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(9) TECHNICAL INFORMATION
REPORT 3-1-3M2

OFFICE, CHIEF OF ORDNANCE
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(6) DEVELOPMENT OF 120-MM GUN TANK, T57 (8)

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In 1948-1950, when the development of the T43 120-mm gun tank was being planned and the project for the T43 was in its first stages, several attempts were made to incorporate automatic ammunition-handling equipment in the new tank's turret. In each instance, the space limitations imposed by the over-all design of the turret made this impossible. However, the Army Equipment Development Guide, issued in December 1950, emphasized the need for incorporating power ammunition-handling equipment and guns of the shortest recoil attainable in the design of new tanks. Although not applied to the T43, these new requirements encouraged the Ordnance Corps to expedite the development of what promised to be a solution of the ammunition-handling problem.

For some months, studies relating to the design of an oscillating turret had been conducted in connection with plans for the T69 experimental 90-mm gun tank and the project for developing the T43 120-mm gun tank. Work on this problem was now accelerated. As tentatively completed, the design for the T43 called for the upper part of the turret, the gun, and the ammunition-handling equipment to be built as a unit and this unit to be mounted on trunnions on the lower part of the turret. Both parts of the turret were to be traversed together, but only the upper part was to be capable of elevation and depression. The ammunition-handling equipment was to be suspended from or attached to the turret top. The design also called for the use of fixed rounds, to be fed into the gun from a magazine suspended directly behind it.

Because so much had been learned in the attempts to modify the T43 tank's turret for handling fixed 120-mm rounds, little time was required for formulating the military characteristics of the turret for a new 120-mm gun tank to incorporate power ammunition-handling equipment. A project for developing this type of turret was approved in March 1951, and a second project, for development of a 120-mm tank to mount such a turret, was opened in March 1952; the tank to be so developed was designated the T57 120-mm gun tank. It was to be essentially a T43E1 chassis and hull mounting a turret of the oscillating

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120-MM GUN TANK, T57

type and a new 120-mm tank gun to fire fixed ammunition. Except for the turret and gun, the principal characteristics of the T57 tank were to be generally similar to those of the T43E1.

In connection with the initiation of work on the T57 tank, a project for the development of the T179 120-mm gun, to be its main armament, was also opened. Designed to have the same ballistic characteristics as the T123E1 gun for the T43E1 tank, it is designed to take the fixed 120-mm ammunition required by the power ammunition-handling equipment of the T57's turret. Five new armor-defeating rounds are being developed for this gun, as follows:

120-mm AP shot, T284
120-mm HEAT shell, T309
120-mm HEP shell, T308
120-mm HE shell, T275
120-mm chemical shell, T276

Engineering tests of the T179 120-mm tank gun ~~are~~ were scheduled for completion by December 1954. Engineering tests of the T57 120-mm gun tank ~~are~~ were also to be completed by that time.

TENTATIVE PRINCIPAL CHARACTERISTICS

120-mm Tank Gun, T179

Caliber	120 mm
Length, over-all	no information
Length of bore	60 cal
Travel of projectile in bore	248.3 in
Rifling	no information
Weight of complete gun	6,280 lb
Chamber capacity	1,021 cu in
Density of loading	0.69
Rated maximum chamber pressure	48,000 psi
Breechblock, type	no information
Breech mechanism	no information
Firing mechanism	electric-percussion
Ammunition, type	fixed
Muzzle velocity (AP shot)	3,500 fps
Maximum effective range	2,000 yds
Perforation of homogeneous armor	
AP shot @ 1,000 yd	10.8 in
AP shot @ 2,000 yd	9.8 in
HEAT shell @ 0°	16 in
Rate of fire	to be determined

Combination Gun Mount, T169

Weight	no information
Recoil mechanism, type	hydrospring
Number of recoil cylinders	4
Recoil length	
Normal	12 in
Maximum	14 in
Equilibrator, type	no information
Elevating mechanism, type	electrical and manual
Maximum elevation	15°
Maximum depression	-8°
Traversing mechanism, type	electrical and manual
Maximum traverse, right or left	360°

Fire Control Equipment

(to be determined)

Ammunition Stowage

(to be determined)

120-mm Gun Tank, T57

Length

With gun forward	448.375 in
With gun to rear	397.5 in
Width	144 in
Height	138.625 in
Weight, over-all	117,824 lb
Ground clearance	16.125 in
Tread, from center to center of tracks	115 in
Length of ground contact	173.437 in
Ground pressure	12.4 psi
Suspension	
Type	torsion bar
Wheels	26 in
Tires	26 x 6 in
Tracks	
Type	steel and rubber
Width	28 in
Number of shoes (both tracks)	164
Armor	
Hull	
Type	cast homogeneous
Front	
Upper	equivalent to 5 in @ 60°
Lower	equivalent to 4.5 in @ 45°
Side	
Upper	equivalent to 3 in @ 0°
Lower	equivalent to 3 in @ 0°
Rear	1.5 to 1 in @ 30° to 60°
Top	1 in
Floor	0.5 to 1.5 in
Turret	
Type	cast homogeneous
Front	equivalent to 5 in @ 60°
Side	5.375 to 2.75 in @ 20° to 40°
Rear	1.5 in @ 40°
Roof	1.5 in
Gun shield	10 to 4 in @ 45°
Armament	
Main	120-mm tank gun, T179
Secondary	
Cal .30 machine gun, coaxial (2)	M37
Cal .50 machine gun, on turret	M2 HB
Communications	
Radios	as selected by Signal Corps
Interphones (5)	as selected by Signal Corps
Engine	
Type	air-cooled gasoline
Make and model	Continental AV-1790-7
Cylinders	
Number	12
Bore	5.75 in
Piston stroke	5.75 in
Piston displacement	1,791.75 cu in

Arrangement	V-type
Drive from crankshaft	direct
Induction system	natural aspiration
Ignition timing	automatic advance
Horsepower	
Gross	810 @ 2,800 rpm
Net	690 @ 2,800 rpm
Torque	
Gross	1,600 lb-ft @ 2,300 rpm
Net	1,330 lb-ft @ 2,100 rpm
Electrical system	
Number of batteries	4
Transmission	
Type	CD cross-drive
Range selector control box	
Type	mechanical
Linkage to transmission	mechanical
Torque converter	single-stage polyphase
Gear shift and steering mechanism	
Internal	hydraulic
External	mechanical
Oil system	
Capacity	72 qt
Pumps	
Type	gear
Number	5
Drive	2 input and 3 output shafts
Filter, type	air maze, double
Coolant	air
Fuel capacity	230 gal
Brakes	
Service brake, type	wet, multiple disk
Parking brake, type	lock on service brake
Crew	5
Performance	
Maximum speed on level	22 mph
Maximum grade climbing ability	60%
Maximum trench crossing ability	90 in
Height of obstacles that can be crossed	27 in
Fording depth	48 in
Turning radius	pivot
Cruising range	80 mi

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