

09-f-0134
#5a-07

II.2 LANCE MISSILE ROUND (FIG II-1):

- a. The missile round is 242 inches long, 22 inches in diameter, and weighs 3450 pounds when mated to the heavy WHS, and approximately 2850 pounds when mated to the Light WHS.
- b. The missile has two major sections: Warhead Section (WHS) and Missile Main Assemblage (MMA). The latter includes the Guidance Set, which is located immediately behind the WHS mating area. Two sets of Control Surfaces (four fins total are required for the complete round).
- c. LANCE is designed to deliver a 1000-pound non-nuclear WHS to 91 KM.

II.7 M752 SELF-PROPELLED LAUNCHER (FIG II-6):

The LANCE Self-Propelled Launcher (SPL) is a fulltracked, diesel-powered launcher capable of transporting and firing the LANCE Missile. Seats are provided for six crewmen. Provisions are also made for mounting the ancillary equipment required for firing the missile. This includes the Monitor Programmer, Firing Device, GSE Battery, and Aiming Equipment. The M752 Launcher utilizes the LANCE M667 Basic Carrier, which is a member of the M113A1 Carrier family. The M752 can be air transported by C130 aircraft; it swims inland waterways, and has excellent cross-country mobility.



LANCE MISSILE ROUND

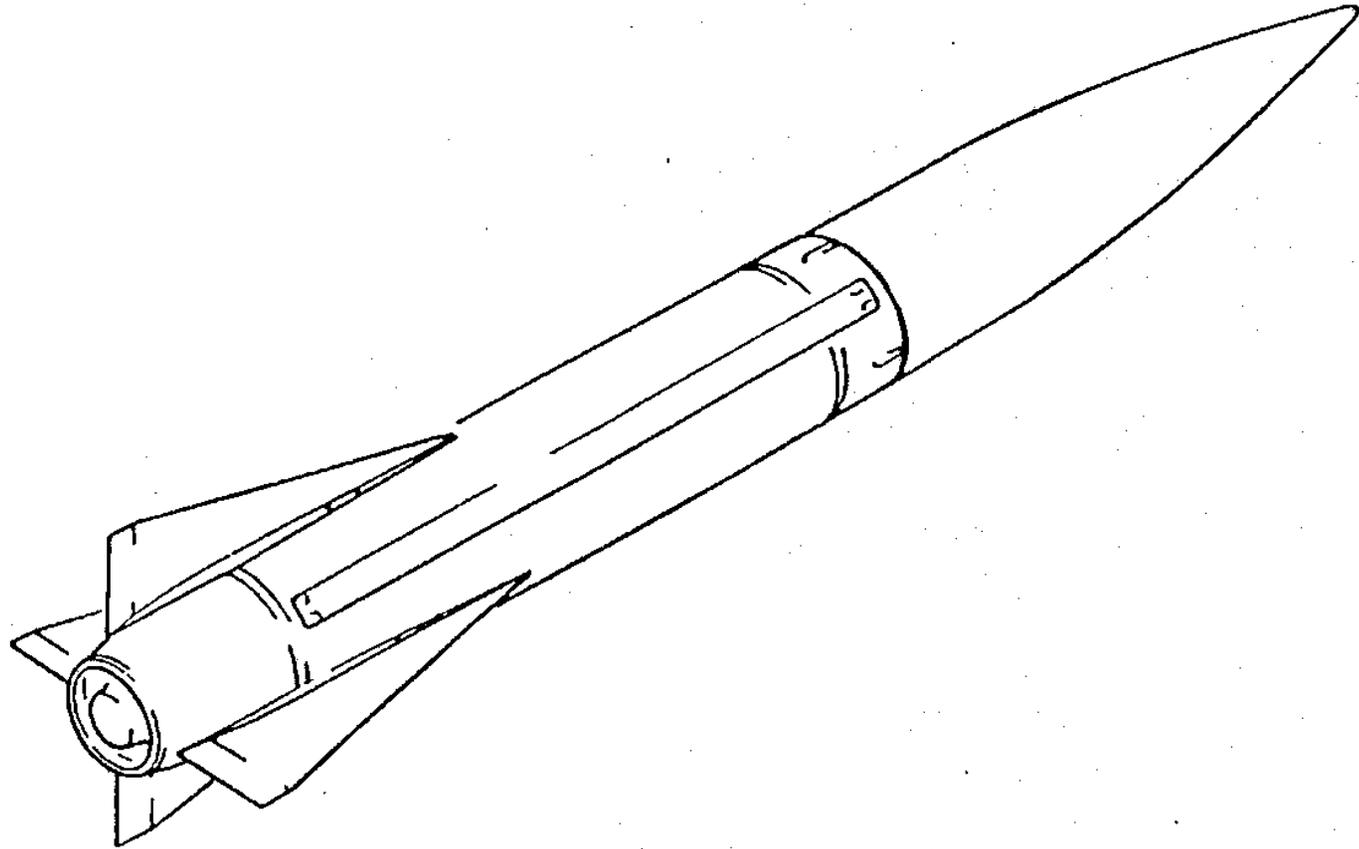
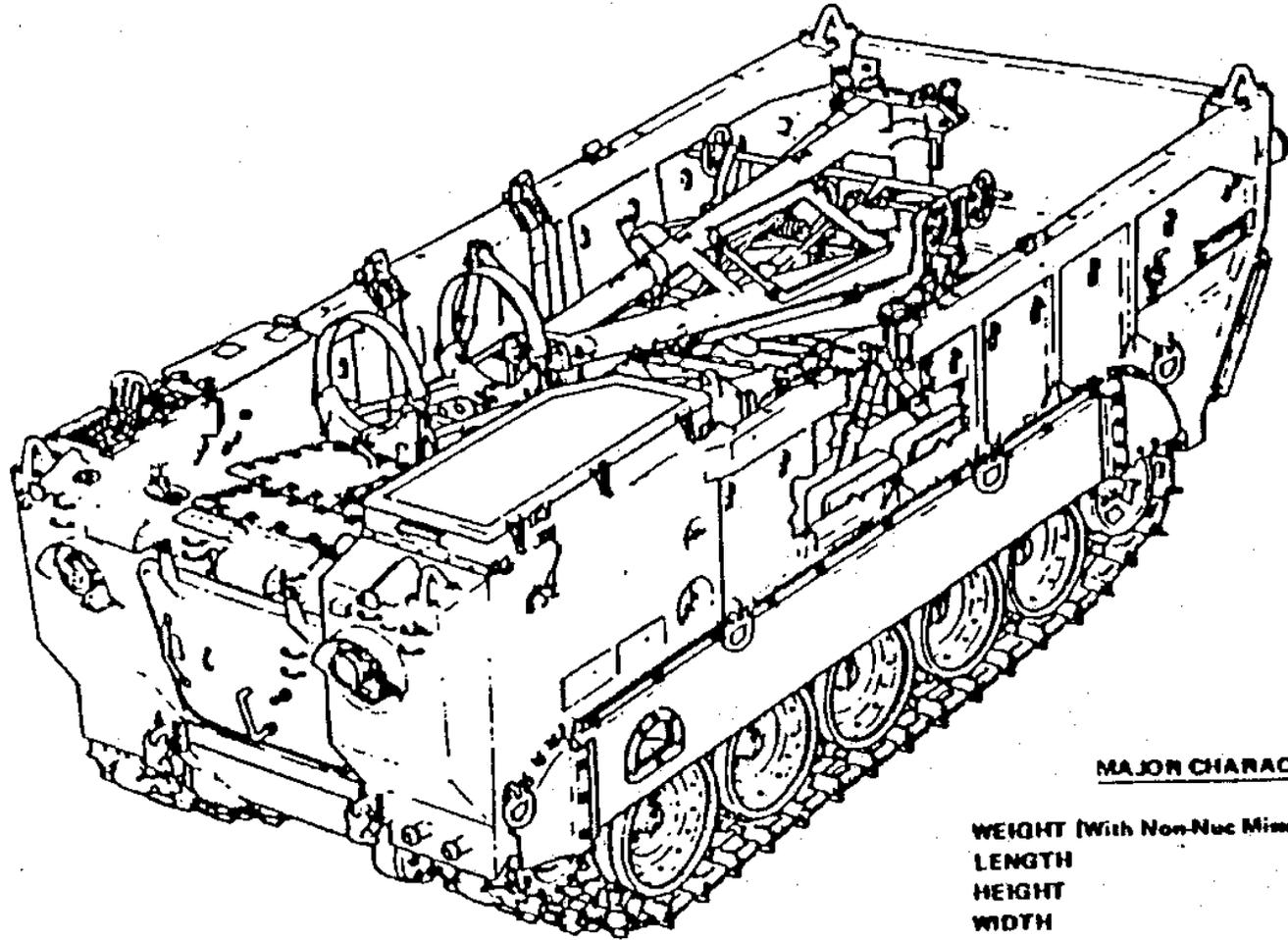


Figure 11-1



M752 LAUNCHER



MAJOR CHARACTERISTICS

WEIGHT (With Non-Nuc Missile)	22,700
LENGTH	258 in
HEIGHT	107 in Cab
WIDTH	106 in
SPEED (Max)	40 MPH
SWIMMING	3 MPH

Figure 11-6

M110A2 SELF-PROPELLED 8-INCH HOWITZER

MISSION:

The M110A2 is an Improved version of the Army's heaviest cannon artillery weapon. It is employed in Division Artillery general support battalions and separate Corps and Army battalions. Some of its missions, aside from general support of friendly units, include counterartillery and air defense suppression. It has both a conventional and nuclear capability.

CHARACTERISTICS:

Range:	29 km with rocket-assisted projectile 23 km unassisted
Weight:	63,500 lbs
Length:	35.3 ft
Width:	10.4 ft
Main Armament:	204mm Howitzer
Secondary Armament:	M16A2
Crew:	12
Road Speed:	35 mph
Ammunition:	High-Explosive, Nuclear, Binary Chemical, Improved Conventional Munitions, and High-Explosive, Rocket-Assisted

SOVIET COUNTERPART:

The Soviet 203mm SP Gun is the closest counterpart to the M110A2, and is a considered roughly equal in most performance characteristics.

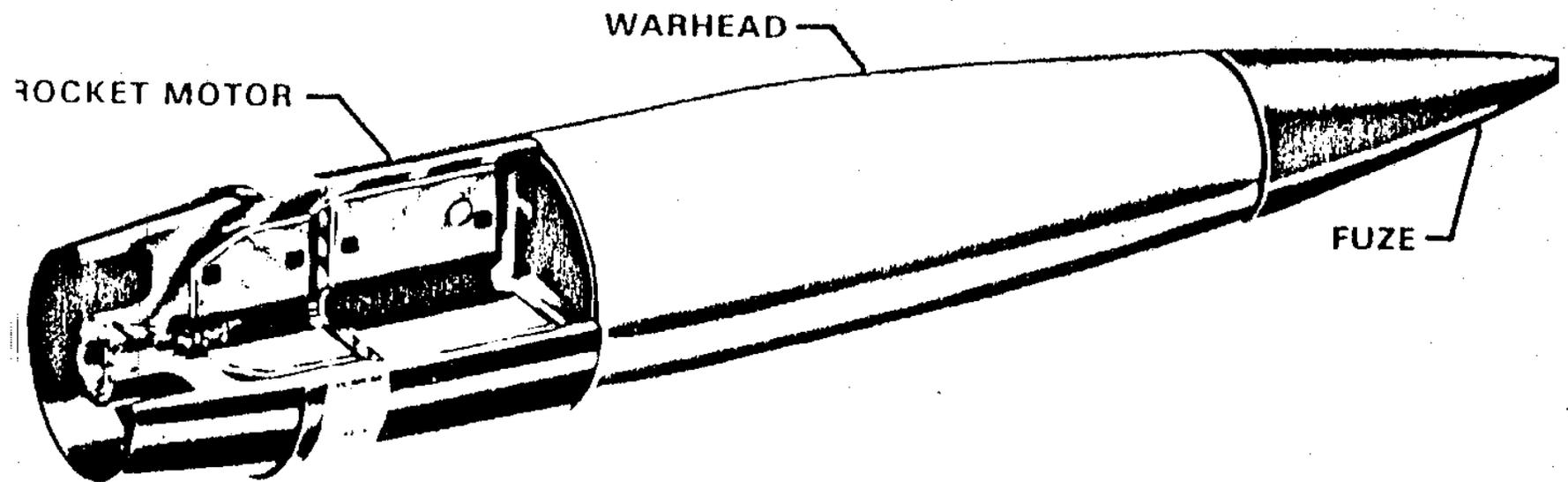
PROGRAM STATUS:

Conversion of the M110A1 to the A2 configuration by the field application of muzzle brakes was completed in January 1982. Reliability, range, safety, and fire control improvements have been incorporated into the weapon. Development of a crew ballistic shelter to protect the crew from small arms fire and artillery fragment is in progress.

CONTRACTOR:

Bowen-McLaughlin-York (York, PA)

PROJECTILE, 155MM; NUCLEAR, XM785



Improved Nuclear Projectiles

MISSION:

The mission of the Non-Strategic Nuclear Forces is to deter both nuclear and conventional attack by enemy forces, and, should deterrence fail, to support the defense of the theater. The improved 155mm nuclear projectile will replace the current 155mm Artillery Fired Atomic Projectile which was developed in the 1950's. It will be more effective than the current 155mm nuclear projectile because of its improved reliability, increased range, and greater yield. Additionally, it contains security devices and command-disable features that prevent unauthorized use. It is compatible with the FH 70 NATO Howitzer and will be ballistically similar to the M549, high-explosive, Rocket Assisted Projectile. Fielding of an improved 155mm nuclear projectile will improve the effectiveness and survivability of tactical nuclear forces by providing a modern nuclear capability to US and NATO 155 cannon artillery units.

SOVIET COUNTERPART:

The Soviets have a wide variety of tactical nuclear weapons. The number of nuclear capable and potentially nuclear-capable artillery cannons has increased by well over a factor of ten in the last decade.

PROGRAM STATUS:

The improved 155mm nuclear projectile is in Full Scale Engineering Development. It is a joint development between the Army and the Department of Energy.

CONTRACTORS:

Motorola Corp. (Scottsdale, AZ)
Sandia National Laboratories (Livermore, CA)
Sandia National Laboratories (Albuquerque, NM)
Chamberlain Manufacturing Corp. (Waterloo, IA)
Lawrence Livermore National Laboratory (Livermore, CA)
Ferrulmatic, Inc. (Patterson, NJ)

M198 155mm Medium Towed Howitzer

MISSION:

The M198 is being employed in the active Army and reserve components in the direct support field artillery battalions of the infantry divisions and separate brigades and in corps battalions supporting the airborne and air assault divisions. It is also being employed by the US Marines in their divisions. It replaces the World War II vintage M114A2 155mm towed howitzer. The M198 provides major increases in range and reliability over its predecessor howitzers. It may be parachute delivered or carried by a variety of cargo aircraft or medium helicopters.

CHARACTERISTICS:

Range:	30.0 km with rocket-assisted projectiles, 18.1 km unassisted
Weight:	15,750 lbs
Length:	40.3 ft (Towed Configuration)
Height:	9.5 ft (Towed Configuration)
Width:	8.3 ft
Crew:	11
Ammunition:	Standard 155mm ammunition, nuclear ammunition, and the new family of 155mm projectiles (Copperhead, DPICM, FA scatterable mines (FASCAM), and rocket-assisted projectiles (RAP))

SOVIET COUNTERPART:

The Soviet towed D20, 152mm howitzer is the rough equivalent of the M198 in most performance characteristics. It is considered an excellent and reliable weapon.

PROGRAM STATUS:

The M198 had its last funded procurement in FY82. There is no Army procurement in FY87 and FY88; however, procurement is planned in FY89 through FY92, to complete reserve component fielding.

CONTRACTORS:

Fire Control: Numax Electronics (Hauppauge, NY)
OPTO Mechanik (Melbourne, FL)
ALHF Industries (Corona, NY)
Ruoff & Sons, Inc. (Rummede, NJ)
Action Mfg. Co. (Philadelphia, PA)
Action Mfg. Co. (Waconia, MN)
Rock Island Arsenal, IL
Watervliet Arsenal, NY

M109A6 Self-Propelled Howitzer, Paladin (Howitzer Improvement Program)

MISSION:

The M109A6, officially named Paladin, is an improved version of the M109-series 155mm self-propelled howitzer that was first fielded in the early 1960's. Like the earlier M109 models, the Paladin will provide the primary indirect fire support to the maneuver brigades of the armored and mechanized Infantry divisions. The Paladin is air transportable in a C5 and is capable of firing both conventional and nuclear munitions. The Army began development of the Paladin in October 1985 as the Howitzer Improvement Program (HIP). The M109A6 modifications include: an on-board ballistic computer and navigation system, secure communications, a new cannon and mount, automotive improvements, improved crew Nuclear/Biological/Chemical (NBC) protection, driver's night vision capability, and built-in test equipment. The Paladin provides the Army a self-propelled howitzer with significantly improved responsiveness, survivability, lethality, and reliability.

CHARACTERISTICS:

	M109A2/A3	M109A6
Range:	23.5 w/Rocket Assisted Projectile (RAP) 18.1 km unassisted	30 km w/RAP 23.6 km unassisted
Weight:	56,000 lbs (Combat Loaded)	64,000 lbs (Combat Loaded)
Length:	29.9 ft	30.5 ft
Height:	10.8 ft	11.5 ft
Width:	10.3 ft	Same
Main Armament:	M185 155mm Cannon	M284 155mm Cannon
Secondary Armament:	Caliber .50 Machine Gun	Same
Crew:	6 (+3 in Accompanying Ammunition Support Vehicle)	4 (+3 in Accompanying Ammunition Support Vehicle)
Cruising Range:	220 miles (345 km)	Same
Ammunition:	All 155 mm ammunition except the M203 propelling charge	All 155mm ammunition

SOVIET COUNTERPART:

The Soviet 2S3 152mm self-propelled howitzer is considered comparable to the M109A2/A3 self-propelled howitzer in most performance characteristics.

PROGRAM STATUS:

Six M109A6 prototypes were built in FY88. Low rate production begins in FY91 to achieve a First Unit Equipped date in FY93.

CONTRACTOR:

BMV, a division of HARSCO Corporation (York, PA)