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STEADY NOISE

| Photo | Model | Name, Condition | Location | Speed km/hr or (mph) | Sound Level dB(A) |
|---|--|---|----------------|----------------------------|-------------------------|
|  | M966, also: M996 M997 M998 M1037 and other non-heavy | High mobility multi-wheeled vehicle (HMMWV), at 2/3 payload | Crew positions | 0(idle) | 78 |
| | | | | 48(30) | 84 |
| | | | | 88(55) | 94 |
|  | M996 M997 | HMMWV mini and maxi ambulance, at 2/3 payload | Patient areas | up to 88 (55) | less than 85 |
|  | M1097 M1097A2 M1113 M1114 | HMMWV heavy variants, at 2/3 payload | Crew positions | up to 50 (31) | less than 85 |
| | | | | 64(40) | 88 |
| | | | | 80(50) | 92 |
| | | | | 96(60) | 98 |
|  | M1097 | HMMWV heavy variant, at full payload | Crew positions | up to 40 (25) | less than 85 |
| | | | | 96(60) | 100 |
|  | M1008 M1009 M1010 M1028 | Commercial utility cargo vehicle (CUCV) | In cab | below 88 (55) | less than 85 |
| | | | | 88(55) | 85 to 91 |
|  | M1010 | Ambulance | Patient Areas | all speeds | below 85 |
|  | M1080 chassis, includes M1078 M1079 M1081 | Light medium tactical vehicles (LMTV 2 1/2 ton trucks), 2/3 payload | In cab | 0 idle | 80 |
| | | | | 72(45) | 84 |
| | | | | 75(46) | 85 |
| | | | | 88(55) | 89 |
|  | M1092 and M1096 chassis, except M1089 wrecker | Medium tactical vehicles (MTV 5 ton trucks), 2/3 payload | In cab | 0 idle | 80 |
| | | | | 72(45) | 84 |
| | | | | 75(46) | 85 |
| | | | | 88(55) | 89 |

| | | | | | |
|---|--|---|---|---|---|
|  | M1089 | 5 ton wrecker, towing, 2/3 payload | In cab | up to 48 (30) 56(35) | less than 85 87 |
|  | M984E1 | Heavy Expanded Mobility Tactical Truck (HEMTT) | In cab | 64(40) and below 72(45) | below 85 93.1 |
|  | M44A3 series includes M35A3 M35A3C M36A3 | 2 1/2-ton truck, extended life program (ESP), 2/3 payload | In cab | Idle 16(10) 32(20) 80(50) | 72-81 85 87 97 |
|  | M1070 | Heavy Equipment Transporter (HET), loaded | In cab | All speeds | Below 85 |
|  | M1074 M1075 | Palletized load system, 16.5 tons | In cab, windows closed Windows open | All speeds 88(55) below 88(55) | 85 or below 87 below 85 |
|  | M113A3 family including M106A2 M1064A3 M1059A3 M58A3 M730A2 M901A3 M981A3 | Armored Personnel Carrier A3 version. M113, M113A1, M113A2, OSV(BMP2) have similar noise levels | | Idle 16(10) 32(20) 48(30) 63(40) | 85-92 106 109 114 118 |
|  | M1A2, M1, M1A1 M1 chassis similar | Abrams tank Grizzly breacher, Wolverine Heavy assault bridge (HAB) | In vehicle | Idle Tac idl 16(10) 48(30) 63(40) | 93 103 108 114 117 |
|  | M2A2 M2, M3, M2A1, M3A1, M3A2 similar | Bradley Fighting Vehicle | In vehicle | Idle 16(10) 32(20) 61(38) | 74-95 110 115 115 |
|  | M88A2 | Hercules recovery vehicle | In vehicle | various | 89 to 106 |

| | | | | | |
|---|------------------------------------|--|-------------------------|--------------------------------|--------------------|
|  | M270 | Multiple Launch Rocket System (MLRS) vehicle | In vehicle | Idle Moving, various speeds | 83-98 99 to 111 |
|  | M109A3E2 other versions similar | Paladin, 155 mm self propelled howitzer | In vehicle | Idle Moving, various speeds | 83-98 99 to 111 |
|  | MEP-802A | 5 kW Tactical Quiet Generator(TQG) | Operator panel | Rated load | 80 |
|  | MEP-803A | 10 kW TQG | Op panel | Rated load | 81 |
|  | MEP-804A | 15 kW TQG | Op panel | Rated load | 84 |
|  | MEP-805A | 30 kW TQG | Op panel | Rated load | 84 |
|  | MEP-806A | 60 kW TQG | Op panel | Rated load | 87 |
|  | CH-47D | Chinook helicopter | Cockpit | | 102.5 |
|  | UH-60A | Blackhawk helicopter | Pilot copilot | | 106 106 |
|  | YAH-64 | Apache helicopter | Pilot copilot | | 104 101.3 |
|  | OH-58D | Kiowa helicopter | Right seat Left seat | | 101.6 100.3 |

| | | | | | |
|---|-------|-----------------|---------------|--|-------|
|  | UH-1H | Huey helicopter | Pilot/copilot | | 101.9 |
| | | | Max in rear | | 102.9 |

Table A-2

IMPULSE NOISE

| Photo | Model | Name | Location | Sound Level dB(P) |
|---|-------------|--|----------|-------------------|
|  | M16A2 | 5.56mm rifle | Shooter | 157 |
|  | M9 | 9mm pistol | Shooter | 157 |
|  | M249 | 5.56mm Squad Automatic Weapon (SAW) fired from a HMMWV | Gunner | 159.5 |
|  | M60 | 7.62mm machine gun fired from a HMMWV | Gunner | 155 |
|  | M2 | 0.50 caliber machine gun fired from a HMMWV | Gunner | 153 |
|  | MK 19 Mod 3 | machine gun fired from a HMMWV | Gunner | 145 |
|  | M26 | Grenade | At 50 ft | 164.3 |
|  | M3 | MAAWS recoilless rifle | Gunner | 190 |

| | | | | |
|---|----------|---|---|-------------------------|
|  | M72A3 | Light Antitank Weapon (LAW) | Gunner | 182 |
|  | | JAVLIN | Gunner open Position Gunner enlosed position Gunner fighting position | 159.9 166.2 172.3 |
|  | M119 | 105MM towed howitzer at charge 8 | Gunner | 183 |
|  | M198 | 155mm towed howitzer firing M203 propellant | Gunner | 178 |
|  | M109A5/6 | Paladin, 155mm self propelled howitzer firing M4A2 zone 7 charge | In fighting compartment, hatches open except driver's | 166.1 |
|  | M110A2 | 8-inch self propelled howitzer firing M106 projectile with a M188A1 zone 9 propelling charge, | Gunner | 176.9 |
|  | M224 | 60mm mortar, M888 round, charge 4, QE 800 mil | 0.5 m from the muzzle, 0.9 m above ground, 105 degree azimuth | 185 |
|  | | TOW II Missile from HMMWV | Gunner | 179.4 |
|  | M29A1 | 81 mm mortar, M374A3 round with charge 4 | 1 m from the muzzle, 0.9 m above ground, 135 degree azimuth | 178.8 |

A-2. Characteristics of individual equipment noise. The following paragraphs summarize noise exposure considerations for common Army equipment:

a. *Trucks and High Mobility Multi-wheeled Vehicles (HMMWV)*. Noise levels increase with increasing speed and, for HMMWV, with increasing load. The levels are below 85 dBA at low to medium speeds and can be over 100 dBA at top speed for some models. When driven mostly at low speeds with short periods at moderate or high speed trucks and HMMWVs are not hazardous. They can be hearing hazards to unprotected soldiers if operated for long time periods at high speed.

b. *Bradley Fighting Vehicle (BFV) and derivatives*. The major noise source is the drive train, particularly the action of the track links as they round over the sprockets, idlers and wheels. For this reason, high noise levels (101 to 115 dBA) occur when the vehicle is in motion. The crew wear the combat vehicle crewman's (CVC) helmet which has integral hearing protectors. A CVC with active noise reduction (ANR) providing added noise protection is available on newer models. The passengers (infantry squad) must rely on their own hearing protectors such as earplugs. These are less effective than the CVC with ANR. For training, the exposure time in moving carriers is restricted depending on the hearing protectors worn and the speed of the vehicle. The severest restriction is on exposure of passengers wearing the less effective earplugs.

c. *M113 Armored Personnel Carrier and derivative vehicles*. Among the loudest of Army equipment. Noise sources and hearing protection are similar to the BFV. Levels are very high when moving.

d. *Abrams Tank and derivative vehicle (Wolverine and Grizzly)*.

(1) Steady noise levels range from 96 to 117 dBA when moving. The crew wear the CVC helmet which has integral hearing protectors.

(2) On the tank, impulse noise levels at exterior commander and loader positions are above or just below the limit of hearing protector effectiveness for training depending on caliber (105 or 120 mm), cartridge model, and tube elevation. The drivers hatch should be closed at all times when firing the main gun. Training with crew heads above the hatch plane is not permitted per the user manuals for certain defined conditions. These restrictions are not applicable to battle situations.

e. *Helicopters*. In flight, helicopter crews wear the helicopter crew helmets which have integral hearing protectors. Passengers must rely on their own hearing protectors such as earplugs or ones supplied by the air operations. Training restrictions on exposure time apply, as discussed for the BFV.

f. *Generators*. Diesel powered generators form the Tactical Quiet Generator (TQG) series are quiet at the operator panel and other close-in areas if the covers are in place. Older generators have been loud with levels above 100 dBA at the panel and above 85 dBA up to several meters away. High levels are generated by TQG if the covers are removed. See ([Figure 2](#)). for comparison of the noise impact from generator types.

For additional information click here

g. *Impulse noise from weapons*. All firearms produce impulse noise levels requiring hearing protection at crew positions for training. Some produce levels under certain conditions, which exceed the safe training limit for crews wearing hearing protectors.

(1) Small arms- rifles pistols, machine guns, and 40 mm grenades. Noise levels at gunner positions are low to moderate. The hazard can be serious because of the large number of rounds that can be fired by the individual shooter. Noise levels are higher in front and to the side of the muzzle than to the rear. For small arms levels at about 5 feet to the side can be higher than at the shooter position. Except very near the muzzle, all levels are within the mitigation capability of hearing protectors.

(2) Mortars. Noise levels range from low to very high because of the wide variation in charge increments and head locations. The requirement to load the cartridge through the muzzle places the head close to the muzzle, which is the source of the impulse. For the top charge on the large ground mount mortars, a safe noise level for training occurs only at 2 m from the muzzle, no higher than 0.9 m above ground. Some mortars include a funnel-shaped blast-attenuating device on the muzzle.

(3) Howitzers without fighting compartments. For the 155 mm towed and 8-inch self-propelled howitzers the levels are medium to high depending on the charge increment, but are below the training exposure limit for protected soldiers.

(4) Howitzers with fighting compartments. For the 155 mm self propelled howitzer the walls of the fighting compartment tend to attenuate the peak levels but the reverberation within the compartment aggravate the noise exposure. For some higher charges the front, top, and side hatches should be closed during training fire.

(5) Tanks. The levels above the turret hatches can be very high for some cartridges and at some tube elevations. For these, training fire with crew heads above the hatch plane is not recommended. Levels below the hatch plane, even with the hatch open, are lower.

(6) Rocket launcher vehicles. Impulse noise in the MLRS, Avenger, and FOG-M launchers are low to medium.