61 TUNNELING COMPANY: SOUTH AFRICAN MINERS IN THE MIDDLE EAST DURING THE SECOND WORLD WAR

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Abstract

The South African Engineering Corps (SAEC) provided a variety of specialised units to assist the Allies during the Second World War. These units performed outstanding work in the East and North African theatres, as well as in Italy. Through their concerted efforts, they were able to provide much needed assistance to the troops on the ground. South African engineering troops, however, served in lesser known territories as well. The likes of 61 Tunnelling Company, under the auspices of the Mines Engineering Brigade (MEB) SAEC, was but one of these specialised units called upon to render services to the Allied forces in the Middle East. The company, representing a cross-section of miners from the Witwatersrand, was tasked to dig a series of tunnels that continued to the completion of the Haifa-Beirut-Tripoli (HBT) railway line. Upon completion of the task, the unit further carried out two more tunnelling tasks in the Middle East, namely at Ras Bayada and at the Kasmieh Irrigation Scheme. Due to the specialised nature of this unit, its exploits during the war only received minimal attention in the written histories of the South African forces. This article thus explores the history of 61 Tunnelling Company's exploits in the Middle East during the Second World War.

Keywords*:* 61 Tunnelling Company; Union Defence Force; South African Engineering Corps; Mines Engineering Brigade; Haifa-Beirut-Tripoli railway; Cheka tunnel; Ras Bayada; Kasmieh irrigation scheme.

Sleutelwoorde: 61 Tonneltroepe; Uniale Verdedigingsmag; Suid-Afrikaanse Geniekorps; Myningenieursbrigade; Haifa-Beirut-Tripoli-spoorlyn; Cheka-tonnel; Ras Bayada; Kasmieh-besproeiingskema.

1. A LOGISTICAL NIGHTMARE IN THE MIDDLE EAST

Whilst war clouds gathered over Europe by 1938, the Union Defence Force (UDF) was understrength, underprepared, and not quite ready for offensive military action in Africa.[2] For much of the interwar period, South Africa remained conscious of the

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2 H Klein, *Springboks in armour: The South African armoured cars in World War II* (Cape Town & Johannesburg, 1965), pp. v-viii.

fact that their next military deployment would most likely occur in British Central or East Africa. The UDF thus concentrated on honing their skills in bush warfare. With the outbreak of the Second World War in September 1939, the UDF had to help with the defence of the British Commonwealth. Due to the threat posed by Italian troops in East Africa, the UDF deployed a motorised division to that theatre of operations by 1940. The campaign in East Africa served as the UDF's initiation into the Second World War, and the UDF emerged from that campaign victorious.[3] The UDF's next deployment was in North Africa. The harsh geography of East and North Africa meant that the South African Engineering Corps (SAEC) played a significant role in keeping the Allied war effort on the move. The SAEC provided specialised companies to help with water purification, mapping, demolitions and railways, to name but a few. When the UDF deployed in North Africa, the strategic nature of the Middle East necessitated the Allied Command to invest in the upgrading of the infrastructure of the region so as to allow for future operations.[4]

During September 1941, the Allied Command in the Middle East realised that there was a distinct possibility of a German invasion of the Middle East and Egypt through Turkey. Thus the improvement to the lines of communication, especially railways in the Middle East, was given a high priority. During the initial stages of the war, a standard gauge railway connected the European mainland with Northern Syria, through Turkey. The railway line further extended from Allepo, in Northern Syria, to Baghdad and the Persian Gulf as well as to Rayak and Tripoli, in the Lebanon, on the Mediterranean Coast. There was, however, a narrow gauge line operating on a limited scale, which connected Rayak through Deraa with Haifa, which, some 250 km south of Tripoli, was the main British supply depot in the Middle East. Here was a bulk petroleum installation, ordnance workshops and engineering stores, which would prove to be very critical once an offensive was called for in the Middle East. Thus, in terms of securing a viable line of communication in the Middle East, the standard gauge railway line from Egypt had to be connected through Haifa and Beirut onwards to Tripoli.[5]

Connecting the standard and narrow gauge railway lines was no easy task, thus the preferred route would follow the coastline through Haifa, via Beirut, and onwards to Tripoli. The Railway Construction and Maintenance Group SAEC, operating under the Directorate of Transportation of the British Ninth Army, was made responsible for the construction of the Haifa-Beirut section of the new railway. The Australian Engineering contingent in the Middle East, mainly railway experts, would construct the rest of the railway line, except for the major

3 IJ van der Waag, "The Union Defence Force between the two World Wars, 1919-1939", *Scientia Militaria* 30(2), 2000, pp. 183 and 217.

4 ND Orpen and HJ Martin, *South African forces in World War II*, Vol VIII: *Salute the sappers* (Part I) (Johannesburg, 1981), pp. v-vi.

5 *Ibid*., p. 302.

tunnelling operations required in and around the Cheka headland. The tunnelling operations around the Cheka headland required specialised labour.[6] The preliminary reconnaissance of the projected line was conducted during September 1941 by 47 Railway Survey Company SAEC. By 20 October 1941, the 39 and 40 Railway Construction Companies had arrived in Syria. The former, under command of Maj. WH Evans, proceeded to Adloun, whilst the latter, under command of Maj. AM Steel, encamped at Az Zib. These companies were solely responsible for the construction of the standard gauge railway line between Haifa and Beirut.[7]

The Cheka headland, however, remained problematic to the SAEC contingent, for a specialised tunnelling company would be needed to construct the vast, and intricate, tunnels on the Haifa-Beirut line. The Cheka headland fell under the Australian section of the HBT Railway, thus essentially placing the tunnelling operations "outside" the South African sphere of operations in the Middle East. It should also be noted that the South African engineering troops would serve beyond the limits of the Africa Service oath of attestation. It did not, however, cause any foreseeable trouble for the UDF. Maj. M Clark essentially gave the men of the SAEC a hint of where they would be posted, when he told them that the country was supposed to be "flowing with milk and honey...there were parts with grass, that queer stuff whose existence you may have forgotten".[8]

2. THE FORMATION OF 61 TUNNELLING COMPANY

The necessity of recruiting a specialised tunnelling company for work on the HBT railway was conveyed to Field Marshal JC Smuts on 26 September 1941.[9] Lieutenant General PJ Auchinleck, C-in-C Middle East Command, in a personal telegram to Smuts stated that:

> "It has been decided to connect standard gauge railways in Palestine and Syria by the construction of a new section Haifa-Tripoli. Construction entails one tunnel 2000 yards long. South African Railway Construction Companies now in Middle East with their excellent equipment will be able to carry out construction more quickly than any others. Would be grateful if you could agree to their being employed outside Africa for this purpose. Grateful if you could recommend tunnelling contractor who could undertake this work, providing his own equipment and staff."[10]

6 *Ibid*., pp. 302-303.
7 *Ibid*., pp. 304-305.
Ibid., p. 305.
8 *Ibid*.
9 South African National Defence Force Documentation Centre (Archives) (Hereafter referred to as DOC C), War Diaries (WD) 459, 61 Tunnelling Company: Reports on completed jobs HBT Rly – Tunnel construction on the Haifa-Beirut-Tripoli Railway, January 1943.
10 DOC C, World War II Diverse (WWII Diverse) 1961, 61 Tunnelling Company, Personal telegram Auchinleck – Smuts.

It was initially suggested by Auchinleck that a composite company from the Mines Engineering Brigade (MEB) could be mobilised and equipped by the various mining groups of the Witwatersrand, so as to complete the necessary tunnelling operations in the Middle East. Auchinleck further anticipated that the strength of the tunnelling company should total about 400 men. The 400 personnel had to include five mining and engineering officers, ten shift bosses, 30 miners, mechanical staff, timber men, trammers and various other tradesmen. It was further stated that at least 50% of the company's proposed strength should be gained from non-European labour. Morever, the company should only be raised for the purposes of the specific tunnelling job and that, upon completion of the job, the men be returned to their civilian occupations in the Union of South Africa. Auchinleck estimated that the project would take approximately one year to complete from the date of arrival of the South African miners. He further informed Smuts that Evans and Clark, from the Railway and Harbour Construction Battalion (SAEC), investigated the site of the proposed tunnelling operations. Evans was tasked by Auchinleck to be ready to return to the Union, upon approval by Smuts, so as to lay down the war establishment tables of the personnel and equipment of the tunnelling company.[11]

Smuts promptly approved Auchinleck's request to send Evans to the Union, but only after permission was granted by the Transvaal Chamber of Mines for the raising of a suitable tunnelling company. Smuts, however, stated that a suitable tunnelling company could only be raised through the necessary assistance of the Mines, Harbours and Railways, and the SAEC in the Union.[12] The Transvaal Chamber of Mines, upon request by Smuts, offered to recruit a tunnelling company from the personnel of the MEB, with an additional promise of full assistance in equipping the company. Smuts duly sanctioned the establishment of a specialised tunnelling company on 17 October 1941.[13] Thus, by the end of October, Auchinleck was able to dispatch Evans to the Union to proceed with the raising of the tunnelling company. The information and advice supplied by Evans, greatly helped Col. SR Fleischer of the MEB to proceed with the matter. The raising of the company became a first priority project for the UDF[14].

On 7 November 1941, a letter from the Adjutant General, Brig. Gen. HS Wakefield, confirmed the approval for the establishment of 61 Tunnelling Company, SAEC, as a volunteer unit of the Active Citizen Force of the UDF. The unit was organised on a full time basis with effect from 31 October 1941 and was allotted to the

11 DOC C, Adjutant General (AG) 42, 61 Tunnelling Company, Gen. PJ Auchinleck – Field Marshall Smuts, September 1941.

12 *Ibid*., Field Marshall Smuts – Gen. Auchinleck, October 1941.

13 *Ibid*., Correspondence between CGS and Sec Def, 23, October 1941.

14 DOC C, WD, 459, 61 Tunnelling Company: Reports on completed jobs – HBT Rly. Tunnel construction on the Haifa-Beirut-Tripoli Railway, January 1943.

Witwatersrand Command.[15] On 13 November 1941, the Transvaal Chamber of Mines sought confirmation from the UDF to the effect that the allotted men would be returned to the Union immediately upon completion of the project, and that they would subsequently be released from full-time military service.[16] Wakefield promptly affirmed.[17] Fleischer confirmed the above-mentioned in a MEB circular of 8 November 1941. The circular, addressed to the various commanding officers of the companies and battalions of the MEB, stated that the men of 61 Tunnelling Company would consist of 190 European and 400 black personnel. These men would all serve in uniform, and would receive the same treatment as their compatriots in the rest of the UDF, albeit the black troops were employed mainly as a "skilled" labour detachment. It was further decided that a pioneer company of 263 blacks would also be attached to the company. These black troops were recruited under the auspices of the Non-European Army Services (NEAS) of the UDF, and included men drawn from Basutoland (now Lesotho) under the auspices of a general labour mobilisation which would aid the Allied war effort.[18]

Fleischer further instructed the various commanding officers to nominate non-commissioned officers (NCOs) and sappers who would be able to fulfil the various trades and occupations within 61 Tunnelling Company. Men selected for the company were to be recruited from the various mines on the Witwatersrand on an equitable basis. Fleischer further informed his subordinates that the nominations for men to serve in the company should not reach him later than 17 November 1941, for the company's mobilisation would commence on 20 November 1941, and be finalised by 8 December 1941.[19] The men who enlisted into the company did not sign the Africa oath of attestation because the task they were recruited for fell outside the auspices of the oath. During the interviews the men were thus asked to declare their willingness to serve anywhere in the world. All the men of 61 Tunnelling Company made this declaration.[20]

15 DOC C, Chief of General Staff: War (CGS WAR), 49, 61 Tunnelling Company. Letter from AG: Organisation and Establishment NEW ACF Unit.

16 DOC C, AG, 42, 61 Tunnelling Company. Correspondence Secretary Gold Producer's Committee, Transvaal Chamber of Mines – Deputy Chief of Staff, Union Defence Force Headquarters, 13 November 1941.

17 DOC C, 42, 61 Tunnelling Company. Correspondence Adjutant General – Secretary Gold Producer's Committee, Transvaal Chamber of Mines, November 1941.

18 N Ntabeni, "Military labour mobilisation in colonial Lesotho during World War II, 1940-1943", *Scientia Militaria* 36(2), 2008, pp. 36-37.

19 DOC C, WD, 459, 61 Tunnelling Company: Policy and organisation. MEB circular by Col. Fleischer, 8 November 1941.

20 DOC C, Union War Histories (UWH), Civil Group, 166, SAEC 61 Tunnelling Company. Notes on activities by tunnelling coys in UDF, compiled by Lt Trollip of the History Records Section, 15 December 1944.

With the establishment of 61 Tunnelling Company nearly complete, the unit was placed under the command of Maj. LD Browne from the MEB. Browne, up to this stage, was the underground manager at Sub-Nigel mine. He was personally appointed by Fleischer, in view of his expertise.[21]The unit was initially accommodated at "Y" Compound at Crown Mines. The Crown Mines barracks fell under direct control of the NEAS. Before the men attested at "Y" Compound, they received their initial inoculations at the Reception Depot at Driefontein. Whilst at Driefontein, the men were attested into the UDF and equipped fully after which they received intensive infantry training and instruction.[22] For the remainder of November, and for a part of December, the unit received further specialised training at Crown Mines. Browne and his company received a verbal warning order to be ready to exit Crown Mines for embarkation at East London not later than 10 December 1941. Further verbal instruction was given to Browne to the effect that their transportation train should be loaded no later than 8 December 1941.[23] The process of equipping 61 Tunnelling Company with heavy plant machinery was only realised through the intervention of the Department of Railways and Harbours, the Irrigation Department, and through direct purchase from the mining agents by the War Supply Commission. The entire Witwatersrand mining industry essentially contributed to equipping the company with its 1 100 tons of equipment. Through the concerted effort shown by the industry, 61 Tunnelling Company was fully equipped and loaded by 8 December 1941.[24]

The large amount of heavy plant assigned to the unit necessitated a power supply of 1500 Kilo Volt Amperes (KVA) once they arrived in the Middle East. After thorough consultation with the British Ninth Army in the Middle East, it was found that the maximum available power supply would only be 600 KVA. It thus forced the unit to bring four 680 horse power (HP) diesel units with them from the Union, so as to ensure the full efficiency of the unit once disembarked.[25] With the above taken into consideration, 61 Tunnelling Company would embark with 1 300 tons worth of industrial and military equipment, the heaviest piece weighing in at more than eight deadweight tons.[26] This, however, did not include any motorised transport. The company would rely solely on the British Ninth Army to supplement

21 DOC C, UWH, Civil Group, 166, SAEC 61 Tunnelling Company. Notes on activities by tunnelling coys in UDF, compiled by Lt Trollip of the History Record Section, 15 December 1944.

22 DOC C, WD, 459, 61 Tunnelling Company: Origins and establishment. Letter to Col. Fleischer concerning accommodation of 61 Tunnelling Company at Crown Mines.

23 DOC C, WWII Diverse, 1691, 61 Coy SAEC 61 Tunnelling Company, Progress report 5 and 8 December 1941.

24 *Ibid*., Reports on completed jobs – HBT Rly. Tunnel construction on the Haifa-Beirut-Tripoli Railway, January 1943.

25 *Ibid*., Progress report 5 and 8 December 1941.

26 DOC C, CGS WAR, 49, 61 Tunnelling Company. Cable from QMG – KRYG, Port Elizabeth, 8 December 1941.

their logistical needs upon arrival in the Middle East. The logistical needs included six bicycles, three motorcycles, three sedan vehicles, one staff car, one 1-ton lorry, six 3-ton lorries, and a plethora of other mining industry related vehicles.[27] The trains carrying the equipment on to East London left the Crown Siding on 8 December 1941. On 14 December 1941, 61 Tunnelling Company held a combined parade at "Y" Compound before leaving for the coast.[28] After the parade, Fleischer and Evans left for the Middle East by air so as to assist in the initial preparations for the task allotted to 61 Tunnelling Company.[29]

By 16 December 1941, 61 Tunnelling Company entrained for East London, with a total strength of 917 men.[30] This was done under the utmost secrecy, for the fear that Radio Zeesen might broadcast their departure remained constant throughout this period. This would also naturally explain why the company did not sail from Durban, the usual port for embarkation to the North, but rather under a cloud of secrecy from East London.[31] The explosives which was needed for the tunnelling job in the Middle East, 70 tons of gelignite, was shipped separately so as to arrive before the personnel.[32] Thus, on 22 December 1941, the unit embarked on Transport 222 EASTERN PRINCE for the Middle East. The unit subsequently disembarked at Beirut harbour on 12 January 1942, knowing little more than that a 1 520 metre tunnel needed to be driven through limestone and completed within one year from the formation of the unit. The unit, however, was in for a pleasant surprise, for their supposed year in the Middle East would soon turn out to be a much longer operational deployment.[33]

3. TUNNELLING OPERATIONS AT THE CHEKA HEADLAND

Upon arrival in Beirut, 61 Tunnelling Company was attached to the Railway Construction and Maintenance Group of the British Ninth Army stationed in the Middle East. The railway section allotted to 61 Tunnelling Company, was 6,5 km in length, and not only included the great Cheka headland but also its

27 *Ibid*., Cable from UNIDEF Cairo – DECHIEF, 10 December 1941.

28 DOC C, WWII Diverse, 1691, 61 Coy SAEC 61 Tunnelling Company, Progress report 6 and 15 December 1941.

29 *Ibid*. Secret correspondence Brig. GH Cotton – G.O.A. of the UDF in Cairo concerning a visit by Col. Fleischer to the Middle East.

30 DOC C, WD, 459, 61 Tunnelling Company: Reports on completed jobs – HBT Rly. Tunnel construction on the Haifa-Beirut-Tripoli Railway, January 1943.

31 DOC C, UWH, Civil Group 166, SAEC 61 Tunnelling Company. Notes on activities by tunnelling coys in UDF, compiled by Lt Trollip of the History Record Section, 15 December 1944.

32 DOC C, CGS WAR, 49, 61 Tunnelling Company. Cable from Mideast – PSTO Simonstown, Dechief, Impcon Durban, 20 November 1941.

33 *Ibid*. Reports on completed jobs – HBT Rly. Tunnel construction on the Haifa-Beirut-Tripoli Railway, January 1943.

approaches. Thus, in order to complete the work on their allotted piece of railway, 61 Tunnelling Company needed to cut two tunnels into the Cheka headland. The southern tunnel would total 173 metres in length, whilst the northern tunnel, more commonly referred to as the Cheka tunnel, would stretch over 1466 metres.[34] The northern approaches to the Cheka tunnel proved problematic. The alignment of the tunnel followed the sea line, at some parts barely 3,6 metres above the water level and immediately below the road running north towards Turkey. Thus, before actual tunnelling could start, retaining walls needed to be built above and below the railway line. Furthermore, a concrete sea wall was also constructed across the inner reaches of Cheka Bay, so as to help speed up the construction of the retaining walls.[35] The alignment of the tunnel was thus planned to run along the cliff face, so that the additional horizontal entrances could be cut into the sides of the cliff where necessary. These horizontal entrances, or adits, would allow for multiple working surfaces to be opened up on the main Cheka tunnel. Thus, the tunnelling company was subdivided into five groups, which allowed it to work on five faces simultaneously. This in turn meant that at an average tunnelling speed of 15 metres per day was necessary, if the proposed deadline was to be met. The newly-organised five mining sections were subsequently reorganised into three groups, each with three shift sub-sections of two working detachments.[36]

The extensive nature of the assignment at the Cheka headland meant that, through the use of the two intermediate adits and both tunnel ends, work could proceed on six faces simultaneously. The northern end of the Cheka tunnel proved the greatest challenge for the tunnelling company. The employment of a slow and laborious tunnelling method would be required so as to gain access to the northern portal, as it entailed penetrating through land-fill and scree at the base of a 182 metre cliff, directly under the main road to Turkey. The northern adit could only be penetrated through the use of spiling or close timber sets, until solid rock was reached. The southern adit of the tunnel was less problematic, since it offered a solid face for drilling. This adit, however, was situated directly above a vertical drop to the sea. The southern portal of the tunnel required an approach cutting to be blasted through surface limestone for 91 metres before actual tunnelling could commence. The southern tunnel was more or less a straightforward job. Despite three large culverts, with heavy fills and banks, the tunnel itself only needed to be drilled through a low spur.[37]

34 Orpen and Martin, p. 312.
35 DOC C, WD, 459, 61 Tunnelling Company: Reports on completed jobs – HBT Rly. Tunnel construction on the Haifa-Beirut-Tripoli Railway, January 1943.
36 Orpen and Martin, p. 312.
37 DOC C, WD, 459, 61 Tunnelling Company: Reports on completed jobs – HBT Rly. Tunnel construction on the Haifa-Beirut-Tripoli Railway, January 1943.

The actual preliminary tunnelling operations started on 23 February 1942, whilst work on the northern section of the Cheka tunnel started by mid-February 1942. A Lebanese labour detachment, with ages ranging from 14-70 years of age, bolstered the ranks of the tunnelling company. During the war, work was scarce in Lebanon, and employment on military works not only offered employment but also a chance for the Lebanese population to actively contribute to the war effort and gain skills. The excavation started in all earnest, and the total amount of ground to be excavated amounted to 40 086 m³, 52% of which would double up as land-fill. Most of the work at the northern end of the tunnel had to be carried out in loose ground, which necessitated panel cutting with the concurrent building of retaining walls in order to ensure the safety of the road. The weather conditions prevalent at this time, severe cold and continuous rain, hampered the tunnelling operations drastically. Most of the soil which needed to be moved was on the side slope of the road.[38] To ease the construction of the tunnel entrance, retaining walls had to be built along the approaches at the same time whilst soil was being removed. This was achieved by side cutting into the road bank and then pouring concrete foundations, which in turn was tied to the solid underlying limestone by means of pinning irons. Masonry walls, with concrete backing, were then built on these foundations to help support the retaining walls. Work on the approaches for the northern section of the Cheka tunnel involved the construction of a sea wall at one corner of Cheka bay, totalling 180 metres. Pre-cast 18-ton concrete foundation blocks were dropped into the ocean so as to serve as a foundation for the rest of the sea wall. Once the sea became sufficiently calm, the men were able to pour concrete directly into the submerged form boxes. A continuous concrete sea wall was finally poured on top of the boxes, which was overall tied down with reinforcing irons. Two angle dozers subsequently moved in soil fill to form a 16 000m³ bank.[39]

The south section of the Cheka tunnel proved to be more straightforward, for only three culverts required construction. Earthworks in this section amounted to 36 528 m³, of which 67% were used as fill. The total quantity of ground moved in both these sections amounted to 84 435 m³, which was accomplished within 20 weeks by a mere 525 civilian labourers. Special mention was made of the Lebanese labour force and their outstanding work ethic, for at one stage each man could account for 1,15 m³ of earth moved per day.[40] The construction of the heavy arched lining below the main road at the north portal of the Cheka tunnel was accomplished by using cut and cover methods, coupled with road diversion. Beginning with the excavation of the tunnel itself, the men now had to deal with mining through an agglomerate

38 Orpen and Martin, p. 313.

39 DOC C, WD, 459, 61 Tunnelling Company: Reports on completed jobs – HBT Rly. Tunnel construction on the Haifa-Beirut-Tripoli Railway, January 1943.

40 *Ibid*.

of limestone rubble. Mining here was accomplished through the utmost difficulties, and continued overhead support was necessary for the smallest advance. Pneumatic picks and drills were used during the excavation, never exceeding 3,65 metres in length before support trusses became necessary. The conveyer belt process of mining and then constructing retaining walls proved to be an extremely gruelling task. The slowness of the procedures used on this section meant that it was the last to hole through.[41]

A combination of wet-drilling techniques and blasting with gelignite ensured a speedy tunnelling process. Once the solid limestone rock was reached, drilling became a lot easier. The total waste tonnage handled by the company during this period amounted to 281 000 tons. The transport of the waste rock was carried out by the use of standard side-tipping railway cars which were hauled by four-ton diesel locomotives. Thus the speed of the advance was largely determined by the rate at which the rubble could be removed effectively. To ensure working conditions adhered to the applicable health and safety procedures, ventilation pipes drive by 10 HP air extraction fans were installed so as to make mining easier. Through the use of the extraction fans, miners could continue with their work 30 minutes after blasting occurred. Air driven turbo "sump" pumps were used to drain excess water from the tunnelling operations. All illumination within the tunnel was electrical, except that used for re-entry to the faces after blasting. At such times, and during survey work, acetylene lamps were used. The tunnelling operations required an immense volume of electrical power and so, at the Cheka tunnel, power was supplied from the local cement works at an output of 3 000 volts.[42]

The excavation of both tunnels at the Cheka headland was completed by July 1942. The tunnels, however, still required concrete lining on the interior walls. Concrete lining of tunnels becomes necessary under two conditions. Firstly, when it is required to support the ground whilst it is being cut through. Secondly, subsequent concrete lining is necessary to support ground which is not entirely reliable on its own. The difference necessarily affects the methods employed in construction. Doubtful areas within the tunnels were dealt with by completely lining these sections with concrete. These areas were initially cleared down to solid rock on both sides of the tunnel, and then concrete foundations were poured. Subsequently, side shuttering of wood was used to erect a suitable frame, and then the concrete walls were poured. The lining of the tunnel was made possible by the employment of three shifts which alternated work during the day. Working in shifts enabled the men to line up to 9,15 metres per day. The northern half of the Cheka tunnel however passed through a marl formation, which when exposed to moisture

41 Orpen and Martin, p. 313.

42 DOC C, WD, 459, 61 Tunnelling Company: Reports on completed jobs – HBT Rly. Tunnel construction on the Haifa-Beirut-Tripoli Railway, January 1943.

rapidly turned into mud or clay. It was decided that a gunite spray-on skin would suffice as a bonding agent on these walls. Thus the total section of the northern tunnel which required guniting totalled 445 metres, of which two metres were completed every hour.[43]

On 1 September 1942, the Cheka tunnels were officially handed over to the Royal Australian Engineers (RAE) for platelaying. Thus, 61 Tunnelling Company completed their allotted task within seven months, a mere nine months after the formation of the unit. In accordance with the promises made to the men, most believed they would now be returned to the Union. They were, however, reminded that they were entitled to a year's service in Syria. Whilst the Cheka tunnels were still under construction, a decision was made by the British Ninth Army that a secondary tunnel was needed at Ras Bayada so as to guarantee the ultimate security of the supply line. Due to 61 Tunnelling Company already being employed in the area, it was decided that the unit would be best suited to conduct further tunnelling operations in Syria.[44]

4. THE BAYADA TUNNELLING OPERATIONS

Ras el Bayada is a low headland which slopes down to the sea. It has been cut back by the sea to form a sheer cliff face all along its northern side. The headland is situated approximately 13km south of Tyre. The initial plan for the Haifa-Beirut section of the HBT railway was drawn up by the Railway Construction Group of the SAEC. Their plan involved the making of heavy side cuts into the sheer limestone cliffs of the headland, whereafter a railway line would be laid. However, due to the terrific seas encountered during the construction, and the vulnerability to attack from marauding enemy submarines, a tunnel would best ensure the ultimate safety of the supply line. Thus, a section of 61 Tunnelling Company was detached to this project during May 1942. This section would initially be responsible for cutting the approaches to the tunnel, and to prepare for the mining operations once the Cheka tunnel was completed.[45] The northern approach of the Bayada tunnel initially started in rubble-filled clay, before solid limestone was encountered at around 91 metres into the tunnel. The northern approach of the tunnel passed underneath the main road, barely eight metres underneath the road surface. Tunnelling at Bayada was more straightforward than at Cheka, with cutting advances in the tunnel coinciding with concrete lining.[46]

43 *Ibid*.
44 Orpen and Martin, p. 314.
45 DOC C, WD, 459, 61 Tunnelling Company: Reports on completed jobs – HBT Rly. Tunnel construction on the Haifa-Beirut-Tripoli Railway, January 1943.
46 *Ibid*.

The initial efforts at Ras Bayada coincided with labour unrest amongst the company's specially-recruited black labour detachment. Whilst the unit was based at Cheka, its members were organised to partake in the defence of the bay should an Axis invasion materialise. When news reached the black contingent that they would be employed on another tunnel operation within Syria, their disappointment with the next project became quite apparent. A deputation was sent to Browne to inform him that the Director of the NEAS promised the men that once the Cheka tunnel was completed, they would be returned to South Africa.[47] Browne, however, enlightened the deputation to the contrary, by reminding them that they had signed up for a year's service in the Middle East.[48] The men, understandably very upset, subsequently ignored a practise alarm sounded on 16 May 1942 to stand to. Throughout the day general unrest could be noted from the black labourers within unit lines. The following day proved to be even more dramatic, for some shifts of black labourers refused to carry out their work instructions for the day. Later on they moved to their working sites, and continued their work without causing any further trouble. The black labourers once again refused to carry out their orders once another practise alarm was sounded. A deputation of 45 men formed up outside the camp, and marched to the southern camp ignoring the orders of the Second-in-Command when he tried to stop them. On their return journey, the group was stopped by an Australian guard and placed under arrest. At the southern camp, there was a straight refusal to go to Ras Bayada, which necessitated the stationing of armed guards within both the camps. On 20 May 1942, no fewer than 85 men were sent to Beirut under arrest, where they were sentenced to detention by a field general court martial.[49]

Upon completion of the Cheka tunnels during September 1942, the entire 61 Tunnelling Company moved to Ras Bayada so as to continue tunnelling operations. As with the Cheka tunnel, work commenced from both portals and two additional adits. This in turn meant that the unit could work simultaneously on six faces, each with its own loading slide. The unit adopted a six-day working week upon their arrival at Bayada, with Sunday being the only day of rest. The day of rest facilitated in the repair and maintenance of the mining equipment which, up to this stage, had been running non-stop for six months. The newly-adopted working week paid dividends, and the machinery remained in use with the minimum breakdowns. The power supply at the Bayada works, however, remained problematic, for there was no bulk supply of electrical power. Thus the bulk of the electricity supply came

47 Orpen and Martin, p. 314.

48 DOC C, UWH, Civil Group, 166, SAEC 61 Tunnelling Company. Notes on activities by tunnelling coys in UDF, compiled by Lt Trollip of the History Record Section, 15 December 1944.

49 DOC C, AG, 42, 61 Tunnelling Company. Extract from War Diary of 61 Tunnelling Company for the period 16-17 May 1942, from the Deputy Chief of Staff for the information of the Adjutant General UDF, 21 May 1943.

from the unit's own electricity generating plants, which in turn severely curtailed mining operations on the tunnel.[50]

The black labour attached to 61 Tunnelling Company did excellent work, albeit finding the initial adjustment to army life rather difficult. Some problems did, however, occur, especially fraternisation with the locals and other white Commonwealth troops. The root cause of these problems seemed to stem from the readily available local brew, "Arrak". However, as the men became accustomed to the local customs and the discipline of army life, their general discipline and work ethic increased. A newfound *espirit de corps* was also established amongst the men. The Ras Bayada tunnel was nearly completed by the time that 400 black labourers from the company became eligible for repatriation back to the Union. These men carried out the bulk of the tunnelling work at Ras Bayada, totalling nearly 2 910 metres of excavation. The UDF kept its word and on 1 December 1942 the men left Ras Bayada for the Union. Only men who were not under a time contract were retained for the completion of the Bayada tunnel.[51] The black labour detachment was replaced by a contingent of the Basotho African Pioneer Corps (APC). The standard of the work remained the same with the departure of the black detachment of men from 61 Tunnelling Company, for most of the men of the Basotho APC had some experience working in the South African mines prior to the war.[52]

Whilst 61 Tunnelling Company was still busy at Ras Bayada, the detachment from the RAE, who was responsible for platelaying at the Cheka tunnels, was moved towards the African theatre of operations. Thus "B" Detachment from 61 Tunnelling Company was sent back to the Cheka headland, so as to finish the platelaying. By 3 January 1943, the detachment arrived back at Cheka, only to find the railway fully operational. The South Africans' job was made very difficult by an unexpected marl formation which started to fragment. Due to the railway line being operational, the South Africans could erect no retaining or staging walls.[52] The detachment of men thus proceeded by building masonry walls, with precast concrete arches fastened on top of them. The company proceeded with the work in earnest, averaging an impressive 36 metres per day. The detachment of men completed their allotted task, that of lining the marl formation, and left the Cheka headland towards the end of March 1943.[53]

With the work on the Cheka headland tunnels completed, "B" Detachment returned to Ras Bayada so as to ensure that the tunnels were completed on schedule. The lining of the Bayada tunnel was completed by 31 March 1943,

50 DOC C, WD, 459, 61 Tunnelling Company: Reports on completed jobs – HBT Rly. Tunnel construction on the Haifa-Beirut-Tripoli Railway, January 1943.

51 DOC C, CGS WAR, 49, 61 Tunnelling Company. Letter from Lt Gen. WD Lindsell – Field Marshall JC Smuts, 6 January 1943 and reply from Field Marshall Smuts, 26 January 1943.

52 *Ibid*.

53 *Ibid*.

whereafter the tunnels were handed over to the New Zealand Engineers Railway Construction Group for track laying. The Ras Bayada tunnel was officially opened by Major General FH Theron, General Officer Administration, UDF Administrative Headquarters, North Africa, on 29 April 1943, when he unveiled a special plaque on the northern portal. During the opening ceremony, Theron conveyed a special message of appreciation to the men from Gen. Smuts himself.[54] At the southern end of the portal, a plaque was erected in the cutting which bears the names of the two units which were involved in the tunnelling operations.[55]

5. THE KASMIEH IRRIGATION SCHEME

With the two tunnels completed, the men of 61 Tunnelling Company were looking forward to shaking off the dust of Lebanon and returning to the Union. The pressure of war, however, tied them up in Lebanon with yet another assignment: The Kasmieh Irrigation Scheme. By the end of 1942, the Allied Middle East Supplies Commission found it increasingly difficult to obtain adequate shipping to transport foodstuffs to the Middle East. This was exacerbated by Japan's entry into the war and their successes in the Far East, as well as intensified submarine operations by the Axis powers in the Mediterranean. In the Middle East, the Supplies Commission was represented by the Spears Mission. The Spears Mission, in conjunction with the Lebanese government, was responsible for the purchase and transportation of foodstuffs from Syria to Egypt.[56]

The Lebanese government had for some years toiled over the idea of irrigating the Litani river valley.[57] It was believed that if the entire coastal plain between Tyre and Sidon, 3 640 hectares, could be irrigated, then the land could be brought under immediate double crop rotation through the establishment of an irrigation canal.[58] If this project succeeded, it was believed that by 1944, 14 000 tons of cereals and 50 000 tons of potatoes could be produced per harvest. Thus, not only would this

54 *Ibid*.

55 *Ibid*. Tunnel construction on the Haifa-Beirut-Tripoli Railway, January 1943.

56 The Spears Mission was headed by Maj. Gen. Sir EL Spears. Spears had previously acted as the liaison between the British and French military commands during the Great War. During the Second World War, Spears was placed in charge of the British Liaison Mission to the Free French Movement. After the Allied occupation of Syria and Lebanon, Spears personally headed up the British branch in the Levant.

57 DOC C, UWH, Civil Group, 166, SAEC 61 Tunnelling Company. Notes on activities by tunnelling coys in UDF, compiled by Lt Trollip of the History Record Section, 15 December 1944.

58 DOC C, WD, 459, 61 Tunnelling Company: Reports on completed jobs – Kasmieh Irrigation Scheme. Tunnel construction on the Kasmieh (Lebanon) Irrigation Scheme, August 1943.

irrigation scheme boost the agricultural resources of the Middle East, but it would also alleviate the all-important shipping problem.[59]

The Spears Mission subsequently tabled the Kasmieh Irrigation Scheme before the Allied Middle East Supplies Commission, who immediately grasped its possibilities.[60] Professor JT Addison of the Cairo University rendered expert advice on the irrigation scheme. It immediately became clear that a specialised tunnelling unit would have to be employed to cut the necessary irrigation tunnels through the solid rock.[61] In order to achieve this, the irrigation canal would have to be started fairly high up in the valley. This in turn meant that a series of tunnels would have to be cut through the mountains to ease the flow of water to the irrigation canals.[62]

It immediately became clear that the Lebanese Civil Administration would not be able to conduct a massive undertaking like this on their own, which in turn necessitated the employment of a specialised unit for the tunnelling. Brigadier Reid of the British Ninth Army, along with Browne, investigated and reported on all factors concerning the tunnelling aspect. The initial inspection of the proposed tunnelling sites took place on 25 March 1943. They reported back that a specialised tunnelling unit could complete the cutting of the tunnels, nearly 1 828 metres, within 125 working days. The Spears Mission initiated the appeal for suitable Army assistance. The Middle East Minister of State, Richard Casey, personally requested assistance from Smuts.[63]

On 25 April 1943 Browne met with Theron. Theron asked him, on behalf of Smuts, whether 61 Tunnelling Company would volunteer to proceed with the tunnel construction work on the Litani River Irrigation Scheme. Browne's response was that the men would undertake the project; he, however, felt that there should be no suggestion of volunteering to the men.[64] By 27 April 1943, confirmation was received from the Union for the retention of the services of 61 Tunnelling Company

59 DOC C, WD, 458, 61 Tunnelling Company War Diary MEB, SAEC War Diary from 1 August 1943 to 31 August 1943. Extract: Copy of *Eastern Times Newspaper*, 14 August 1943.

60 DOC C, WD, 459, 61 Tunnelling Company: Reports on completed jobs – Kasmieh Irrigation Scheme. Tunnel construction on the Kasmieh (Lebanon) Irrigation Scheme, August 1943.

61 DOC C, WD, 458, 61 Tunnelling Company War Diary MEB, SAEC War Diary from 1 August 1943 to 31 August 1943. Extract: Copy of *Eastern Times Newspaper*, 14 August 1943.

62 DOC C, UWH, Civil Group, 166, SAEC 61 Tunnelling Company. Notes on activities by tunnelling coys in UDF, compiled by Lt Trollip of the History Record Section, 15 December 1944.

63 DOC C, WD, 459, 61 Tunnelling Company: Reports on completed jobs – Kasmieh Irrigation Scheme. Tunnel construction on the Kasmieh (Lebanon) Irrigation Scheme, August 1943.

64 DOC C, UWH, Civil Group, 166, SAEC 61 Tunnelling Company. Notes on activities by tunnelling coys in UDF, compiled by Lt Trollip of the History Record Section, 15 December 1944.

for another four months. Needless to say, it was a big disappointment for the men when they received the news on 29 April 1943, mere days before they were set to sail back to the Union.[65]

Confirmation of the retention of the services of 61 Tunnelling Company was, however, still required from the Transvaal Chamber of Mines as well. Their subsequent satisfactory response of 30 April 1943 finally confirmed the extended deployment of 61 Tunnelling Company in Syria.[66] For this operation, 61 Tunnelling Company would receive direct logistical support from the Director of Transportation of the British Ninth Army in the Middle East.[67] In correspondence between the office of the Chief of the General Staff, Lt Gen HA van Ryneveld, and the Transvaal Chamber of Mines, it was confirmed that the families of the deployed men should be informed of their extended stay in the Middle East. As such, the families were informed that the men would remain deployed for another four months so as to complete a task of great importance to the war effort of the Allied forces. The Gold Producer's Committee of the Transvaal Chamber of Mines also decided to send a representative to view the work done by 61 Tunnelling Company.[68]

By 6 May 1943, 61 Tunnelling Company had started operations on the Kasmieh Irrigation Scheme. By 10 May 1943 the final plans and staking off of the tunnels were completed. It was found that four tunnels had to be cut. Tunnel 3 would total 365 metres, Tunnel 9 would total 780 metres, Tunnel 10 would total 215 metres, and Tunnel 11 would lastly total 214 metres. The finished dimensions of the tunnels would be 2,1 metres by 2,1 metres and 20 cm with a radius invert, at a grade of one in 1 000. Tunnelling operations commenced on 10 May 1943, before which an access road of 3 km had to be cut into the mountains to allow access to the tunnel portals and set up the required compressor and electrical units.[69] During this period it was confirmed that the entire irrigation scheme would be funded by Travaux-Public.[70] Travaux-Public would also cover the costs incurred on such

65 DOC C, WD, 459, 61 Tunnelling Company: Reports on completed jobs – Kasmieh Irrigation Scheme. Tunnel construction on the Kasmieh (Lebanon) Irrigation Scheme, August 1943.

66 DOC C, CGS WAR, 49, 61 Tunnelling Company. Official correspondence Transvaal Chamber of Mines – Chief of General Staff, Pretoria, 30 April 1943.

67 DOC C, WD, 459, 61 Tunnelling Company: Reports on completed jobs – Kasmieh Irrigation Scheme. Tunnel construction on the Kasmieh (Lebanon) Irrigation Scheme, August 1943.

68 DOC C, CGS WAR, 49, 61 Tunnelling Company. Official correspondence Col. Ross of the Chief of General Staff – Mr FA Ungar from the Transvaal Chamber of Mines, 11 May 1943.

69 DOC C, WD, 459, 61 Tunnelling Company: Reports on completed jobs – Kasmieh Irrigation Scheme. Tunnel construction on the Kasmieh (Lebanon) Irrigation Scheme, August 1943.

70 Travaux-Public, was the Public Works section of the Lebanese government operating under the auspices of the Free French Movement which was assisted by the Spears Mission in the day to day running of Lebanon during World War II.

equipment as explosives, consumable stores and the repair and depreciation charges on the construction plant employed during tunnelling operations.[71]

Tunnelling operations were carried out in six faces. Tunnels 10 and 11 each had one face that was worked on, whilst tunnels 3 and 9 were worked on from two faces each. The mining shifts were subdivided into four six-hour shifts and local civilian labour was used to clear the rubble. Each face was worked on by two hand-held jackhammers, drilling "wet" under a constant air pressure of 70 pounds per square inch (PSI). Tramming was simplified by the use of standard one-ton cars, whilst the ventilation units provided 11 m^3 of air per minute to ease mining operations. The total labour force employed during the operations consisted of the remainder of 61 Tunnelling Company, with an additional 360 civilian labourers added to their ranks. By 7 July 1943, nearly 50% of the mining on the Kasmieh irrigation was completed.[72]

Whilst the tunnelling operations were continuing in all earnest, back in the Union arrangements were being made for a delegate from the Chamber of Mines to proceed to the Middle East to visit the men of 61 Tunnelling Company. Col. PM Anderson of the MEB accepted the invitation on behalf of the Chamber of Mines during June 1943.[73] Upon notice of the visit to the Middle East, Browne suggested that Fleischer should accompany Anderson on his visit so as to show united support to the men still deployed.[74] Anderson left for Cairo on 17 May 1943. The subsequent visit served two purposes. Firstly, to serve as a goodwill visit to the men so as to thank them for their service. Secondly, to allow Anderson to discuss the future position and employment of 61 Tunnelling Company with the Director of Transportation Middle East.[75]

Due to the high prevalence of malaria in the area of operations, 61 Tunnelling Company was forced to camp some miles away from the working site. In order to prevent serious cases of malaria from occurring, all army personnel received suppressive mepacrine treatment between sunset and sunrise. Vigorous anti-malaria measures were imposed in the working areas. Two civilian labourers detached to the unit's hygiene section sprayed all pools continuously to prevent the accumulation of malaria-carrying mosquitoes. Due to the stringent measures imposed, the unit only

71 DOC C, AG, 42, 61 Tunnelling Company. Official correspondence Lt Gen. Lindsell – the Spears Mission, 17 May 1943.

72 DOC C, WD, 459, 61 Tunnelling Company: Reports on completed jobs. Kasmieh Irrigation Scheme. Tunnel construction on the Kasmieh (Lebanon) Irrigation Scheme, August 1943.

73 DOC C, CGS WAR, 49, 61 Tunnelling Company. Official correspondence. President of the Gold Producer's Committee – Colonel R Ross of the Chief of General Staff Section, 18 May 1943.

74 DOC C, CGS WAR, 61 Tunnelling Company. Signal from UNIDEF to DECHIEF concerning proposed visit to Middle East by representative of Mining Industry, 2 June 1943.

75 DOC C, UWH, Civil Group, 166, SAEC 61 Tunnelling Company. Notes on activities by tunnelling coys in UDF, compiled by Lt Trollip of the History Record Section, 15 December 1944.

reported two cases of malaria for the entire period whilst working on the Kasmieh Irrigation Scheme.[76]

By 20 July 1943, 61 Tunnelling Company had completed 75% of the tunnelling work. This meant that only the lining of the tunnels had still to be done. The unit started with the lining of the four tunnels as early as it was practicable. Lining construction commenced with three eight-hour shifts working from all ends of the tunnels. By the time the tunnelling had been completed, almost 50% of the tunnels were already lined with concrete. The lining was carried out by building walls of rubble masonry, with an average thickness of 35 cm. The walls were finished off with a high-strength cement plaster. The arched ceilings of the tunnels were built on top of the walls using precast concrete arch ribs. The radius invert was poured in concrete to a minimum thickness of 10 cm in the rock and 35 cm in the mud sections. The overall speed of the lining averaged about 15 metres per day.[77]

During June to July 1943, Anderson visited the unit, whereupon he told the men that after they had completed the Kasmieh project in September, they would be returned to the Union as soon as possible. He further stated that they would have a month's leave in the Union, after which they would have the option of returning to civil employment at the mines or to remain in the Army. The men seemed perfectly satisfied with this. Upon returning to South Africa, Anderson reported back to the UDF General Staff conference about his visit in the Middle East. He highlighted the importance of the work which the company was doing, and also informed the meeting that a company similar to 61 Tunnelling Company would be needed once the invasion of Europe started. He further informed the meeting that the Chief Engineer of the British army in the Middle East said that he could not have carried out his work without the company's assistance. Van Ryneveld agreed with Anderson's feedback, and stated that the unit had indeed made history and would thus continue to function as an active unit in the SAEC.[78]

By 20 September 1943, the tunnelling operations were concluded on the Kasmieh Irrigation Scheme, despite the irrigation canals not being nearly completed. By the time 61 Tunnelling Company finished their required work, the Lebanese detachment busy with the building of the canals only completed about 25% of their allotted task.[79] On 27 September 1943 the company received the required authority to be returned to the Union by sea. The Unit departed directly from Suez to the Union and disembarked at Durban on 11 November 1943. Upon

76 DOC C, WD, 459, 61 Tunnelling Company: Reports on completed jobs. Kasmieh Irrigation Scheme. Tunnel construction on the Kasmieh (Lebanon) Irrigation Scheme, August 1943.

77 *Ibid*.

78 DOC C, CGS WAR, 49, 61 Tunnelling Company. Address by Col. PM Anderson to the General Staff Conference concerning his visit to the Middle East, 18 August 1943.

79 DOC C, UWH, Civil Group, 166, SAEC 61 Tunnelling Company. Notes on activities by tunnelling coys in UDF, compiled by Lt Trollip of the History Record Section, 15 December 1944.

arrival in the Union, the men were granted 30 days vacation leave, after which at least 60% of the men returned to the mines upon discharge from the Army. The remainder of the men chose to remain in the Army, and saw subsequent service with the unit during the Italian Campaign. Thus, after 689 days in the Middle East, and upon the completion of three major tunnelling projects, 61 Tunnelling Company finally received their well-deserved rest. As a final token of appreciation, the Lebanese government and the British Ninth Army congratulated the unit on a job well done. The gratitude of the Lebanese government was immense, for the infrastructure of their country had a definite boost through the concerted work shown by the men of 61 Tunnelling Company.[80]

6. CONCLUSION

The SAEC provided a number of specialist services to the Allied war effort during the Second World War. The SAEC troops served with distinction in the East African, Western Desert and Italian Campaigns. The SAEC troops did, however, serve in lesser known theatres as well. This was the case with 61 Tunnelling Company, a unit that rendered invaluable service to the Allied war effort in the Middle East. 61 Tunnelling Company completed three distinct tunnelling tasks during their stay in the Levant, and these projects subsequently had a perceived post-war impact on the economy and infrastructure of Lebanon. The company remains one of the myriad of specialist companies which served under the auspices of the SAEC, often forgotten, and very rarely congratulated for their effort in the war. The success of 61 Tunnelling Company in the Middle East led to the establishment of 62 Tunnelling Company, and both units served with distinction during the penultimate Italian Campaign.

80 *Ibid*.