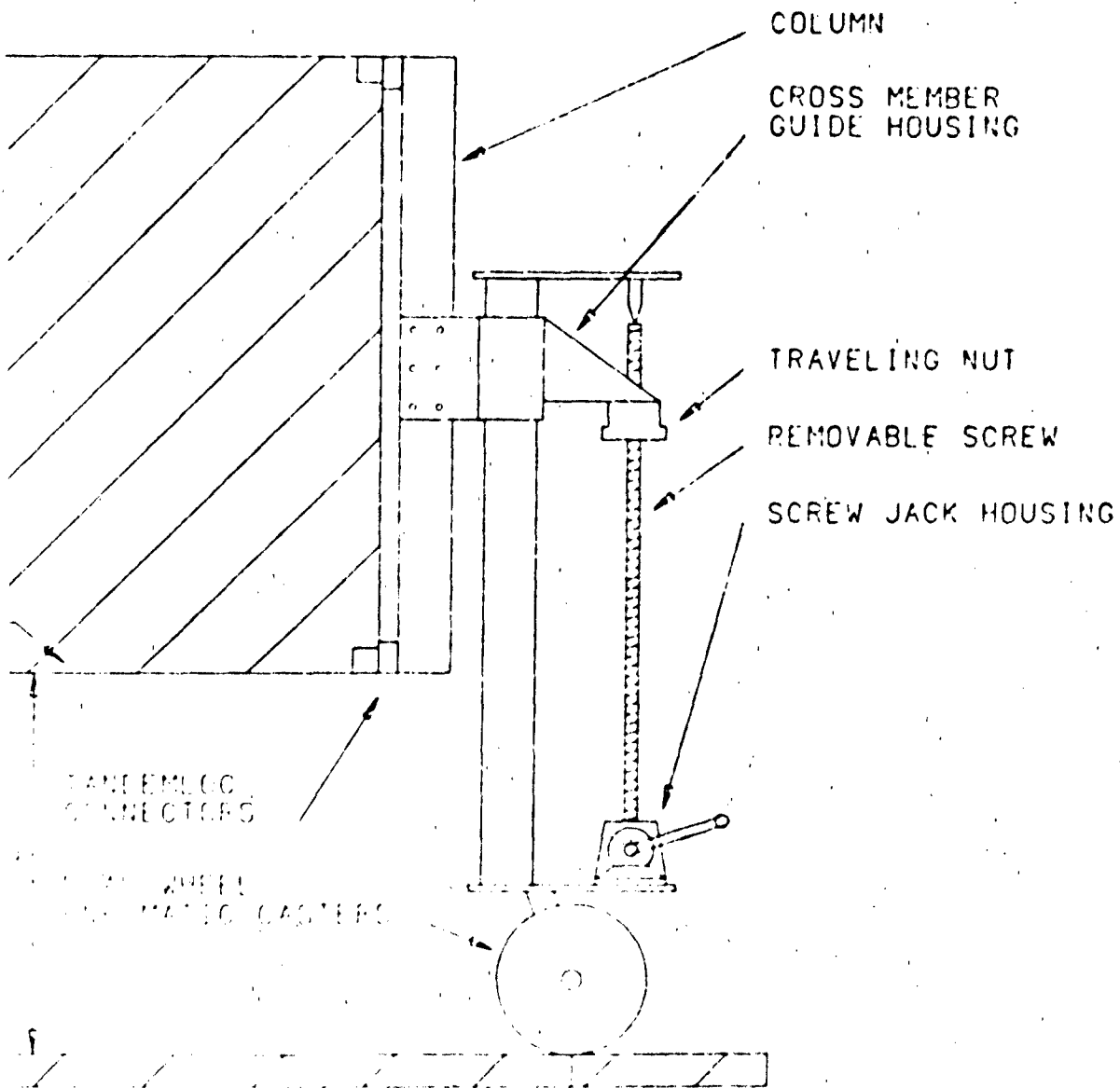
Point of Contact: Izbicki, D., Mr., HQ TAC/LGTT, Langley AFB, VA  
23665-5001, Autovon 432-3807/Commercial (804)764-3807

Item Description: This 33,000 lb rated forklift with a 22,000 lb minimum capacity at a 48-inch load center will be used to handle tactical shelters at TAC and PACAF bases. Some Air Force shelters have a maximum gross weight of 20,000 lbs. The forklift will be a commercially available vehicle. Rough terrain capability is not required, side shift carriage is mandatory, air transportability on C-141 aircraft is desired.

Status: Both TAC and PACAF will replace, through attrition, existing 15K forklifts with the 22/33K forklift.

Program Plan: There are 20 assets planned for FY87 procurement with an additional 10 for FY88 and 89 for a total of 40.

WEIGHT: EACH COMPONENT MUST BE  
UNDER 100 LBS.



V-9

**Title:** "SUPER JACK" Mobile Loading System

**Point of Contact:** Ege, R., MAJ, Shelter Management Office, ESD/OCMS,  
Hanscom AFB, MA 01731, Autovon 478-4115/  
Commercial (617)861-4115

**Item Description:** The "SUPER JACK" Mobile Loading System will load an ISO shelter onto military aircraft and flatbed trailers and provide limited mobility (less than 10-mph on paved surfaces). Aircraft loading can be done either roll-on/roll-off or level loading. The weight limit is planned for 25,000 lbs.

**Status:** The acquisition package is being prepared for an expected contract award date of Aug 86.

**Program Plan:** Full scale development and production contract is to be awarded approximately Aug 86 with an anticipated delivery date of Apr 87. Initial buy will be for 142 units.

**V-9**