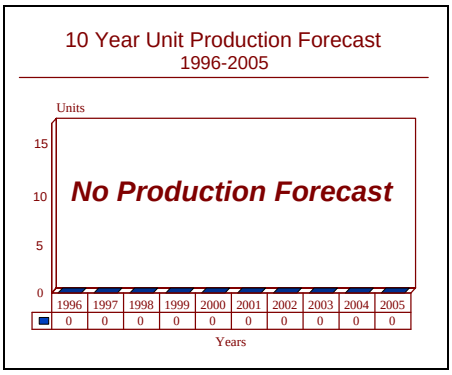
T.54/T.55 - Archived 5/98

Outlook

- The production of the T.55 ended in 1981; the production of the Type 59 terminated in 1989
- Approximately 68,000 T.54 and T.55 tanks manufactured; approximately 8,000 Type 59 tanks manufactured
- These tanks remain in service in at least 59 nations
- Despite tremendous potential and numerous programs, the modernization/retrofit potential for these tanks has never developed



Orientation

Description. Tanks

Sponsor. The development and procurement by the former Soviet Union of the T.54 and T.55 tanks was sponsored by the former Union of Soviet Socialist Republics Ministry of Defense through the Sixth Central Directorate of the Army supported by the Technical Institute for Armored Technology and the Military Transport Machine Building Research Institute.

Contractors. The design and development of the T.54 was undertaken by the Morozov design bureau in the former Soviet Union. The tank was manufactured at the Soviet State Tank Plants, specifically the Malyshev tank plant at Khar'kov (Zavod 75). The T.55 was designed by the Kartsev Design Bureau and manufactured at the Vagonka tank plant at Nizhnyi Tagil (Zavod 183) and the Omsk Tank Plant (Zavod 13).

Licensees. The Labedy plant in Poland and the Zavody Tazkeho Strojarstva/Martin plant in the former Czechoslovakia manufactured the T.54A, T.54A(M) and T.55. The People's Republic of China manufactured the T.54 under the designation Type 59 at the People's Republic of China State Arsenals.

Status. Although production of the T.54/T.55 terminated in the early eighties, thousands of T.54 and T.55 tanks are still in widespread service around the world. A number of modernization and retrofit programs are in various stages of development, implementation and completion for this tank. The manufacture of the Type 59 was completed in 1989; thousands of Type 59 tanks remain in service around the world. Like the T.54 and T.55, a number of modernization and retrofit programs are in various stages of development, implementation and completion for the Type 59.

Total Produced. At least 68,000 T.54 and T.55 tanks were manufactured from all sources except the People's Republic of China. The People's Republic of China manufactured approximately 8,000 Type 59 tanks. If the manufacture of variants from all sources is included, the total is approximately 106,400 units.

Application. A tank for the projection of power as well as defensive missions.

Price Range. Although difficult to ascertain, recently released data reveals that, in equivalent United States dollars, the 1970 unit price for a serially produced T.55 was $115,000. A 1988 sale of two refurbished T.55A tanks at a unit cost of $204,000 was made to an unspecified Middle Eastern nation, possibly Iran. This sale was through an international broker. In late 1990, large numbers of T.54 and T.55 tanks began coming on the market as a result of the changing situation in Europe. By early 1991, some of these tanks were being offered with unit prices essentially equal to their scrap value while others, in very good condition were being offered for around $90,000 with no spares or ammunition.

Teledyne Continental Motors' T.54E RAMSES II, a modernized T.54 with the M68 105 millimeter tank cannon, new diesel engine, new fire control components including a laser rangefinder and passive vision equipment, was offered for approximately $1.5 million in 1994 United States dollars, based on a 425 unit order.

Technical Data

T.54/T.55

Crew. Four: commander, gunner, loader, driver

Armor. The T.54 and T.55 are fabricated from conventional rolled homogeneous steel alloy armor, cast and welded with a maximum thickness of 20.3 centimeters (7.99 inches) on the turret face.

Dimensions. The following data are for the T.54 and T.55 where different.

	SI units	US units
Length	8.97 meters	29.43 feet
Width	3.27 meters	10.73 feet
Height	2.4/2.35 meters	7.87/7.71 feet
Combat weight	36 tonnes	39.68 tons
Fuel capacity	812/960 liters	216.0/255.3 gallons

Performance. The automotive performance is on a metalled road. With preparation, both the T.54 and T.55 can ford 4.55 meters (14.9 feet) of water. Fitted with optional externally mounted fuel tanks, the maximum range of the T.54 is 720 kilometers (447.1 statute miles) and the T.55 is 650 kilometers (403.7 statute miles).

Maximum speed	48/50 kilometers per hour	29.81/31.05 miles per hour
Maximum range	514/462 kilometers	319.2/286.9 statute miles
Step	80 centimeters	2.63 feet
Trench	2.7 meters	8.86 feet
Slope	34%	34%
Gradient	60%	60%
Fording	1.4 meters	4.59 feet

Engine. The T.54 uses the V-54 liquid cooled V-12 diesel engine which is rated at 387.2 kilowatts (520 horsepower) at 33.34 revolutions per second (2,000 revolutions per minute); the power-to-weight ratio is 10.76 kilowatts per tonne (13.11 horsepower per ton). The T.55 uses the V-55 diesel of the same type but of an increased power rating of 432.7 kilowatts (580 horsepower); the power-to-weight ratio is 12.02 kilowatts per tonne (14.62 horsepower per ton). In both tanks, the engine is transversely mounted. Both engines are products of unknown design bureaus of the Soviet State Factories. Both engines are equipped with smoke making equipment. A 28 volt electrical system with four 12 volt 28 ampere hour batteries is the standard electrical fit.

Gearbox. Both of these tanks use an unspecified manually operated unit with five forward and one reverse gear ratios.

Suspension and Running Gear. Both the T.54 and T.55 use a torsion bar type suspension with five single tired road wheels on each side; no track return rollers are fitted. The first and last road wheel stations are provided with hydraulic shock dampers.

Armament. Both these tanks mount some variant of the D.10 (originally M1944) 100 millimeter rifled tank cannon. The basic D.10T is unstabilized and found in the early production T.54 tanks. The D.10TG is stabilized in the vertical plane only; it is found on the T.54A, while the D.10T2S, which is stabilized in both planes, is found on all subsequent T.54 and all T.55 tanks. Secondary armament also varies but in the T.54 usually consists of two 7.62 millimeter PKT (SGMT) machine guns, one coaxially mounted and the other mounted in the glacis plate plus an additional 12.7 millimeter DShKM machine gun mounted on the turret roof at the commander's position. The T.55 usually mounts a single 7.62 millimeter PKT (SGMT) machine gun in a coaxial mount.

Fire Control. The make-up of the fire control suites in the myriad of models of these tanks varies greatly but all systems are known for their ruggedness and simplicity. The usual fit for the T.54 has the gunner provided with a TSh 2-22 sight with two levels of magnification, two and seven power. The T.55 sight is designated TSh2B-22P. The commander's rotating cupola in the T.54 is fitted with a TPK-1 binocular type sight; the improved TPKU-2B is on the T.55. The commander is

usually the one who locates and designates the target by slewing the turret so the gunner can sight, lay and fire the main gun. There is no rangefinder or ballistic computer.

Type 59

Crew. Four: commander, gunner, loader, driver

Armor. The Type 59 is fabricated from conventional rolled homogeneous steel alloy armor, cast and welded with a maximum thickness of 20.3 centimeters (7.99 inches) on the turret face.

Dimensions. The following data are for the Type 59 only. The fuel capacity figure is for the internal fuel followed by the fuel carried in external tanks.

	SI units	US units
Length	8.97 meters	29.43 feet
Width	3.27 meters	10.73 feet
Height	2.59 meters	8.5 feet
Combat weight	36 tonnes	39.68 tons
Fuel capacity	815/400 liters	216.8/106.4 gallons

Performance. The automotive performance is on a metalled road. With preparation, the Type 59 can ford 5.5 meters (18.04 feet) of water.

Maximum speed	48 kilometers per hour	29.81 miles per hour
Maximum range	420/600 kilometers	260.8/372.6 statute miles
Step	80 centimeters	2.63 feet
Trench	2.7 meters	8.86 feet
Slope	34%	34%
Gradient	60%	60%
Fording	1.4 meters	4.59 feet

Engine. The Type 59 uses the Model 12150L liquid cooled V-12 diesel engine which is rated at 387.2 kilowatts (520 horsepower) at 33.34 revolutions per second (2,000 revolutions per minute); the power to weight ratio is 10.76 kilowatts per tonne (13.11 horsepower per ton). A 24 volt electrical system with four 12 volt 28 ampere hour batteries is the standard electrical fit.

Gearbox. The Type 59 uses an unspecified manually operated unit with five forward and one reverse gear ratios.

Suspension and Running Gear. The Type 59 uses a torsion bar type suspension with five single tired road wheels on each side; no track return rollers are fitted. The first and last road wheel stations are provided with hydraulic shock dampers.

Armament. The Type 59 mounts a license manufactured variant of the D.10 (originally the M1944) 100 millimeter rifled tank cannon; the designation is Type 59. Secondary armament consists of two Type 59T 7.62 millimeter machine guns, one coaxially mounted and the other mounted in the glacis plate plus an additional Type 54 12.7 millimeter machine gun mounted on the turret roof at the commander's position.

Fire Control. The fire control suite of the Type 59 has the gunner provided with a Chinese license manufactured version of TSh 2-22 sight with two levels of magnification, two and seven diameters. The commander's rotating cupola in the T.54 is fitted with a Chinese license manufactured version of the TPK-1 binocular type sight. The commander is usually the one who locates and designates the target by slewing the turret so the gunner can sight, lay and fire the main gun. There is no rangefinder or ballistic computer, but an infrared searchlight was fitted to later production tanks.

Variants/Upgrades

Production Models. The following is a breakout of the various production models of the T.54 and T.55; included are the designations and data for the modernized versions.

T.54 Model 1946 - Designated Ob'iekt 137 by the Russians, this is the prototype/developmental tank that is essentially a rework of the T.44 design. This tank never entered serial production.

T.54 Model 1949 - This is the initial low rate production model. It features a turret design that is undercut at the rear and a wide mantlet. This model introduced the driver operated 7.62 millimeter machine gun and external fuel tanks mounted on right rear fender.

T.54 Model 1951 - The second low rate production model of the T.54 retained the undercut turret but introduced a narrow mantlet called the pig snout.

T.54 Model 1953 - The initial full scale serial production model with a narrow mantlet and hemispheric turret.

T.54A - Introduced in 1955, this production model is fitted with a fume extractor and vertically stabilized D.10TG cannon. Introduced power elevation and TSh 2A-22 gunner's sight. When retrofitted with an infrared searchlight, the designation is T.54A(M). This model is the basis for the Type 59 discussed below.

T.54AD - This is a Polish command version of the T.54.

T.54B - This production model appeared in 1957. It introduced the D.10T2S cannon which is stabilized in two planes and infrared vision equipment is standard. The gunner's sight is the TSh 2-32.

T.54K, T.54BK, T.54MK - These are command tank versions of the T.54 with increased communications equipment.

T.54M - Developed from 1983 to 1988, this is the designation for the T.54A and T.54B upgraded to T.55M standard. Included in the upgrade is a V-55U engine, R-173 radio, new tracks, improvements to the suspension system, new passive armor and internal detail improvements to improve the level of fightability.

T.55 Model 1958 - Also called Ob'iekt 155 by the Russians, this is a redesign of the T.54 done by the Kartsev design bureau. The prototype for the T.55 series, this tank has a new design turret, new V-55 engine and running gear, increased ammunition storage and other changes.

T.55A - Introduced in 1961, this production model added an interior layer of radiation shielding; the PAZ nuclear, biological and chemical defense system was also introduced. The 7.62 millimeter bow machine gun was deleted, resulting in increased ammunition storage. A more powerful version of the V-55 engine with an air compressor-based starting system and modified gearbox was fitted. Infrared night vision equipment for the crew was introduced. The rotating turret floor was also introduced and the armament stabilized in two planes. When retrofitted with a 12.7 millimeter anti-aircraft machine gun, the tank is known as the T.55A(M).

T.55A Model 1970 - This model added a fitting at the loader's hatch for the 12.7 millimeter DShK anti-aircraft machine gun.

T.55M - This model is a modernized T.55 fitted with the 9K116 Bastion (NATO designation AT-10 Stabber) anti-tank guided missile system including the associated 1K13 sight, controls, interface equipment, appliqué armor, the uprated V-55U engine and the R-173 radio.

T.55M-1 - This model is an upgraded T.55 fitted with the 9K116 Bastion (NATO designation AT-10 Stabber) anti-tank guided missile system including the associated 1K13 sight, controls, interface equipment, appliqué armor, the V-46-5M engine and the R-173 radio.

T.55MV - This model is an upgraded T.55 fitted with the 9K116 Bastion (NATO designation AT-10 Stabber) anti-tank guided missile system including the associated 1K13 sight, controls, interface equipment, explosive reactive armor, the uprated V-55U engine and the R-173 radio.

T.55MV-1 - This model is an upgraded T.55 fitted with the 9K116 Bastion (NATO designation AT-10 Stabber) anti-tank guided missile system including the associated 1K13 sight, controls, interface equipment, explosive reactive armor, the V-46-5M engine and the R-173 radio.

T.55AM-1 - This model is an upgraded T.55A fitted with the 9K116 Bastion (NATO designation AT-10 Stabber) anti-tank guided missile system including the associated 1K13 sight, controls, interface equipment, appliqué armor, the V-46-5M engine and the R-173 radio.

T.55AD - This is an upgrade of the T.55M done from 1983 to 1988. The major enhancement is the integration of the Drozd active defense system. This system is designed to destroy incoming anti-tank missiles. It consists of a sensor package which automatically activates one of four launch tubes mounted on each side of the turret. When activated, these launch tubes fire a spread of small pellets toward the incoming missile.

T.55AD-1 - This is an upgrade of the T.55M1 done from 1983 to 1988. The major enhancement is the integration of the Drozd active defense system. This system is designed to destroy incoming anti-tank missiles. It consists of a sensor package which automatically activates one of four launch tubes mounted on each side of the turret. When activated, these launch tubes fire a spread of small pellets toward the incoming missile.

T.55K, T.55AK, T.55AMK, T.55MK, T.55VMK - These are command tank versions of the T.55 with increased communications equipment.

Type 59 - As noted above, the Type 59 is almost identical to the T.54. In 1953, the former Soviet Union began providing a limited number of T.54 tanks to the People's Republic of China. In 1958, the People's Republic of China began manufacturing under license and initially with Soviet aid, an almost exact copy of the T.54A. Later still, after the tank was type classified as the Type 59, additional relatively minor changes, such as a larger infrared searchlight and fume extractor for the main armament were incorporated in the design. The serial manufacture of the Type 59 continued into 1989 with a total of about 8,000 tanks manufactured. The Type 59 has been exported with the largest customer being Pakistan.

Variants. The T.54 and T.55 have been manufactured in a number of specialized variants. The following list is in alphabetical form and was complete as of 1997:

BLG-60 - An armored vehicle launched bridge developed by the former German Democratic Republic and Poland. This vehicle mounts and deploys a 21.6 meter (70.9 feet) scissors bridge with a 50 tonne (55.1 ton) capacity. A more recent and improved version is the BLG-60 M2.

BMR - A Soviet designed mine clearing tank based on a T.54 or T.55 chassis with a new superstructure with no turret. The KMT M1988 or KMT.7 mine clearing roller system is fitted.

BTR.4 - A recovery vehicle similar to the BTS.2 but fitted with a hydraulic crane with telescoping jib mounted at the left front of the tank, rear mounted spade, front mounted dozer blade, winch and specialized recovery equipment.

BTS.1 - An armored recovery vehicle that is essentially a T.54 with the turret removed. Called T.54T by NATO.

BTS.2 - Another armored recovery vehicle that is essentially the same as the BTS.1 but fitted with a winch and a spade at the rear to aid in recovery operations. Additional storage for recovery gear and tools is provided. Called T.54T by NATO.

BTS.3 - Also known as the SPK-12G, this armored recovery vehicle features a hydraulic crane with telescoping jib mounted at the left front of the tank, rear mounted spade, front mounted dozer blade, winch and specialized recovery equipment. Called T.54T by NATO.

IMR - An armored engineer vehicle based on a turretless T.55. The turret is replaced with a hydraulically operated crane fitted with a grab or a bucket, and a dozer blade is mounted at the front of the vehicle.

KAM-1 - An armored recovery vehicle based on the T.55 chassis that has been developed by the Vannas firm of Finland. A crane, dozer blade, winch and other specialized equipment are fitted. A more recent improved version is designated KAM-2.

MT-55 ARV - This armored recovery vehicle, also referred to as the VT-55, was developed by the former Czechoslovakia. The MT-55 ARV features a crane with telescoping jib crane mounted to the rear, other specialized recovery tools and a cargo carrying area.

MT-55 AVLB - This armored vehicle launched bridge developed by the former Czechoslovakia mounts and deploys an 18 meter (59.1 feet) scissors bridge with a 50 tonne (55.1 ton) capacity.

MTU.1 - This Soviet designed armored vehicle launched bridge is based on the T.54 chassis. A bridge 12.3 meters (40.35 feet) in length with a capacity of 50 tonnes (55.1 tons) is carried.

MTU.20 - This Soviet designed armored vehicle launched bridge carries a 20 meter (65.6 feet) bridge with a capacity of 60 tonnes (66.14 tons).

SU.122 - This is a tank destroyer introduced in 1949; it is armed with a 122 millimeter cannon with only limited elevation and traverse. Most have been converted to armored recovery vehicles under the designation M.1977.

T.54/T.55 Mine Clearing Tanks - Both the T.54 and T.55 can be fitted with a wide variety of mine clearing devices of Soviet and Czechoslovak design.

T.54AD - This is a command tank built to Polish specifications.

TO.55 - A flamethrower tank based on the T.55. This tank is fitted with a flamethrower in addition to the D.10 cannon. A tank with a capacity of 460 liters (122.34 gallons) holds the fuel for the flamethrower. The range of the flamethrower is 200 meters (218.7 yards). Due to the inclusion of the flamethrower equipment, the internal ammunition capacity is diminished.

Type 59 - This is a slightly modified T.54 manufactured by the People's Republic of China.

VT-55 - This is an armored recovery vehicle developed and manufactured by the former Czechoslovakia.

WZT-1/WZT-2 - These armored recovery vehicles from Poland are based on the T.54 and T.55 with the WZT-1 being essentially equivalent to the BTS.2 described above. The WZT-3 is a newer design which, although comparable to the BTS.3 described above, has been developed to the specifications of the Polish Army.

ZSU.57-2 - This self-propelled anti-aircraft artillery system is based on the modified chassis of the T.54. A

new turret mounting two 57 millimeter S.68 cannon is fitted.

Civilian Conversions. Led by the Russian Federation, with its enormous holdings of T.54 and T.55 tanks, there have been a number of vehicles based on these tanks developed for dedicated civilian applications. Several other nations of the former Warsaw Pact as well as the Federal Republic of Germany, which inherited the inventory of the old German Democratic Republic when the two countries unified, have also undertaken such conversions. However, for the most part, these have proven uneconomical; it has proven more cost effective to scrap the undesired inventory. The reason for this is simple - tanks are not designed for fuel economy; there are much more efficient vehicles of the types listed below available from any number of commercial sources.

In any event, the converted vehicles offered by the Russian Federation include the following:

Bronya - a fire reconnaissance vehicle for use in extremely hazardous areas of contamination. Specialized equipment includes nuclear, biological and chemical defense/monitoring equipment, a thermal imaging system, land navigation system, communications equipment. The Bronya has a three man crew.

GPU-54M - A fire fighting vehicle operated by two men.

GPMU-54 - A fire fighting vehicle carrying 9,000 liters (2,393.6 gallons) of water or other fire extinguishing fluid and operated by four men.

GTU-1 - A heavy tractor/recovery vehicle mounting two winches, a 25 tonne (27.56 ton) main winch and a 0.5 tonne (0.55 ton) secondary winch. A dozer blade, three tonne (3.31 ton) capacity crane, unditching beam and other specialized equipment.

Irtysh - A mobile protected command post for fire, nuclear and other disaster emergencies.

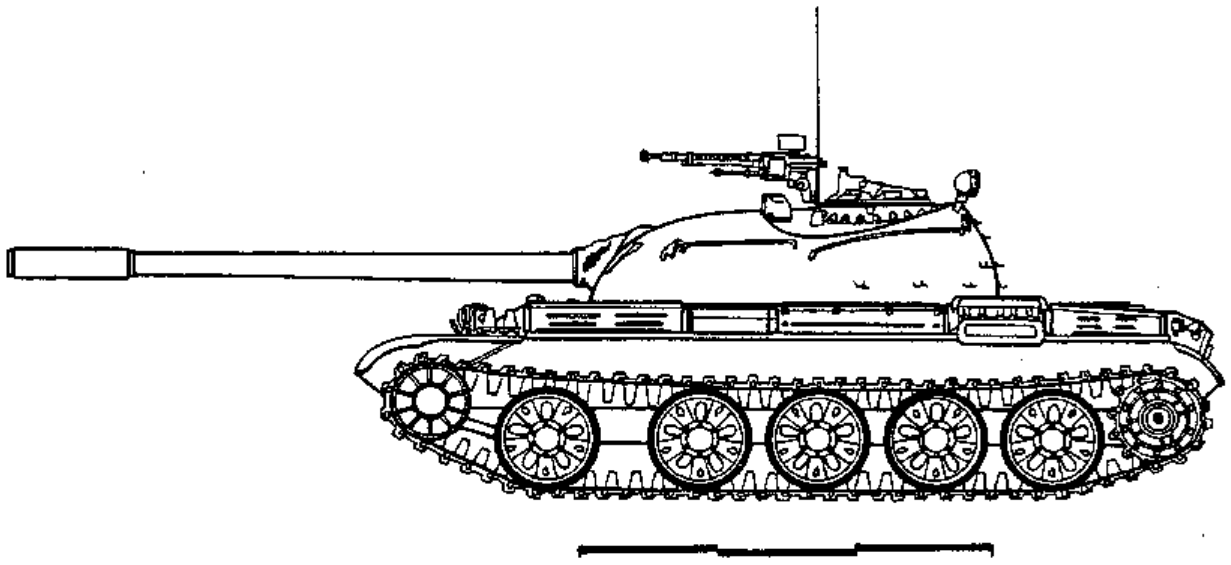
Ladoga - This vehicle mounts a telescoping hoist which can attain a height of 26 meters (85.3 feet) in 12 seconds.

Shchit - A fire fighting vehicle designed for use in forests.

Slavutich - A fire fighting vehicle which uses a front mounted rocket launcher to shoot fire suppressant material out to a hundred meters (109.4 yards).

Sojka - A specialized fire fighting vehicle designed for use in radioactive conditions.

In addition, at least two other fire fighting related vehicles and a mobile generating station have been developed and are presently offered by the Russian Federation.



T-55

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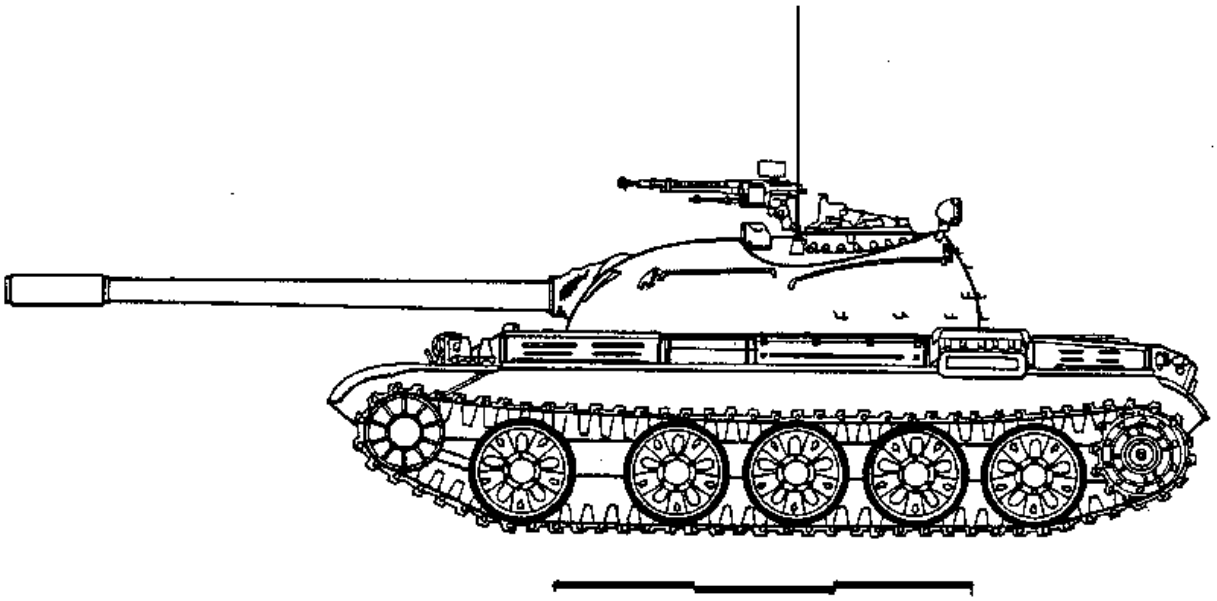

TYPE 59

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