DIPLOMA IN MECHANICAL ENGINEERING
FACULTY OF MECHANICAL ENGINEERING
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SHAH ALAM SELANGOR

FINAL YEAR PROJECT
'RESEARCH OF MECHANICAL COMPONENTS OF THE MALAYSIAN ARMY TANK- ALVIS SCORPION 90'

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Introduction.

Tank, a heavily armored, highly mobile vehicle possessing a large-caliber gun capable of delivering tremendous firepower. Generally, it is track laying vehicle travel on two endless belts, called tracks, one on each side. The main purpose of the tank is used in ground offensive combat. Thus, it is very crucial for the tank to have highly mobile capabilities especially during attacking as well as defensive. In order to have these capabilities, a lot of time, dedications, manpower and energy have been sacrificed for study, research and development, in order to keep on improving the mechanical and overall construction of the tank.

Therefore, the main purpose of this project is to know and to study the mechanical components in a tank, and if possible, to relate it with the subjects that that have been taught in Mechanical Diploma Course in Mara University Of Technology. The main focus in this study will be the model of an Alvis Scorpion 90 tank, which is the main battle tank in the Malaysian Army. In addition to that, our purpose is also to give some ideas or suggestions to improve the capabilities of the existing Scorpion 90 in order to cope and to satisfy the needs and demands for the coming millennium.

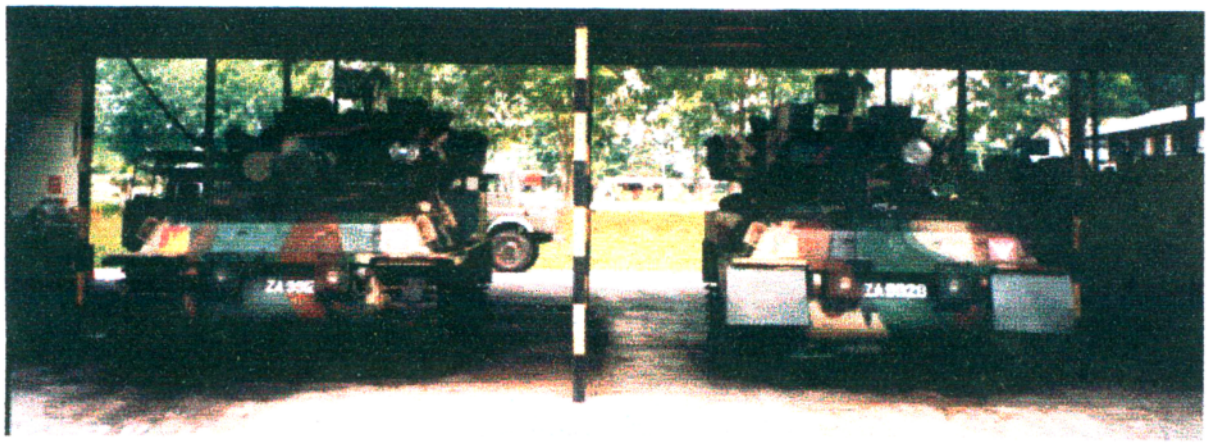

Fig 1 The front view of the Alvis Scorpion 90

CHAPTER I.

History.

At the beginning at World War I, neither side possessed the tank. When the machine gun pinned down the individual soldier, a virtual stalemate developed on the battle-field. Frontal attacks, supported by concentrated artillery preparation, also ended in stalemate. Trenched warfare seemed likely to continue indefinitely.

The British finally approved a plan to developed and employ track lying vehicles. On September 15th 1916, in the battle of Somme, the British committed 49 of this new secret weapons; labeled "tanks" as deceptive warfare, releases the infantryman to perform this mission, and restored mobility to the battlefield.

Between World War I and II, development of tactics and material continued. There were two schools of thought regarding the role of tanks in warfare. The ground maintained that tanks were to be used strictly to support the infantryman; this had been the method of employment in World War I. The tanks developed by this group were large and cumbersome, but capable with standing firepower and had great crushing power. The other school of thought favored to be used to locate weakness, then the medium tanks would be employed in mass formation. This was basically an adaptation to mechanized vehicles of horse cavalry techniques.

By World War II, tanks were employed in dual role; tanks assigned to infantry units supported the rifleman and tanks assigned to armored units were used in independent actions. Mass employment of armor proved most effective on the Western front in the spring of 1940. In North Africa, armies employing hundreds of tanks fought each other. In Europe, large armored formations were initially somewhat restricted by hedgerows. However, following the break out from Normandy, Gen. George Patton's Third Army crossed France in a classic demonstration of mobility. One lesson learned from World War II was the requirement for mutual tank, infantry and artillery support.

The North Korean armies used Soviet-made tanks in South Korea in 1950. The UN forces in South Korea had no tank support until US tank units were rushed in. The Korean campaign proved that tanks were necessary to engage enemy's tanks: that tanks were able to operate in generally unfavorable terrain; and that, of two forces, the force with armor will prevail.