

Canadian Engineer Creates Biggest Explosions in the World

The two largest non-nuclear planned explosions in history involved the same man – a Canadian Engineer officer - Major Cyril Burton North, DSO, MC.

First some background. During World War I, the Canadian Engineers had three tunnelling companies serving at the front: two with the Canadian Corps and one with the British. Tunnelling Companies were largely composed of men who had worked in mines in civilian life. Their tactic involved digging tunnels and galleries under enemy lines, filling the galleries with explosives, and setting the charges off immediately prior to an attack. The men in the tunnelling companies were familiar with the dark, claustrophobic work that characterized this dangerous activity. While nominally called companies, they had establishments of over 500 all ranks, and were often reinforced with up to 500 more infantry or Pioneer labour. It was dangerous work with both sides building tunnels. More than once opposing miners met in the dark underground and vicious hand-to-hand subterranean battles ensued.

Cyril Burton North was a Canadian mining engineer from Nova Scotia who enlisted in with The Canadian Engineers (C.E.) in September 1914 in Nelson, B.C. He was on the ground in England when the British developed their tunnelling capabilities and served with the royal Engineers' 177th Mining Company until May 1916. He then returned to the Canadian Army and was assigned as Officer Commanding 1st Canadian Tunnelling Company, C.E.

When he took command, the 1st Tunnelling Company was stationed in the area of the St. Eloi craters, a few miles southeast of Ypres, Belgium. Descriptions of the battles in and around the area are covered extensively in any number of historical documents. Suffice to say, the battles that took place

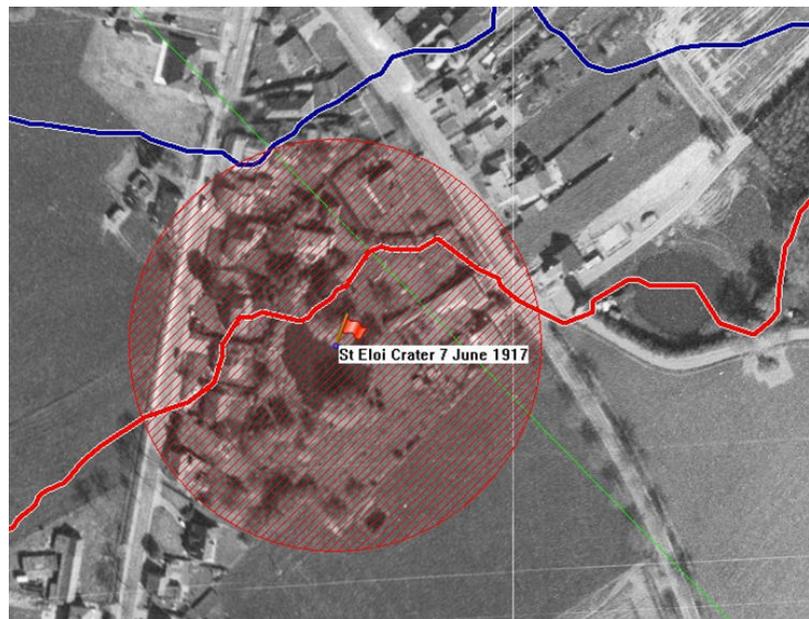


Figure 1 St Eloi Crater Fired by 1st Canadian Tunnelling Company 7 June 1917

before Major North arrived were costly. The 2nd Canadian Division lost nearly 2,000 men in a single German counter attack. Both sides had been stuck facing each other since the War broke out in 1914.

The stalemate was finally broken with the launch of the Battle of Messines on 7 June 1917. Nineteen huge craters were blown that day adding to the moonscape battlefield, the largest by far at 95,600 pounds of explosive was the one fired by Major North. The resulting crater measured 300 feet across and up to 50 deep. Nearly 10,000 German soldiers were killed or captured from the blasts which opened the way for the British 41st Division to finally capture

the village of St Eloi. Until the detonation at Ripple Rock in 1956 in Seymour Narrows on BC's coast, the mines set off that morning constituted the largest planned explosions until the first atomic bomb test in 1945.

By war's end, Major North had been wounded twice, awarded the DSO and Bar, the Military Cross and Mentioned in Dispatches five times. After the war, Major North returned to Canada and re-entered his career as a mining engineer, mostly working in northern British Columbia.

During the Second World War, the Canadian Army again had need of tunnelling expertise, although not for digging under enemy lines. No. 1 Canadian Tunnelling Company had been raised to assist a range of mining activities supporting the war effort. A detachment had been assigned construction tasks on the Rock of Gibraltar. When it was realised their efforts needed to be reinforced, Major North was assigned to raise No. 2 Canadian Tunnelling Company. In a few short months after scouring all R.C.E. units in England, he raised the company and took them to Gibraltar in March 1941. Canadian Tunnellers built a huge, underground hospital, complete with road, storehouses and artesian wells. The work done by the hard-rock miners of R.C.E. in Gibraltar still stands today. He finished the war as a Lieutenant-Colonel and returned to his mining career in British Columbia.

Cyril North was hired by Dolmage & Mason Consulting Engineers in Vancouver and assigned the task of leading the engineering staff during construction of the First Narrows tunnel to carry water from the Capilano River to Vancouver. Later he worked on the Kemano tunnels during the construction of the Alcan plant at Kitimat. Then came the biggest task of all - planning and managing the blasting of the notorious Ripple Rock in Seymour Narrows, in 1958.

Ripple Rock was an underwater, twin-peaked mountain in the Seymour Narrows on Vancouver Island's east coast. At only nine feet underwater at low tide, it was a deadly marine hazard. As long ago as the late 1700s, Captain George Vancouver described it as "one of vilest stretches of water in the world." Until it was removed, at least 20 large and 100 smaller vessels were badly damaged or sunk with at least 110 people drowning in these accidents.

There had been two attempts to plant explosives on Ripple Rock - one in 1943 using surface barges, and a similar attempt in 1945 planning to use nearly 1500 small charges lowered from the surface. Both attempts were failures and a solution needed to be found. The concept of tunnelling and placing explosives under the rock was proposed by the National Research Council of Canada in 1953.

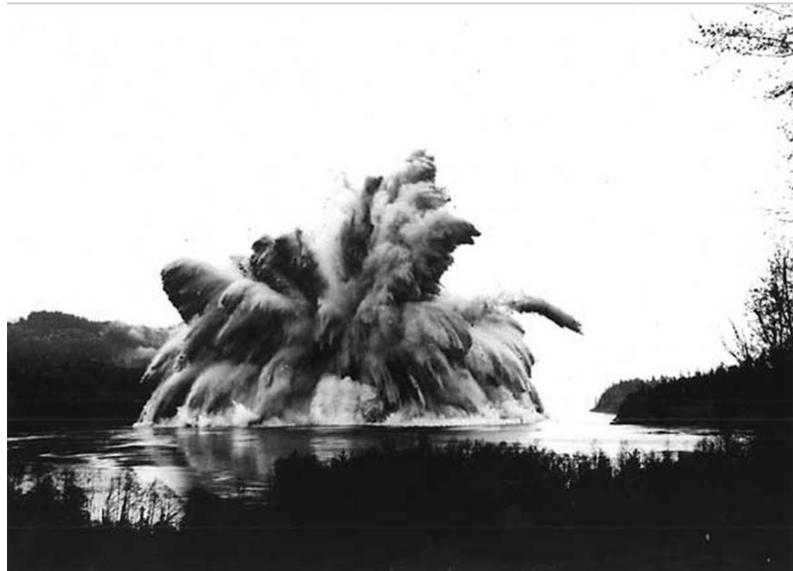


Figure 2 Ripple Rock Explosion - 5 April 1958

Between November 1955 and April 1958, a three-shift operation involving an average of 75 men worked to build a 174 metre vertical shaft from Maud Island, a 762 metre horizontal shaft to the base of Ripple Rock, and two main 91 metre vertical shafts into the twin peaks, from

which shafts were drilled for the explosives. 1,270 metric tons of Nitramex 2H was placed in these shafts. This amount was ten times what would have been needed for a similar explosion above water.

The explosion took place at 9:31 on the morning of April 5 1958. Over 635,000 metric tons of rock and water were displaced by the explosion throwing debris 300 meters into the air and falling on land on either side of the narrows. The blast increased the clearing at low tide to about 45 feet. At over seventeen tonnes of explosive, it was the largest peacetime, non-nuclear explosion up until that time.

LCol North died in 1960 and is buried in Mountain View Cemetery in Vancouver.