



BREAKTHROUGH

MEMOIR '44

OPERATION GUNNERSIDE

Introduction

I love Memoir 44 but I have found myself in a tricky spot. My teenage son (a good Memoir 44 player) is now preoccupied with basketball and a girlfriend and rarely plays anymore. Online the game lacks something. When I play solo it's dry and uninspiring.

I thought hard about the problem with solo Memoir 44. It has no surprise - there is no seeing your chance and going for it. With this project I've addressed this shortcoming by examining an espionage operation where Norwegian special forces ran rings demoralized German soldiers in Norway 1943.

The Norwegian Heavy Water Sabotage was a series of Allied-led efforts to halt German heavy water (deuterium) production in Nazi Germany-occupied Norway during WW2.

This project examines a Norwegian Commando operation aimed at the Vemork Hydroelectric Plant (pictured below) Operation Gunnerside.



Operation Grouse

A rough plan was devised for an advance team of four SOE* trained Norwegian Commandos to be dropped by parachute onto the Hardanger (a large wilderness area avoided by the German forces).

They would live in the wild and act as a reconnaissance unit and reception committee for a force of British glider-borne commandos who were arriving at a later date.

Their task was to find a suitable dropping zone in the rugged terrain, guide in the aircraft, lead the British troops to the Vemork Hydroelectric Plant and help them escape. All four had exceptional outdoors skills and underwent additional training in Scotland to gain competency in sabotage, radio transmitting and irregular warfare.

Operation Grouse

Operation Grouse was the name given to this advance team. It was to be led by Jens Anton Poulsson, a pipe-smoking, Norwegian Army cadet and expert mountaineer who grew up a mile or so from the Vemork Hydroelectric Plant. The three men he put forward to make up the team, Claus Helberg, Knut Haugland and Arne Kjelstrup, were also born in Rjukan.

Helberg, a brilliant skier and man of adventure, had sat next to Poulsson in school.

Haugland, one of the best underground W/T operators of the war, had worked with the embryonic Norwegian Resistance but escaped to Britain after being arrested on several occasions.

Kjelstrup, a plumber, was born in Rjukan but raised in the suburbs of Oslo. Short and powerful, he had shown during Germany's Blitzkrieg invasion that he was not a man to shy away from a fight, even in the face of overwhelming odds.

On October 18 1942, after several flights were aborted due to bad weather, the four commandos were parachuted into Norway. The four men suffered heavy landings on very rough terrain. The RAF had dropped them in the wrong place, ten miles from the prearranged landing zone.

'It was fortunate that none of us was severely hurt when we landed,' Poulsson recorded in his log. 'The ground was just a mass of stones.'

They passed the rest of the night in sleeping bags, sheltered from the biting wind in a large outcrop of rocks. The four men would set up an operating base in one of the small wooden huts dotted over the Hardanger.

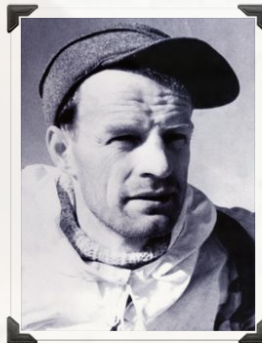
Operation Grouse (Initial Reconnaissance)



Jens-Anton Poulsson
(Leader of Grouse / Member of Gunnerside)



Arne Kjelstrup
(Grouse / Gunnerside)



Claus Helberg
(Grouse / Gunnerside)



Knut Magne Haugland
(Grouse / Gunnerside)
Radio Operator

Operation Names

"Grouse" was the name of the initial reconnaissance operation.

After the Operation Freshman failure, the mission plan was renamed Operation "Swallow" by the Norwegians and Operation Gunnerside by the British SOE*. This name change distinguished between the failed initial attempt and the successful revised sabotage operation.

Operation Swallow was not a renamed Operation Grouse — it was the next phase of the mission that succeeded where previous efforts had failed.

The Grouse team stayed in place and later joined with the Swallow/Gunnerside team to carry out the actual sabotage.

To simplify explanations I will refer to Swallow/Gunnerside as simply Gunnerside.

SOE = Special Operations Executive *

Radio Operator

Knut Magne Haugland (Radio Operator)

Haugland, trained as a radio technician and served as a wireless operator in the Norwegian Army at the outset of the German invasion on April 9 1940. He is renowned for his contributions against Nazi Germany's atomic program during WW2.

In August 1941, Haugland was arrested by the Statspolitiet, Norway's German-controlled state police, on suspicion of resistance activities but escaped custody shortly thereafter. He fled eastward into neutral Sweden before continuing to the United Kingdom, where he enlisted in Kompani Linge.

Knut Haugland participated in the Vemork heavy water sabotage as a radio operator in Operation Grouse, which parachuted into the Hardangervidda plateau on October 18, 1942.

Following the successful operation on February 27-28 1943, Haugland, remained on the Hardangervidda plateau maintaining contact with SOE* headquarters in London. He used an improvised radio set powered by a car battery and parts from stolen fishing rods. Each morning at 01:00 he would make contact, often unable to control the chattering of his teeth.

Arrested by Gestapo forces in Oslo in November 1943 amid heightened security following resistance activities, Haugland escaped custody by navigating through a hospital attic and cellar, eluding pursuing German soldiers. He then utilized the Shetland Bus—a covert SOE* maritime evacuation route operated by Norwegian fishermen between occupied Norway and Scotland—for exfiltration to Britain.

"I never use that word about myself or my friends. We just did a job,"

Haugland was always unhappy with the use of the word hero.



Operation Freshman [The Reinforcements]

Operation Freshman was mounted the following month by British paratroopers to rendezvous with the Grouse Team. It was a disaster.

The German Defenses

The geography of the area around the village and the plant meant that attacking the plant would be extremely difficult. Both were situated in a deep thickly-forested valley that rose almost vertically from a narrow river-bed, and which was overlooked a 5,400 foot high mountain. The plant itself was built on a broad rock shelf above the river bed.

Einar Skinnarland had observed the German defences over the summer and transmitted details back to London in the weeks leading up to the operation. He had counted a garrison of 100 men in the village of Rjukan, 20 at the dam and about 55 near the main plant during the summer, by October this had been reduced to about 12 at the plant, 12 at the dam and approximately 40 in Rjukan. Most of the men were elderly or infirm Austrians under the command of an elderly captain, although well trained German regulars periodically passed through Telemark. Skinnarland also believed that Gestapo agents were in the area.



In early October 1942 Generaloberst Nikolaus von Falkenhorst (see Page 28) had visited the plant. He warned that the plant was a likely target for British commando raids, but he did not have the resources to increase the manpower there.

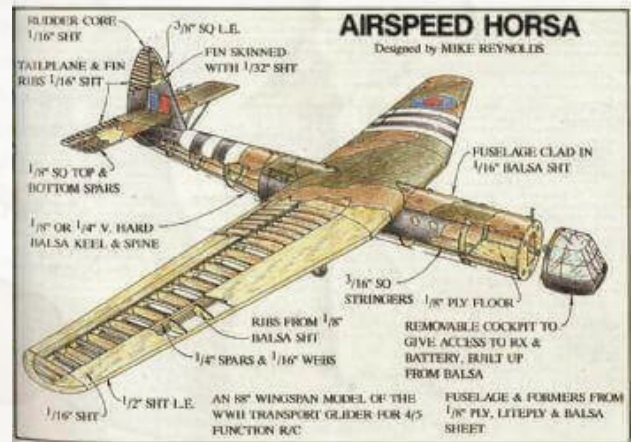
The Germans had obstacles hanging across the valley to prevent low flying bombing raids. Minefields and booby traps were deployed along with searchlights on the roof and a machine gun nest near the entrance. A single bridge crossed the gorge in front of the plant that was usually manned by two guards.

Planning

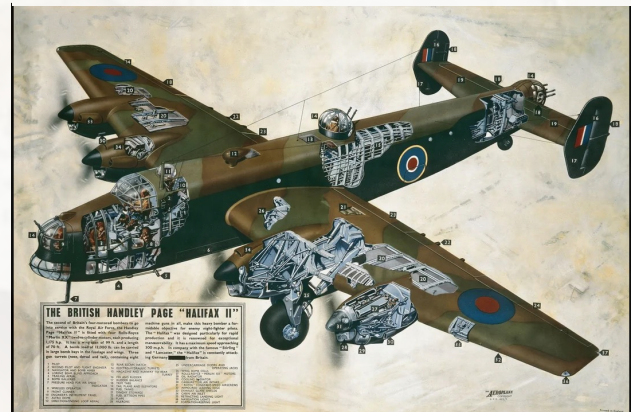
HQ staff was tasked with devising a plan for the glider-borne assault on the plant.

Because of the complicated nature of the operation, it was thought that a minimum of twelve to sixteen skilled engineers was required. This number would be doubled to ensure that if there were casualties the survivors would have the skills to complete the operation.

The Royal Air Force unit was provided with three Handley Page Halifax Mark II heavy bombers for the operation that were capable of towing Horsa Gliders the distance required before returning home.



The SOE* agents selected a landing zone which was approximately 3.1 miles from the Vemork Hydroelectric Plant and could not be observed by German patrols. The plan was for the engineers to land in the two gliders at the landing zone, guided in by the SOE* agents equipped with Eureka radio beacons. Once they had successfully landed, the sappers would be escorted to the plant by the SOE* agents, demolish the plant and its stocks of heavy water, and then cross the Norwegian border into neutral Sweden.



It was initially suggested that the men should fight their way to the Swedish border, but MI9 believed their chances of survival were better if they attempted to disguise themselves as Norwegians and travel in pairs. In order to facilitate their escape the men were provided with civilian clothes (to be worn after the operation), simple Norwegian phrases (in the hope that no German they encountered would speak Norwegian) and escape kits containing money and maps. They were also ordered to shave off any moustaches and grow their hair long in order to blend in with Norwegian men.

Operation

After their training had been completed, on November 17 1942 the engineers were transported to RAF Skitten, Killimster in Scotland, with the operation scheduled to commence two days later. On the evening of November 19 1942, it was decided that although the weather was not perfect, it would be best to launch the operation that night. The first aircraft-glider combination took off from the airfield at 17:50, with the second following at 18:10; after circling the airfield several times the two combinations headed out across the North Sea towards their objective.

1st Aircraft Glider Combination

The first combination flew through poor weather conditions but managed to reach Norway and fly towards its objective. During the flight over Norway technical problems left the aircrew with only map-reading available to locate the landing zone, but the poor weather made this almost impossible.

On a second attempt to find the landing area, they flew into thick clouds approximately 40 miles northwest of Rjukan. Ice began to form on the aircraft, glider and the tow rope connecting them. Eventually, the tow rope snapped, setting the glider free. At 23:55, the aircraft signaled back to Skitten that it had released the glider. This was followed by a second message, "Glider in sea", indicating the air crew's belief that the glider had crashed. Low on fuel, the aircraft turned back and managed to crawl back in Britain.

"The tragedy of Freshman showed us that courage alone was not enough; precision and planning were everything." (Members of Milorg, later recorded in post-war Norwegian accounts)

The glider crash-landed in an area called Fyljesdal, overlooking Lysefjord. Of the seventeen men on board, three were killed outright. Some local farmers found the injured soldiers and gave them medical treatment to them and did not contact the German authorities. The Norwegians also burned all of the maps and documents from the glider crash before the Germans could arrive, and managed to keep the entire operation secret for almost twenty-four hours.

German soldiers arrived the next afternoon on two boats from a nearby camp. They took the British soldiers prisoner, and departed with them on the boats. Despite the grave injuries suffered by some of the soldiers, they were forced to walk and ride in the unsheltered boats in the cold. The dead soldiers were buried in a shallow grave.



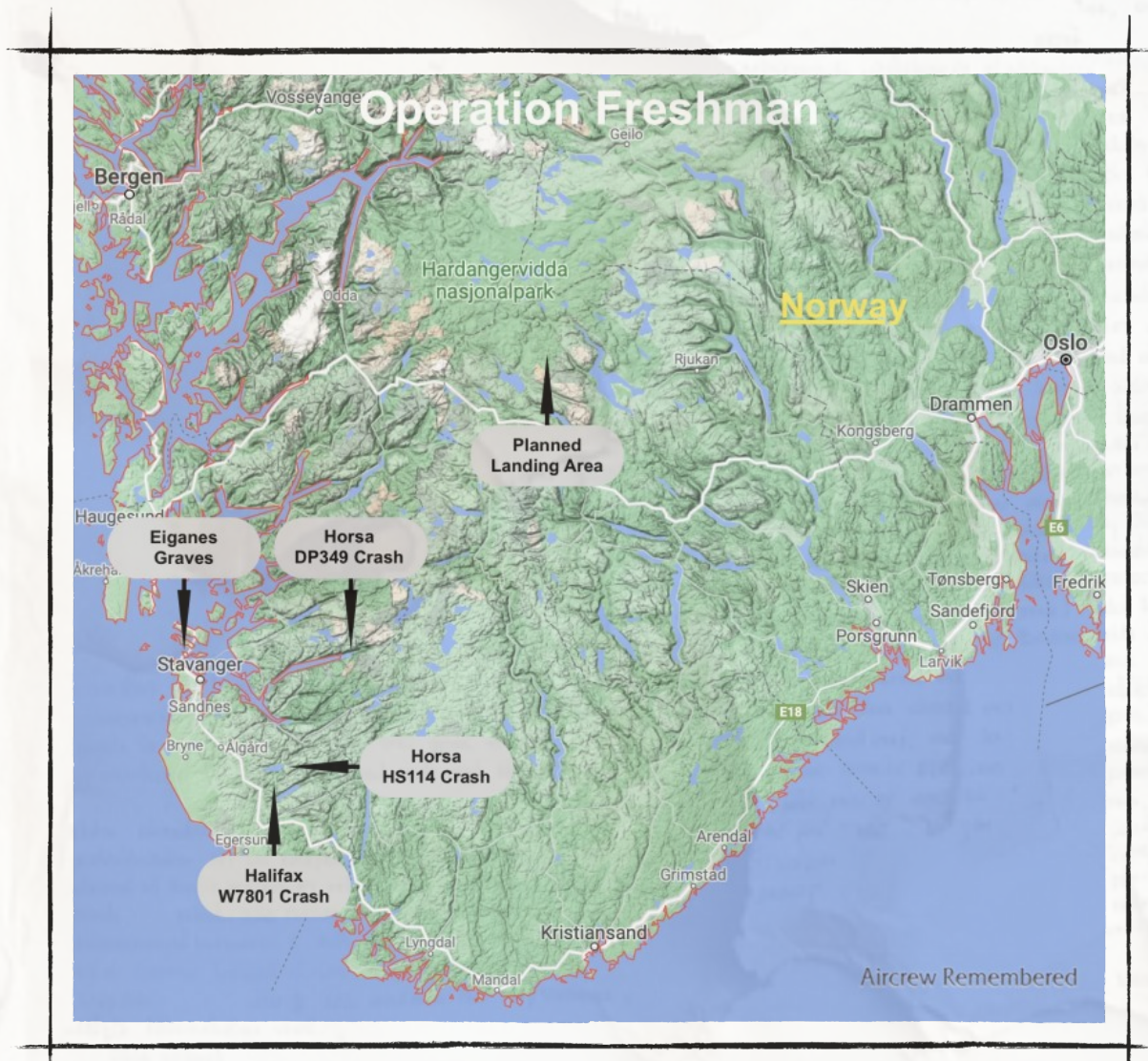
2nd Aircraft Glider Combination

The second combination managed to reach the coast of Norway, but fared worse than the first combination. The weather was poor and the second Halifax released the glider and then crashed into a mountain at Hestadfjell killing everyone onboard. The German authorities arrived quickly and finding no survivors they threw the bodies of the aircrew into a nearby bog and left the area.

The glider spiralled out of control and crash-landed in the mountains between Helleland and Bjerkreim. The pilot and copilot were killed instantly and the rest were injured to varying degrees. The survivors began searching for help and found the hamlet of Helleland about 2 miles from where they had crashed. Meeting a local person, Trond Hovland, they asked if he could help them find a doctor. He agreed but the nearest doctor lived 9.3 miles away, in the town of Egersund.

Believing that there was no alternative, the soldiers agreed to contact the Germans, expecting to be taken as prisoners of war. A party from the Norwegian Labour Service arrived at the crash site and helped tend to the injured soldiers who burned all of their sensitive documents and materials.

A German party arrived about twenty minutes later and the British offered their surrender. Underneath their uniforms, the soldiers were wearing civilian clothing and had been told to grow their hair and beards. Additionally, sabotage equipment was found and German Colonel Probst, the head of the Wehrmacht in the Stavanger district, had all survivors executed at the German camp at Slettebø near Egersund.



Meanwhile

As all of this was unfolding, the surviving Norwegian Grouse team had a long wait in their mountain hideaway, subsisting on moss and lichen until Jens-Anton Poulsson captured a reindeer just before Christmas. From then on, Poulsson reported, they lived on meat.

"We ate every morsel of the animal in Indian fashion". 'One can live entirely on meat', he said. 'One gets vitamin C by eating the stomach with its contents. These contents, mixed with blood are a delicacy'"

The failure of Freshman was a hard blow for the Grouse men.

"It was sad and bitter", Poulsson later reported, "especially as the weather in our part of the country was splendid during the following days"

London wired to Grouse: 'Keep up your hearts. We will do the job yet.'

Grouse had remained undetected and continued to transmit information. Because of the failure of Freshman, however, the Germans were aware that the plant was a target and they increased their defences. Grouse became Swallow and continued their observation and signaling albeit amid snow, ice, food shortages and frequently failing power supply.

"We created a study circle — each night someone gave a lecture — to divert attention from the problems we faced. Everyone had to teach something. Otherwise, we would have gone mad."Claus Helberg

Just days after the Operation Freshman disaster, SOE*decided to launch a second attempt. This time it would be carried out by a further six British-trained Norwegian Commandos disguised as British soldiers. The operation would be code-named Operation Gunnerside.



Norwegian Independent Company 1 (NOR.I.C.1)

A British SOE group formed in March 1941 to perform commando raids during the occupation of Norway by Nazi Germany. As the English title lacked resonance in Norwegian they soon became known as *Kompani Linge*. "Linge" became synonymous with elite resistance work.

"To say you were "from Linge" carried serious weight inside occupied Norway"

Martin Jensen Linge, was a Norwegian actor who debuted on stage at the Oslo Central Theatre in 1921. He appeared in both theatre and films during the 1920s and 1930s. When Germany invaded Norway he began training commandos.

Unusual for a hero Martin Linge's (pictured) died early in the war while attacking a German position in during Operation Archery, a British Combined Operations raid at Måløy against German military positions on Vågsøy Island.



The members of the unit were trained at various locations in the United Kingdom, including at the SOE establishment at Drumintoul Lodge in the Cairngorms, Scotland. They trained alongside British commandos, specializing in sabotage, assassination, and insertions by sea and air. A total of 530 Norwegians served in NOR.I.C.1, of whom 57 died.

"There was both military and civilian, talk of a 'gang' of young Norwegians, out of ordinary control, trained by the British and also under their command. It was quite obvious that Norwegian army circles did not applaud the idea" (Joachim Rønneberg)

In cooperation with Milorg, the main Norwegian resistance organisation, communication lines with London were gradually improved during the war, so that by 1945, 64 radio operators were spread throughout Norway.

*** To varying degrees all Operation Gunnerside commandos were associated with Kompani Linge.**

Scientists



Nazi Germany undertook several research programs relating to nuclear technology, weapons and reactors, before and during WW2. These were variously called Uranverein (Uranium Society) or Uranprojekt (Uranium Project).

Jomar Brun was a Norwegian chemical engineer who saw the potential for large-scale production of heavy water at the Vemork plant. With inorganic chemist Leif Tronstad from the Norwegian Institute of Technology, he made plans for a heavy water production facility. Uranverein physicists visited Brun at the plant in May 1941, to discuss expanding production capacity. But they were evasive why they wanted the heavy water.



Leif Tronstad was considered the worst student ever accepted into the chemical engineering programme at the Norwegian University of Science and Technology (NTNU) in Trondheim. He turned out to be one of its greatest graduates.

Early on, he was unaware of the connection between heavy water and atomic weaponry, but it soon became clear that Germany could be running a nuclear energy project.

The idea of bombing the heavy water facility at Vemork surfaced, but Tronstad was a staunch opponent of this action. He warned that bombing was unlikely to succeed as the heavy water facility was located in the armoured basement of the electrolyzing plant.

After the failure of Operation Freshman, Tronstad organized Operation Gunnerside. He had wanted to take an active part in the mission, but was stopped by his commanders, who regarded him as inexpedient.

Tronstad and Brun proceeded to supply the Operation Gunnerside saboteurs with extensive knowledge of the facility, and organized their training.



Radio Communications / Spy

Einar Skinnarland (Swallow Blue)

Einar Skinnarland was a Norwegian resistance fighter during WW2. He graduated from Telemark Engineering College in Porsgrunn and was a skilled cross-country skier.

He worked at the Norsk Hydro plant at the Vemork Hydroelectric Plant and lived near the factory almost all of his life. His brothers and friends also worked at the factory.



In 1942, with a plan to help the war effort, he escaped to the UK. Only hours after surgery on his knee, he hijacked the coastal steamship Galtesund, evaded German bombers, and reached Aberdeen, Scotland. Once there he joined the ranks of Kompani Linge. On arrival, he thought he would receive months of military training to fight for his country's freedom. Instead, he was whisked to London by Leif Tronstad (see Page 12) who told Skinnarland he would have a week of training before parachuting back into Norway. Once there, he would spy on the German operations at Vemork, that served as a linchpin to Nazi nuclear research.

He has been referred to as "den ukjente sabotøren" ("the unknown saboteur"), because his role was overshadowed by some of the more dramatic commando raids.

On March 28 1942, buffeted by wind, he stared out the hole cut into the belly of a Whitley bomber. Bum knee, barely trained, and scared stiff, he refused to jump into the darkness over the vast Norwegian expanse of rock and snow. The dispatcher shouted at him to go. Skinnarland remained. The dispatcher signaled they were running out of fuel. Finally, knowing he must jump, Skinnarland took a deep breath and dropped into the night. After a rough landing, he gathered the gear sent out before him and skied dozens of miles back to his family's wood cabin beside the dam. His parents thought he had only been away for a hunting trip.

His technical skills and stealth helped link the underground struggle inside Norway with Allied command in London.

"Smiling broadly as usual, though a bit out of sorts as he had broken a front tooth recently" (Jens-Anton Poulsson describing Skinnarland)

Over the next three years, Skinnarland lived a double life, was chased by the Gestapo, and gathered the essential intelligence the Allies needed to attack Vemork. His baby face hides a tough and wily operator. His work as a radio operator in occupied territory was among the most deadly roles in the resistance. If captured he would have been shot. He evaded capture for years, despite intensive German efforts to locate the source of his wireless transmissions.



Operation Gunnerside [The Assault]

British authorities, aware that the Grouse team was still operational, mounted another operation with them; by this time, the Grouse team was known as Swallow.

The Gunnerside men went through intensive training with orders to destroy the whole stock of heavy water and all production facilities.

After handing them their suicide capsules... "I cannot tell you why this mission is so important, but if you succeed, it will live in Norway's memory for a hundred years." (Norwegian Royal Army Colonel Leif Tronstad)

On February 16 1943, in Operation Gunnerside, six Norwegian Commandos were dropped by parachute by a 138 Squadron Halifax bomber from RAF Tempsford. They were parachuted into Bjornesfjorden, about 20 miles from Swallow's camp. They swiftly unpacked their equipment and repacked what they needed. They took refuge in a hut until on February 23 1943, Gunnerside finally joined up with Swallow.

"We greeted each other with as much emotion as Norwegian men can." Helberg recorded drily.

Together, they set out on Feb 25 1943 to assault the Vemork plant on the night of February 27-28 1943. Haugland went into hiding with his equipment to make sure communications could be maintained. The combined force was split into two units: a support unit to neutralise the German security guards, and a demolition unit to place explosive charges in the basement and destroy the production facilities.

After the failed Freshman attempt, the Germans had placed mines, floodlights, and additional guards surrounding the plant. Although the mines and lights remained in place, security at the plant had weakened over the winter. The 246 ft bridge spanning the deep ravine 660 ft above the Måna River, however, was fully guarded.

Gunnerside was headed by second lieutenant Joachim Rønneberg (23) and otherwise includes second lieutenant Knut Haukelid (31), sergeant Fredrik Kayser (24), second lieutenant Kasper Idland (24), sergeant Hans Storhaug (27) and sergeant Birger Strømsheim (31).



How Were They Armed?

I love the details of these missions - for me it brings the scenarios to life. I try to be as accurate as possible but I am not certain about the firearm loadout used in Operation Gunnerside. Some historians have taken their best guess but I think they have got it wrong..... Here is my best guess.

It is reported that the Norwegian Commandos left a Thompson SMG behind at the Vemork Hydroelectric Plant to mislead the Germans and minimize any retribution against Norwegian civilians in the area. This may well be true.



This has led people to assume that they all carried Thompson SMGs. I disagree. A Thompson M1928A1 SMG is a very heavy weapon. It weighs about 11lb whilst the Sten Mk II SMG weighed about 7lb. The Thompson SMG ammunition was also considerably heavier than that of the Sten Mk II SMG.

"A Thompson would be better suited to a fighting patrol than a sabotage raid."

My research suggests that they were most likely armed with Sten Mk II SMGs chambered in 9×19mm format. These guns were light, foldable and easily maintained. In addition to the Sten Mk II SMGs it's likely that M1911A1 pistols were carried as a sidearm.



Keeping weight down was critical for this mission. I just can't see that the Norwegians would be willing to cross country ski with an extra 4-5lb in order to carry a gun they didn't intend to use.

MISSION: VEMORK - THE SOE COMMANDO'S SILENT BLOW!

MAN'S ADVENTURE

**SABOTAGE
IN THE
SNOW!**

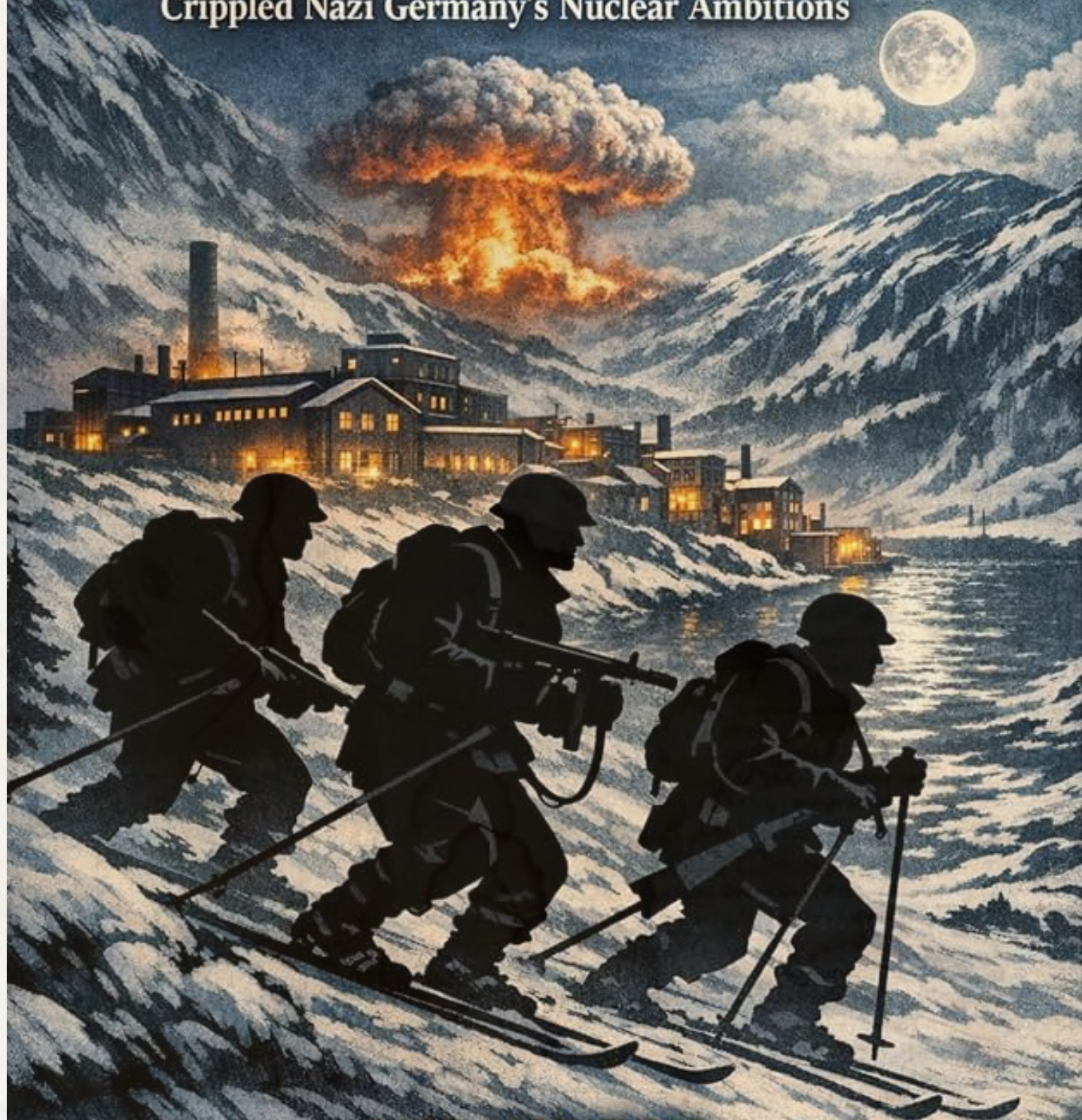
**THE HEAVY WATER RAIDERS!
DEEP FREEZE IN NAZI NORWAY**



26
Perry

OPERATION GUNNERSIDE

The Daring World War II Mission That
Crippled Nazi Germany's Nuclear Ambitions



EVA MYERS

How Were They Armed II?

To make matters more complicated, various illustrations and the movie made about Operation Gunnarside “The Heroes of Telemark” have promotional posters with Thompson SMGs and movie scenes with Sten SMGs.

Perhaps the movie makers noticed the same discrepancy that I did and chose to include both guns in the film.



It is reported on the erenow.org website that “Between them they carried five Tommy guns, three Colt .32 pistols, seven Colt .45s”

You can choose to believe whichever version you wish to believe.

Operation Gunnerside - (Demolition Team 4 men)



Joachim Rønneberg (Team Leader)

Joachim Rønneberg was just twenty-two years old but he was the obvious candidate to lead the raid and would assume command of the combined parties on arrival. 'Rønneberg was one of the most outstanding men we had. He was well-balanced, unflappable, very, very intelligent and tremendously tough,' wrote Colonel Charles Hampton, who ran SOE's Norwegian training school in Scotland.

Fredrik Kayser

One of the first saboteurs to enter the Vemork facility, crawling through a cable shaft with Joachim Rønneberg and placing charges. After the raid, Kayser and several other members of the team escaped by skiing across the mountains toward neutral Sweden covering roughly 200 miles.



Kasper Idland

During Operation Gunnerside when the team became separated inside the facility, Idland and Birger Strømsheim broke in through a window while the explosives were being placed.

Birger Strømsheim

An experienced ski-trooper and one of the 4 who actually entered the Vemork Hydroelectric Plant. He broke a window in order to enter with Kasper Idland. He was a highly valued team member and remembered as being among the more daring of the raiders. A demolition/explosives expert.



"Birger was the oldest of the group and was almost like a father to us. He was a very calm and balanced person who I appreciated immensely." (Joachim Rønneberg)

Operation Gunnerside Support Team (5 Men)



Knut Haukelid (Bonzo)

Born in Brooklyn, USA to Norwegian parents, Haukelid—who bore a striking resemblance to Humphrey Bogart - was Leader of the Support Team. He was a formidable operator. In his SOE reports, his instructor described him as ‘exceptionally efficient . . . cool and calculating type who would give a very good account of himself in a tight corner . . . A really sound man and cunning. Has no fear.’

Hans “Kyllingen” Storhaug (The Chicken) 🐔

During his time in Scotland, Storhaug did a bit of poaching. An angry gamekeeper described him as being a small man with a large nose and feet. “Just like a chicken”.

He kept watch while the four others destroyed the heavy water cellar. He had been hand-picked by Joachim Rønneberg because he was an experienced outdoorsman and a hard man. He had a key role in navigating the 300 mile escape route.



Jens-Anton Poulsson

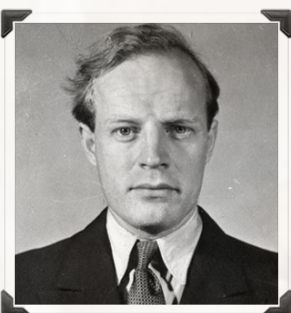
In the UK, Poulsson joined the first Kompani Linge as a second lieutenant. He was soon recruited by the SOE*, created in summer 1940 by Winston Churchill for sabotage operations in occupied territory.

Previous member of Operation Grouse / Swallow

Claus Helberg

Claus Helberg, a boyish 24-year-old, had grown up in the immediate area and worked as a mountain guide for a touring organization before the war. His key task was assisting others to cross territory safely.

Previous member of Operation Grouse / Swallow



Arne Kjelstrup

He was working as a plumber up until the outbreak of WW2. After which he became a Norwegian Resistance member. Following the German invasion of Norway in April 1940 he was hit by a German bullet, but survived because he was carrying a pair of wire cutters that the bullet hit before entering his body. The bullet stayed in his body for the remainder of his life.

Previous member of Operation Grouse / Swallow

The Norwegian Commandos had a choice to make....

- 1. Descend the mountain behind the plant, which was littered with landmines.**
- 2. Cross the single-lane suspension bridge, which was closely guarded.**
- 3. Descend to the bottom of the valley, cross a half-frozen river and climb a 500-foot-high cliff.**

GUNNERSIDE IN ACTION

They decided to climb the cliff, in the middle of the night, in the middle of winter!" (Neal Bascomb, author of The Winter Fortress: The Epic Mission to Sabotage Hitler's Atomic Bomb, on Operation Gunnerside)

Team movement across the plateau, down the gorge, across the river and the steep ascent of the cliff was a collective effort. The men moved in small groups to avoid detection and were guided by veterans of the earlier Grouse team who were familiar with the terrain and garrison routine.

According to Rønneberg, the group voted to take the gorge, which led to a route alongside a railway line that a local contact said was relatively unguarded.

At 00:30 on the morning of February 28 1943, a half hour after Vemork's guards had changed shift, Knut Haukelid, 31, cut the chain on the gate to the railway line. Luckily, Rønneberg had purchased the metal cutters in Cambridge, England after going to a movie on his day off.



He told The New York Times that...

"The handsaw provided by the British military would have taken too much time, made too much noise and alerted Nazi guards."

GUNNERSIDE.

5 km approx.

House

RAILWAY TRACK

2 RVK
2 PASTAN
2 by building

Very steep

WOODEN SLOPE
WOODEN SLOPE

MAIN ROAD

Old Road

Route for road

NATIONAL

THICK WOOD
ARCHIVES
THICK WOOD

Furnishings by.

Township

900 m above sea level

THINLY WOODED TO LANGSTON LAKES

House

Look-out point

VÅGÅR STREAM

Very steep

TO MÖSVAN

Fish house

Very steep

Mineral hot for water

Boiled milk

River bank

Route road by path

CT 80

Haukelid's eyes swept the scene for guards. They were ready to act if guards approached or if an alarm sounded. The demolition team followed, heading for the eight-story hydrogen plant. They split into pairs—Rønneberg with Fredrik Kayser and Birger Strømsheim with Kasper Idland.

Research had identified a seldom used service entrance in the basement.



"Getting inside I was quite certain that the rest of the team would follow me, but only one chap came. The other ones hadn't found the entrance to the tunnel. Therefore we decided we would have to do it ourselves and started laying out the charges." (Joachim Rønneberg)

After getting separated from their teammates, the other two men on the explosives team, Kasper Idland and Birger Strømsheim, decided to break in through a window.

A couple of men from the Support Team stayed near the access shaft and the route back out to watch for German patrols.

Once in the building, Rønneberg and his men placed two strings of explosive charges next to the heavy water production cells.

"I was with the Support Team," Helberg wrote. "We covered the German guardhouse and the entrances of the factory. Fortunately, we did not see a single guard. The noise from the factory was quite loud, and there was no other sound. It was pitch dark, and, even if a German had come, I do not believe he would have seen us leaning against the factory wall."



**Staircase leading down to the heavy water production and storage areas. This is the staircase the saboteurs entered and exited after placing their bombs. Photo by anonymous (date unknown). Courtesy of Tomasz Wako/
Norwegian Industrial Workers Museum.**





Explosive charges laid by the commandos of Operation Gunnerside destroyed the heavy water concentration cells.

The only person encountered inside the plant was a cooperative but problematic Norwegian caretaker named Johansen*. As the fuses were about to be lit, Johansen realized that his spectacles were missing and complained about the difficulty he would have replacing them. A frantic search ensued and eventually the spectacles were found and the fuses were lit.

The explosive charges detonated, destroying the electrolysis chambers. They all managed to get out of the room unscathed. And when they heard the muffled explosion, they knew their mission was complete.

The explosion sounded like a dull thud, Rønneberg later reported.

At that moment, a German guard emerged from the door of his hut, scanned a torch around, and disappeared back inside.

"They were all wearing British uniforms as they thought that if Britain, rather than the Norwegian resistance, was blamed for the attack then the local population may perhaps escape German retaliation. Similarly, a Thompson submachine gun was deliberately left behind to further indicate that this was the work of British forces and not the local resistance."



All the vital parts of the machinery were blown to pieces. The entire supply produced under German supervision was destroyed, along with all the equipment used to produce it. It was estimated that the plant would be put out of action for between eight and 12 months.

Once on the plateau, the group split up again. Although 3,000 German soldiers were dispatched to search for the commandos, all escaped; five commandos escaped by skiing 200 miles to Sweden, two proceeded to Oslo (where they assisted Milorg), and four remained in the region for further resistance work.

"It was a mackerel sky, it was a marvellous sunrise. We sat there very tired, very happy. Nobody said anything. That was a very special moment."
Rønneberg recalling the calm dawn after the successful operation as the team made their escape toward Sweden.

*** Some reports say that up to two Norwegian workers were briefly detained inside the Vemork plant**

Paul Nikolaus von Falkenhorst

A German general and war criminal during WW2. In 1911, to replace his noble name Jastrzembski, Paul Nikolaus voluntarily changed this Slavic Silesian-derived family name to the Kulturkampf-Germanized version Falkenhorst ("falcon's eyrie") early in his career;

He planned and commanded the German invasion of Denmark and Norway in 1940.

On February 20 1940, Hitler informed Falkenhorst that he would be ground commander for the invasion of Norway (Operation Weserübung), and gave him until 17.00 the same day to come up with a plan. With no time to consult military charts or maps, Falkenhorst picked up a Baedeker tourist guidebook of Norway at a stationery store on his way to his hotel room, where he planned the operation from maps he found in that book. Hitler promptly approved his plan.



"Falkenhorst talks a lot and says whatever comes to his mind. The German is braggy and full of himself, and he presents himself in a somewhat brutal manner..." (Lieutenant General Wiljo Tuompo, who served as chief of the command staff at the Headquarters)

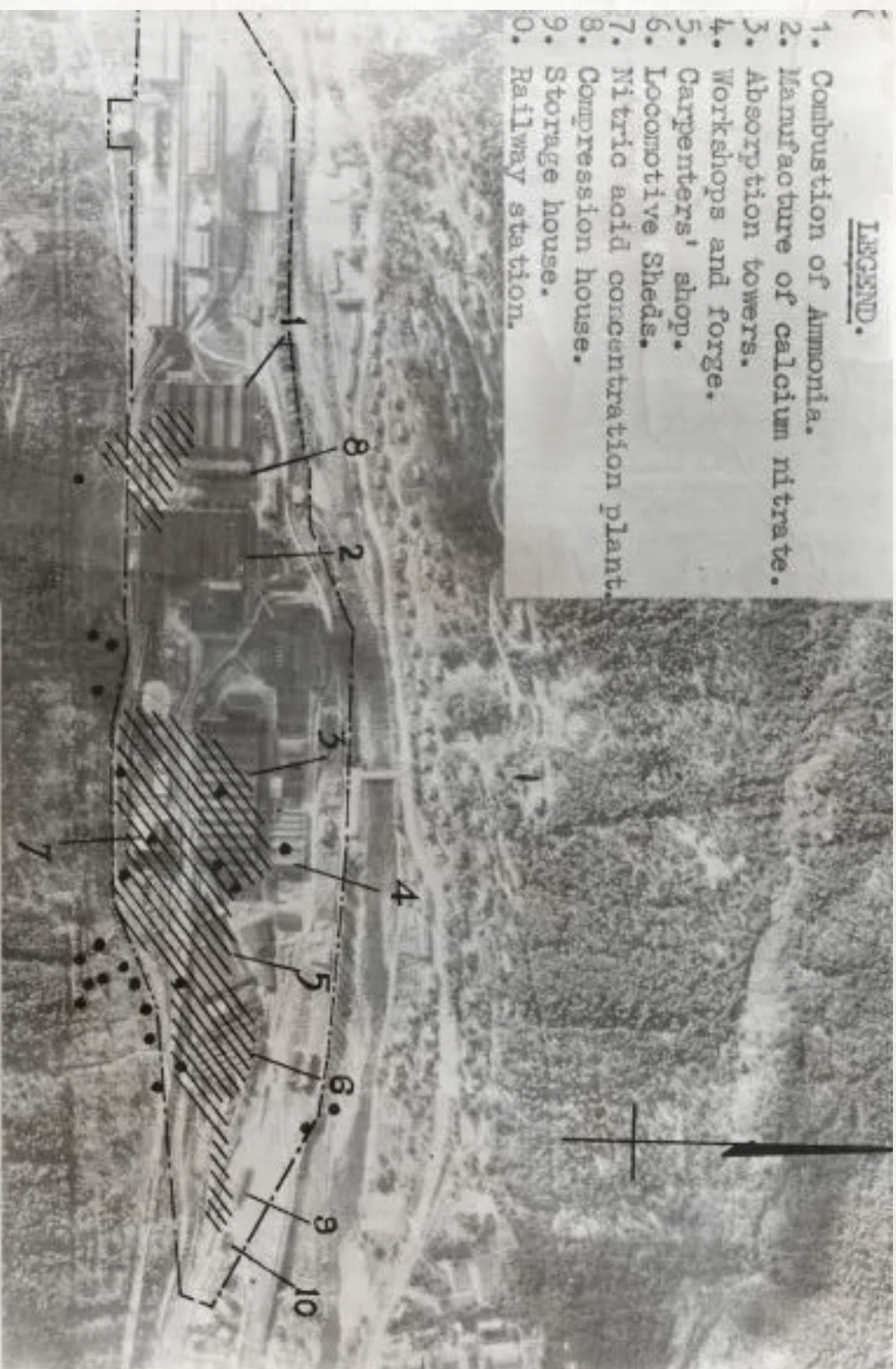
Between December 1940 and December 1944, von Falkenhorst remained commander of all German forces in Norway (Wehrmachtbefehlshaber Norwegen). He was dismissed from his command on December 18 1944 and transferred to the Führerreserve. He did not receive a further assignment.

After the war, Falkenhorst was tried by a joint British-Norwegian military tribunal for violating the rules of war. He had passed on the Führerbefehl known as the "Commando Order" which required captured saboteurs to be shot as spies (several were), and was therefore convicted and sentenced to death in 1946. The sentence was however later commuted to twenty years' imprisonment, after a successful appeal.

"The most splendid coup he'd seen this war'." (General Falkenhorst, speaking about Operation Gunnerside)

LEGEND.

1. Combustion of Ammonia.
2. Manufacture of calcium nitrate.
3. Absorption towers.
4. Workshops and forge.
5. Carpenters' shop.
6. Locomotive Sheds.
7. Nitric acid concentration plant.
8. Compression house.
9. Storage house.
0. Railway station.



S.A. 661

CHEMICAL WORKS

RJUKAN, NORWAY

16.11.43

Neg No 31919.

APPROXIMATE BOMB PLAT

• Position of well defined bursts

/// Area of heavy concentration

Photographic background 5.8.42 N/607 516

Air Raid And Ferry Bombing [The Aftermath]

Resumed Operation and Allied Air Raids

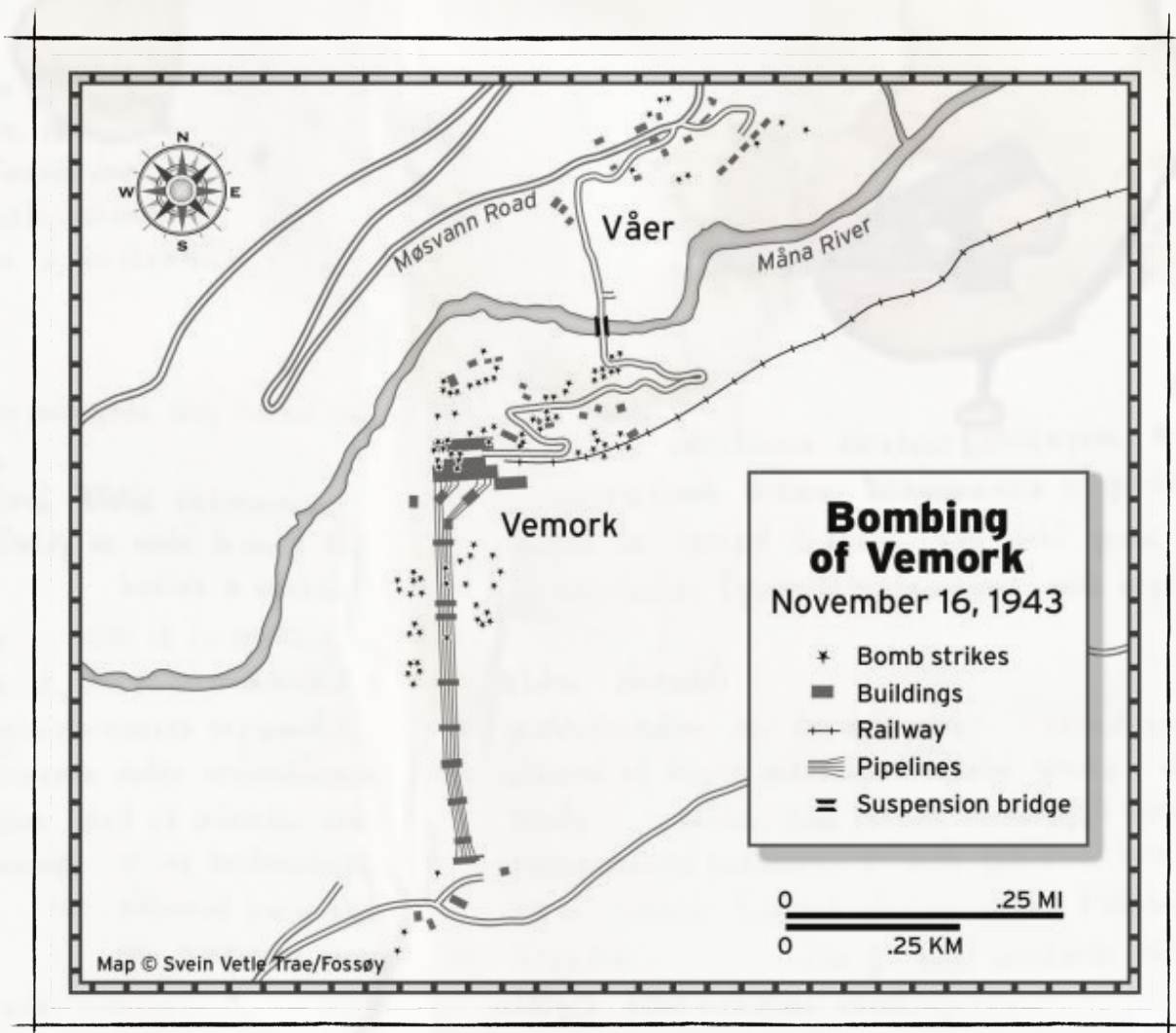
The attack had halted production for several months, although it did not permanently damage the Vemork Hydroelectric Plant. It was repaired by April; SOE* concluded that a repeat commando raid would be extremely difficult, since German security was considerably improved.

Almost as soon as production resumed, the USAAF began a series of raids on Vemork Hydroelectric Plant.

On November 16 1943 a massive daylight bombing raid of 143 B-17 heavy bombers dropped 711 bombs. Although the raid caused extensive damage, at least 600 bombs missed the plant.

On November 18 1943, 35 B-24 heavy bombers from the 392nd Bomber Group attacked.

There was less need for ground assaults than a year earlier, since night bombing (previously unrealistic due to German air cover) was now an alternative. The Germans, convinced that air raids would result in further serious damage, decided to abandon the plant and move its remaining stocks and critical components to Germany in 1944.



Operation Sunshine

Knut Haukelid was informed of the German plan to remove the heavy water, and was told to arrange for the destruction of the shipment. Haukelid recruited two people, and they decided to sabotage the ferry which would be carrying the heavy water across Lake Tinnsjø on the Tinnsjø railway ferry.

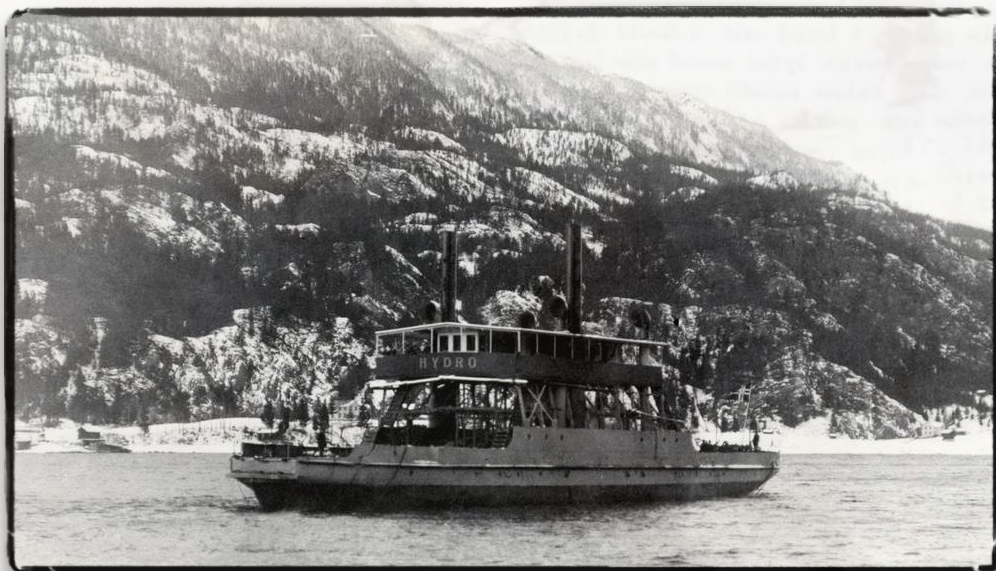
One of his recruits recognized a ferry-crew member and spoke with him, taking an opportunity to slip into the bottom of the ship, plant the bomb and slip away. 18lb of plastic explosives (with two alarm-clock fuses) were fixed to the keel of the SF Hydro, which would transport railway cars with drums of the heavy water across Lake Tinnsjø.

The SF Hydro ferry and its cargo sank in deep water shortly after its departure around midnight on February 20 1944. Witnesses reported seeing steel drums floating after the SF Hydro ferry sank, leading to speculation that they did not really contain heavy water; an examination of records after the war showed that some barrels were only half-full, however, and would have floated. A few may have been salvaged and transported to Germany.

Haukelid wrestled with the fact that sinking the ferry meant ending innocent lives, yet ultimately proceeded because he believed that stopping the heavy water reaching Germany was critical to ending the Nazi nuclear effort.

Despite the mission's intention to minimize casualties, 18 people were killed (14 Norwegian crew and passengers and 4 German soldiers)

A 2005 expedition retrieved Steel Drum "26", from the bottom of the lake. Its heavy-water contents matched the concentration noted in German records. The concentration of heavy water in some of the Steel Drums was too low to be of value to a weapons program. This is perhaps why the security around the shipment was light and why the remnants of the ferry were not searched for bombs.





Operation Gunnerside Breakthrough



CLASSIFIED

How To Enjoy Operation Gunnerside Breakthrough

1. Read the backstories of Fritz, Hans and Maxim

These fictional biographies have been included to give players a glimpse into the mindset of the men tasked with guarding and attacking the Vemork Hydroelectric Plant.

2. Watch the Heroes of Telemark

By watching this film (available on YouTube) you can see the enormity of what the Norwegian Commandos managed to achieve. The Vemork Hydroelectric Plant is literally perched on the side of a mountain and surrounded by unforgiving terrain.

3. Print out the tokens

Playing this scenario with individual characters captures the covert nature of the operation. The **ALERT** tokens help to keep track of what is happening in the game.

- Please complete the above 3 steps before attempting this scenario. If you know the history the game comes alive.
- My objective is to make the definitive Memoir 44 depiction Operation Gunnerside. It is historically and geographically accurate, it will present a different sort of challenge for players (stealth and escape) with gameplay reduced down from the unit level to the individual soldier level. Less shooting and more scheming, I hope it will be a supreme solo game scenario.

This scenario does not incorporate Operation Sunshine or the Aerial Bombing.

After Operation Gunnerside members of the team dispersed across the plateau. Some remained in Norway, while a wireless operator continued to transmit information to the British.

The arduous, cross-country ski journey, in harsh winter conditions, allowed the commandos to evade a massive German search operation and reach safety without a single casualty.

Mindset Of A Guard From Vemork Hydroelectric Plant

I'm Friedrich "Fritz" Adler, a Gefreiter in the Wehrmacht. I'm 38, a machinist from Augsburg. Before the war I repaired textile looms, now I guard turbines in Telemark at the Vemork Hydro plant.

I was not meant to be here. In 1941, I found myself in the thick of the Battle of Smolensk, a splinter from a mortar shell tore my leg to shreds. I kept the leg but it gets sore in the cold and when I climb stairs. The doctors declared me unfit for front-line fighting.

I heard that British commandos had a crack recently in a glider operation called Freshman. They must be crazy. Apparently it was a fiasco, since then we've been having training drills and everyone is a bit on edge.



There won't be another attempt. The cliffs are too steep, the winter merciless, and who would try again? The worst enemy here is boredom. It is as boring as hell.

We live in a ghastly barracks. It's a squat wooden box that stinks. Six of us grumpy old buggers live inside, basically we are broken men. Otto snores like an idling truck. Bruno complains about the cold, the bread, the officers, the Norwegians, even the shape of the mountains.

My rifle is a Karabiner 98k. I keep it clean but haven't used it since Russia. My greatcoat is thick but stiff with frost by the end of each watch. Gloves help little, my fingers ache, especially the two that never quite bend properly since Smolensk. Sometimes at night the old wound throbs so sharply I wake thinking I am back in the snow east of Minsk.



The officers strut about as if this outpost were Berlin. Their coats are tailored, their boots mirror-bright. And always at the hip, those polished Luger pistols, the P08, gleaming like jewelry. I would trade two months' pay for one, though what use would I have for one?

Tomorrow I will get up before dawn, drink the awful coffee, shoulder my rifle, and stand watch over concrete and steel.

Mindset Of A Gebirgsjäger (Specialists assisting in the Search for the Norwegian Commandos)

I do not underestimate the Norwegians. Any man who can cross the Hardangervidda in winter, carrying equipment and explosives, has my respect. They are determined and clearly accustomed to the mountains. That makes them dangerous. It does not make them impossible to catch.

I would rather move slowly and understand where they are going than have men running around like headless chickens trying to find them. I keep my notebook for precisely this reason. A man may disappear over a ridge, but he cannot disappear from the weather, and he cannot hide the tracks he leaves behind. They will be captured.

I have great confidence in the Gebirgsjäger. Mountain warfare requires knowing how to move, navigate and survive when roads disappear and the weather turns. My men know that the mountains are not an obstacle to be feared.

The guards at Vemork have given us little to be proud of. Their lack of discipline is obvious the moment you lay eyes on them. They were responsible for protecting an important installation yet they allowed a group of commandos to penetrate it, carry out their operation and escape into the mountains. Worse, they seem to have depended upon the roads, the buildings and the harsh terrain to protect them.



I consider that incompetence.

But there is no value in complaining about what has already happened. The damage is done. The wily Norwegian commandos are somewhere on the plateau, and we have been instructed to go out and find them.

Mindset of a Norwegian Commando

I'm Hans Storhaug. Soon a bunch of us are going back to Norway to get rid of the Germans that sit in our country like they own it. Sentries are on our bridges. Their flag flies over our towns. They think Norway has gone quiet.

In Britain we've been trained for the mission. Long marches in the Scottish Highlands in the driving rain. The British were trying to grind us down but we are hardy people and just got on with it.

We have been shown how to kill with precision. Moving swiftly and communicating with hand signals. If we're being pursued, we disappear into thin air. Capture isn't in the plan, we have each been given a pill to take if need be.

Joachim Rønneberg is our boss. He's only 23 but what a leader. Calm eyes. When he gives an order, you follow it. He expects discipline, and he gets it. None of us want to let him down.

We aren't going in there looking for a fight. We will slip in, set the charges and slip back out. No alarms. No gunfire. Leave them staring at broken machinery and wondering what the hell just happened.

But let it be clear.

If any sentry or officer gets in the way, he's a dead man. Out of necessity. The mission and Norway come first.

At Vemork there will be no second try. We go in once. We break the heavy water plant. We get out.





THE RANK ORGANISATION PRESENTS A BENTON FILM PRODUCTION

KIRK
DOUGLAS

RICHARD
HARRIS



The year was 1942...
the place was Norway...
the stakes were the highest
the world has ever known.
This is the true story as it
actually happened...
the story of the
supreme weapon the
Nazis nearly had...
would have had
but for the courage of
nine indomitable
Norwegians

in ANTHONY MANN'S

The
Heroes
OF TELEMAR

TECHNICOLOR[®] PANAVISION[®]

CO-STARRING

ULLA JACOBSSON • MICHAEL REDGRAVE

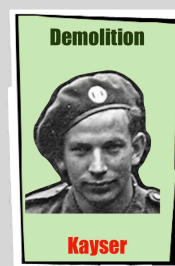
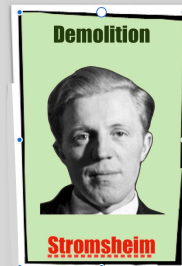
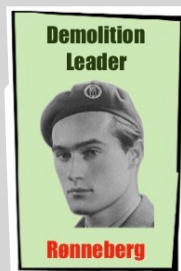
Screenplay by IVAN MOFFAT and BEN BARZMAN • Produced by S. BENJAMIN FISZ

Directed by ANTHONY MANN

Support Team Tokens



Demolition Team Tokens



Radio Engineer Tokens



Norwegian Commandos

The Norwegian Commandos are Ski Troops (Troops #9) (Rønneberg moves like a Ski Troop but attacks 2/2/2 if he is in possession of the Thompson SMG)



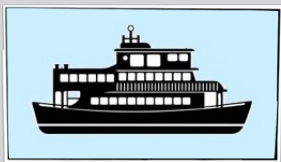
Rønneberg's Thompson SMG / M1911A1 Tokens



Place one of these **ALERT** Tokens alongside the German Soldiers once they have rolled a star.



Once 4 German Guards have an **ALERT** badge all Guards have become **ALERT**.



Use this Ferry if you play The Norwegian Heavy Water Sabotage IV Token as an alternative to the Aircraft Carrier (Troops #11) from the original.

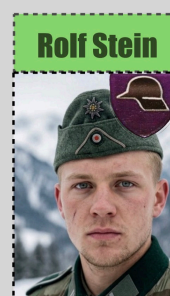


Use this hex for the German Guards Barracks

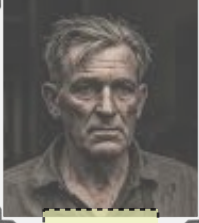
German Gebirgsjäger (Mountain Infantry) Tokens

These Gebirgsjäger tokens are a game mechanic that allows the difficulty of the challenge to be adjusted. Choose 0-3 Gebirgsjäger to assist with the pursuit of the Norwegians before starting the game.

The Gebirgsjäger become active at the beginning of the Axis first turn of being **ALERT**.



Regular German Guard Tokens



Fritz

A demoralized man with injuries from action he saw on the Eastern Front. His commitment to the Wehrmacht is limited, all he wants to do is return home in one piece. Fritz starts the game in the centre section on the Axis baseline.



Bruno

Despite being the eldest of the guards Bruno is disliked for his incessant whinging and complaining. He is the outcast of the group and prefers to spend his time alone. At the beginning of the game he is found standing on the road surrounded by barbed wire.



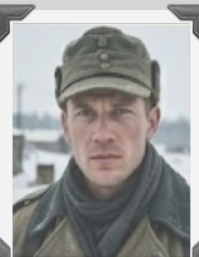
Otto

Overweight and prone to all night snoring. Easily the most likeable guard he is always keen for a game of cards or a chat over a morning Ersatzkaffee. Otto starts the game in the left section on the Axis baseline tantalizingly close to Norwegian Radio Engineer Haugland.



Hans

A dashing rogue, Hans is more interested in money than the military. It is known that he is stealing military supplies and selling them for his own personal gain. The other guards don't leave their wallets lying around when Hans is about. He is found in the right section on the Axis baseline when the game begins.



Helmut

Keen as mustard and eagle eyed. Helmut mans the MG34 on the bridge where he is located at the start of the game. The military gives a sense of purpose to his life and he is proud of his job but frustrated by the lack of action he sees here in Norway.



Karl

Karl is seldom far from the barracks, where he is located as the game's action unfolds. A sickly 21 year old, he seems to catch a nasty dose of every flu going around. His friend Helmut covers for him but the relationship is becoming strained due to his weak constitution.

German Gebirgsjäger (Mountain Infantry)

The Gebirgsjäger were the specialized mountain infantry of the German Army during WW2. Trained to fight in mountains, forests, snow, and arctic environments, they combined infantry skills with mountaineering, skiing, climbing, and survival techniques. Their symbol was the edelweiss badge worn on the cap and sleeve.

"We were freezing our tails off with top-tier gear, but those bastards had been dug into those ridges for months. They didn't just defend the mountains; they lived in them like animals. You couldn't push them off with artillery alone; you had to go up there and drag them out."
(A US 10th Mountain Division veteran remarked on the resilience of the Gebirgsjäger in the frozen landscape of the Northern Apennines in Italy)

The Gebirgsjäger units were organized into mountain divisions supported by mountain artillery, engineers, reconnaissance, signals, medical, and logistics units. Their lighter equipment and mobility allowed them to operate where conventional infantry and vehicles struggled.

Unteroffizier (Squad leader or assistant platoon leader)

Primarily their role was to lead, maintain discipline, mentor new members and ensure orders from officers were carried out effectively.

They supervised climbing, skiing, and mountain movement while managing equipment and logistics in difficult terrain. The Unteroffizier was the first true NCO rank and formed the backbone of small-unit leadership within the German Army.

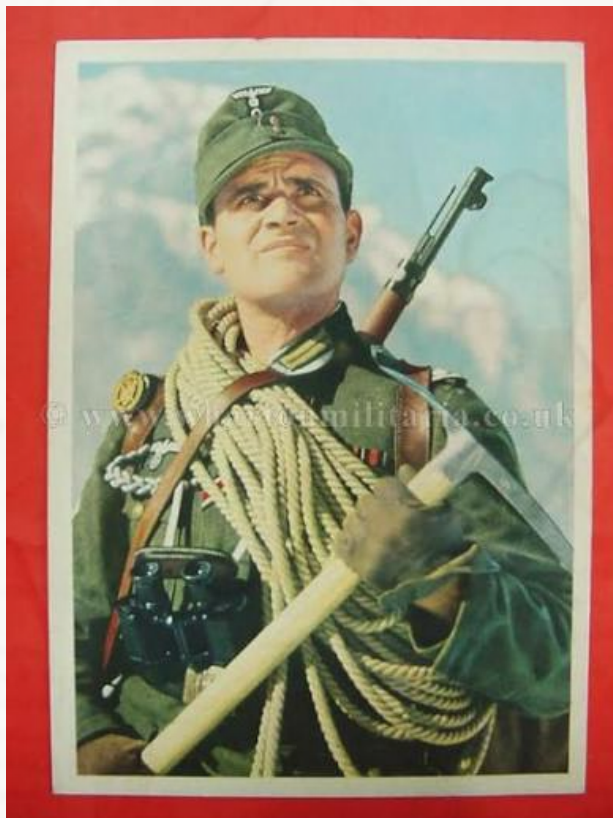
Obergefreiter (Experienced enlisted soldier or assistant team leader)

In the field they would often act as second-in-command within a fire team. This required them to be a jack of all trades - an assistant machine gunner, radio operator, scout, or specialist depending on the unit. Not a permanent commander but a competent soldier that could take the reins if required. The rank recognized competence and experience rather than formal command authority.

Gefreiter (Capable and well trained soldier)

A Gefreiter was typically a seasoned mountain infantryman entrusted with more responsibility than a new private but still serving under the direction of NCOs and officers.





Elite German Gebirgsjäger Reinforcements

Maxim is a quiet, methodical non-commissioned officer who carries a small notebook filled with hand-drawn terrain sketches, weather observations, and navigation notes from his patrols throughout Norway.

By mid-1942, Falk was transferred to occupied Norway. Rather than serving on the Eastern Front, he is now one of the company's principal instructors and spends his time training troops on the Hardangervidda plateau and the surrounding mountain districts. Although Falk's unit had not been responsible for guarding the Vemork Hydroelectric Plant itself, experienced mountain troops were requested to reinforce the search effort.



The MP40 is used by Unteroffizier Maxim Falk. Its compact size and controllable automatic fire make it more practical than a full-length rifle when moving through forests and unstable terrain.

This weapon attacks 3/2/1

As an experienced NCO, he is used to leading from the front, reacting quickly to sudden contact and directing his men at close range. Unlike the sniper and the aggressive rifleman, the MP40 gives him a practical, versatile weapon that reflects his role as a professional leader rather than a specialist.



Maxim Falk



After the Anschluss in 1938, Rolf entered the Wehrmacht and volunteered for the Gebirgsjäger, where his aggressive spirit quickly stood out. He earned a reputation as a fearless point man on mountain patrols but was equally known for his impulsive temper and impatience with caution.

An excellent skier, he often clashes with Falk's measured leadership, preferring direct action over careful planning.

This weapon attacks 4/2/1

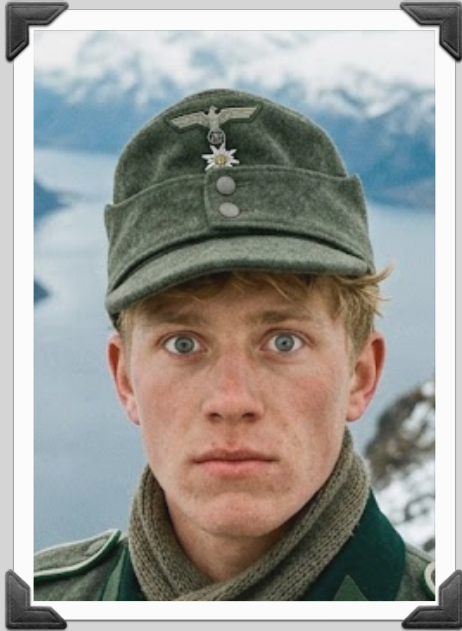


The Gewehr 33/40 is the ideal rifle for aggressive Gebirgsjäger Rolf Stein. Shorter and lighter than the standard K98k, it was specifically designed for mountain troops who need to move quickly, close distance and confront the enemy at close quarters.

Its compact dimensions make it less cumbersome during rapid movement, climbing and close combat. The reinforced stock and robust construction also suit the rough conditions of mountain warfare.

Rolf Stein





Willi grew up in southern Germany where he regularly went hunting in the Bavarian Alps. Drafted into the Wehrmacht in 1942, his instructors identified his unusually accurate shooting and sent him for specialist sniper training at the Seetaler Alpe training area.

He was assigned to Unteroffizier Maxim Falk's detachment in Norway as part of a training and security unit. Roth enters the search for the Operation Gunnerside commandos as his first operational deployment, determined to earn the respect of his more experienced comrades.

The Karabiner 98k fitted with a 4×ZF-39 Scope is the weapon of choice for young Gebirgsjäger sniper Willi Roth.

The K98k was the German service rifle, and the 4×ZF-39 Scope transformed it into a designated sniper weapon. Paired with s.S. Patrone (schweres Spitzgeschoß/ Heavy pointed bullets) there was confidence that Roth could place a deliberate shot on a target at well over 500 metres.



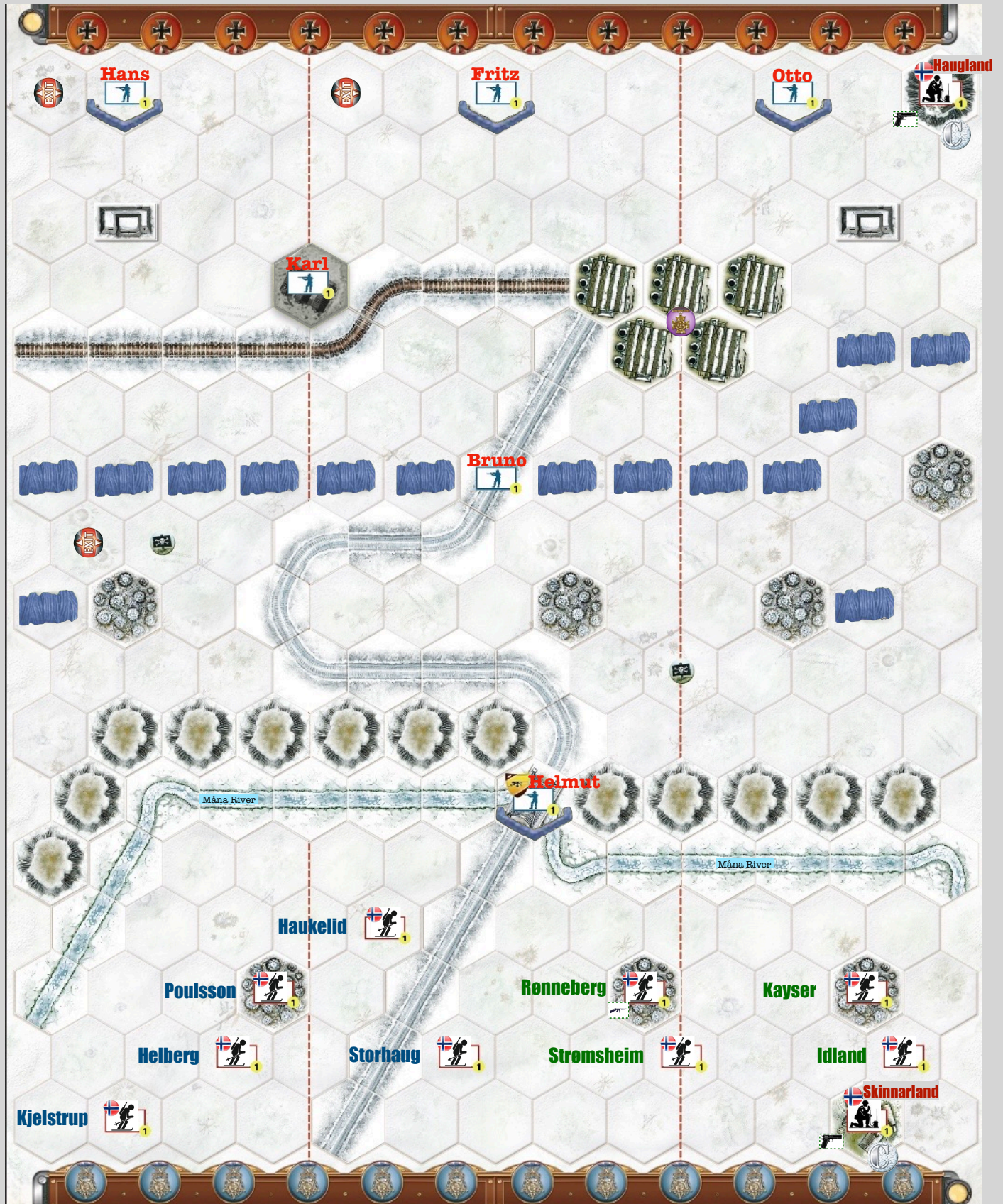
This weapon attacks 1/1/1/1/1



Operation Gunnerside BT

Designed by Memoir 44 Japan to be the definitive Memoir 44 version of Operation Gunnerside. The map is not exclusively designed for people playing solo but playing the Norwegians presents a good challenge for those who are. Printing all the materials (Tokens and a hex), reading the history and watching the movie are all strongly recommended before playing.

Set up the board, pour yourself a coffee and hold on tight.you might be able to get in.....but the real trick is sabotaging the Vemork Hydroelectric Plant and getting back out again.



Each unit that dies (including Gebirgsjäger and Radio Engineers) results in a Permanent Objective Medal for the other side.

Briefing

Axis [Germany] : 4 BT Command Cards (Axis cards are not dealt until **ALERT** phase)

Allies [Norway] : 4 BT Command Cards ([FIRST MOVE](#))

Conditions of Victory

9 MEDALS

A successful sabotage and destruction of the Vemork Hydroelectric Plant earns the Allies 1 Permanent Objective Medal.

Leaving the Thompson SMG in the Vemork Hydroelectric Plant (following a successful sabotage) earns the Allies 1 Permanent Objective Medal.

At least 2 Norwegian Commandos **MUST** escape the board via an Exit Marker.

The death of all Demolition Team Norwegian Commandos before a successful Sabotage of the Vemork Hydroelectric Plant is a Sudden Death Victory for the Germans.

Set Up

Print out the Support, Demolition, Radio Engineer, Alert, Thompson SMG, M1911A1 Pistol, Regular Guards and Gebirgsjäger Reinforcements tokens. Paste them to some firm cardboard and cut them out.

Use a single Equipment Pack Finnish Ski Troop for Norwegian Commandos.

Before starting the game decide how many Gebirgsjäger (0-3) the Axis have to assist with the capture of the Norwegian Commandos.



There are key differences to standard Memoir 44 rules - the details are explained in the following 10 pages.

1. Two game phases “**AT EASE**” and “**ALERT**”.
2. Individual not unit combat.
3. Norwegian Commando movement and attack changes.

1. Two Phases of the Game

It is vital that you understand that there are two distinct phases of this scenario. Operation Gunnerside is an espionage scenario - the key to success is stealth.

In the **AT EASE** phase the Norwegians are covertly approaching and infiltrating the Vemork Hydroelectric Plant.

In the **ALERT** phase the Germans are panicking. An unexpected event is unraveling in the dark and they are trying to understand the situation. Each individual guard is trying to grasp what is happening.



AT EASE PHASE

1. The Norwegian Commando's attack is largely unexpected. German Guards are patrolling the Vemork Hydroelectric Plant and its surrounds as the Norwegian Commandos attempt to gain entrance to the facility.

German Objective : Protect the plant and eliminate any unauthorized personnel.

Norwegian Objective : Gain entrance to and destroy the Vemork Hydroelectric Plant.

ALERT PHASE

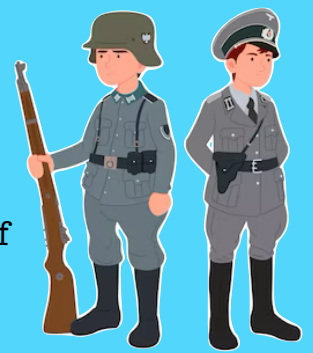
1. Aware of a threat, the German Guards scramble to react to the attack as it unfolds. The Norwegian Commandos try to escape the scene and evade capture.

German Objective : Pursue and eliminate all Norwegian Commandos.

Norwegian Objective : Flee from the Vemork plant and leave the board via Exit Markers.

#1 AT EASE PHASE

The Norwegian Commandos aim to approach and gain entrance to the Vemork Hydroelectric Plant (without coming to the attention of German Guards).



Norwegian Commandos

When the German Guards are in the **AT EASE** phase the Norwegian Commandos are Ski Troops (Troops #9) equipped with Sten Sub-machine guns. They are gliding over the snow at high speed towards the Vemork Hydroelectric Plant.

Norwegian Commandos

Attack 3/2/

Move 0-3

Move onto terrain and battle

Retreat 0-3 hexes on a flag



Rønneberg Thompson SMG Exception

- Only Rønneberg starts the game with a Thompson SMG that attacks 2/2/2 but he still moves as a Ski Troop (Troops #9).
- If Rønneberg (or any Norwegian Commando) is in possession of the Thompson SMG and is killed before or after the Sabotage the token is left on the hex on which he died.
- The Thompson SMG can then be picked up by any Norwegian Commando by entering the hex containing the token. That commando's attack then becomes 2/2/2 as they have abandoned their Sten SMG. There are no movement or attack restrictions associated with changing to the Thompson SMG.
- If a German Guard captures the Thompson SMG at any stage the token is then placed on the Axis Medal Bar as a Permanent Medal Objective. They cannot do this by taking ground following a close assault.
- After a successful sabotage it is optional for the Allies to leave the Thompson SMG inside the Vemork Hydroelectric Plant (to make the Germans think the saboteurs are British). In this case the Allies move the Thompson SMG token to the Allies medal bar as a Permanent Objective Medal. Rønneberg (or whichever commando was in possession of the Thompson SMG is left with a M1911A1 pistol that shoots (1/1/1). Place the pistol token next to any Norwegian Commando who left the Thompson SMG.



Norwegian Radio Engineers

Radio Engineers are incognito while the German Guards are **AT EASE**. They cannot attack or be attacked on their starting hexes unless an **ALERT** guard occupies the adjacent hex to their starting position as they are Camouflaged (Actions #16)

Radio Engineers are free to leave the safety of their starting hex. Whilst the German Guards are **AT EASE** Radio Engineers may move about unnoticed. However, they quickly become vulnerable to attack if a German Guard rolls a star and becomes **ALERT**.

Additionally, a Radio Engineer who leaves their starting hex makes the position available for a German Guard (who has become **ALERT**) to occupy - resulting in the Norwegians losing one BT Command Card.

German Guards Awareness Roll

When the game begins the German Guards do not use BT Command Cards. At the beginning of each Axis turn of the **AT EASE** phase; a single Battle die is rolled for each German Guard.

A star means the German Guard's attention has sensed something unusual. Place an **ALERT** token beside the German Guard that rolled the star. This **ALERT** German Guard may now move and attack as regular infantry every turn. Once 4 German Guards in total have gained an **ALERT** token all German Guards enter the **ALERT** phase of the game.

Until having an **ALERT** token the German Guards cannot move or attack.

If a gun is fired by a Norwegian Commando or German Guard a further Battle die is rolled for each German Guard on the board.

A German Guard who comes under attack immediately receives an **ALERT** token.

If the Vemork Hydroelectric Plant is successfully sabotaged all German Guards immediately move to being **ALERT** and can move and attack as regular infantry.

This allows the German Guards to move around the board and prepare a defense but simulates the confusion of being under attack in the dark.

A lone German Guard (even if ALERT) cannot enter the Vemork Hydroelectric Plant hexes or attack Norwegian Commandos inside whilst collectively the German Guards (less than 4) are still in the AT EASE phase.

Example of the Opening 3 Rounds of The Game

1

Night Attacks (Actions #19) - One hex Visibility

Norwegian Commandos make their opening moves using their BT Command Cards.

German Guards - Each Guard rolls a single battle dice.

Fritz - Rolls an Infantry Figure.

Bruno - Rolls a Grenade.

Otto - Rolls a Flag.

Hans - Rolls a Flag.

Helmut - Rolls a Star. He is now ALERT. From his post on the bridge an irregular sound catches his attention. He tightens his grip on his MG 34 and scans the field in front of him. Nothing.....but sensing something is not right Helmut glances over his shoulder back towards the Vemork Hydroelectric Plant. As he is now **ALERT** he has the option of moving to investigate but chooses to hold his position and keep his eyes peeled.

Karl - Rolls an Infantry Figure.



2

Night Attacks (Actions #19) - Two hexes Visibility

Norwegian Commandos continue their approach towards the Vemork Hydroelectric Plant using the options available from their BT Command Cards. The increased visibility (2 hexes) causes Rønneberg to move to the right and Haukelid to move to the left to avoid being spotted by the Machine Gun positioned on the bridge.

Fritz - Rolls a Star. He is now ALERT. A sudden chill in the air causes Fritz to gaze forward into the darkness. What was that?.....from his position on the Axis baseline he moves two hexes and positions himself outside the Vemork Hydroelectric Plant.

Bruno - Rolls a Star. He is now ALERT. The sound of a deer  running through the snow seems odd this close to the Vemork Hydroelectric Plant. Inhaling smoke deep into his lungs Bruno begins strolling down the road towards Helmut's Machine Gun post. As he starts on a road hex he may move three hexes.

Otto - Rolls a Grenade.

Hans - Rolls a Flag.

Helmut - ALERT Continues to hold his position on the bridge.

Karl - Rolls an Infantry Figure.

Example of the Opening 3 Rounds of The Game

3

Night Attacks (Actions #19) - Four hexes Visibility

Norwegian Commandos have spread out using their BT Command Cards. Visibility is now 4 hexes and they are scattering to avoid being detected.

Fritz - ALERT Walks two more hexes to investigate. Crossing the Railroad Tracks (Terrain #38) he is now standing on the right hand side of the Vemork Hydroelectric Plant.

Bruno - ALERT Continues walking three more hexes along the road towards Helmut to ask if he has seen anything.

Otto - Rolls a Flag.

Hans - Rolls a Flag.

Helmut - ALERT Continues to hold his position on the bridge.

Karl - Rolls a Star. He is now ALERT. Hearing the sound of Fritz's feet trudging through snow outside Karl feels uneasy. He has a nasty cold but opens the door of the barracks to investigate. In his heavy coat he walks two hexes towards the Vemork Hydroelectric Plant.



Four German Guards are now **ALERT**. A booming siren sounds moving all 6 German Guards from being **AT EASE** to **ALERT**.

The Axis are dealt 4 BT Command Cards to use to issue orders from the next move on.

Before the game started it was decided that the Axis would get one Gebirgsjäger to assist them catching the Norwegian Commandos. At the beginning of their turn the Axis will deploy Gebirgsjäger Gefreiter Willi Roth (the young sniper) onto the fifth hex from the left on the Axis baseline hex behind the Vemork Hydroelectric Plant. He is able to move and battle at this time.



#2 ALERT PHASE

German Guards Awareness Roll

Once 4 German Guards have become **ALERT** (by rolling a star) news of the attack has spread. At this point all German Guards become **ALERT**.

All options available to the German Guards are dictated by the BT Command Cards in their hand and the Night Attacks chart (Action #19)

The hunt is underway with the German Guards eager to capture the Norwegian Commandos before they can escape.

A successful attack is **ONLY** achieved by rolling a star or a flag if retreat is impossible.

All Regular Guards (except Helmut) carry Karabiner 98k rifles and attack 3/2/1.



Gebirgsjäger Detachment Assisting German Forces

The Gebirgsjäger detachment are a game mechanic used to adjust the difficulty of the game. Before the game starts players should decide how many Gebirgsjäger the Axis can deploy once the Axis have entered the **ALERT** phase of the game. The Axis player must choose specifically which of the 3 Gebirgsjäger they will deploy (this decision must be made before the game starts).

Each Gebirgsjäger brings different benefits to the Axis cause.

The Methodical Non-Commissioned Officer

Unteroffizier Maxim Falk - MP40 Machine Pistol

His cool head and careful planning add coordination to the Axis forces who receive an additional BT Command Card when he enters the board.

Attacks 3/2/1

The Hot Headed Assistant Team Leader

Obergefreiter Rolf Stein - Gewehr 33/40

His eagerness to catch the fleeing Norwegian Commandos gives him an advantage in Close Assault where he rolls 4 dice.

Attacks 4/2/1

The Young Eager to Impress Sniper

Gefreiter Willi Roth - K98 with 4×ZF-39 Scope

Attacks 1/1/1/1/1

Retreats 1-3 hexes if a flag is rolled.

All Gebirgsjäger Reinforcements move as (Troops #2)

At the beginning of the Axis first turn of being **ALERT** they can deploy 0-3 of the German Gebirgsjäger anywhere on the Axis baseline of the board (but not on top of an Exit Marker).

The deployment can only be made at this time. These reinforcements can be ordered to move and battle in this first turn of **ALERT** phase.

The Allies receive a medal for each Gebirgsjäger killed.

A successful attack is **ONLY** achieved by rolling a star or a flag if retreat is impossible. Even when sniper Gefreiter Willi Roth is attacking.



Norwegian Commandos

Once all German Guards have become **ALERT** the Norwegian Commandos become Specialized Infantry (Troops #2) They have taken off their skis in order to be able to defend themselves. They lose mobility but gain offensive capability.

The Norwegian Commandos now move 0-2 hexes and attack 3/2/1.

Rønneberg attacks 2/2/2 with the Thompson SMG or 1/1/1 if he has the M1911A1 pistol following a Sabotage.

A Demolition Team Commando must be present in the Vemork Hydroelectric Plant to perform a Sabotage. If all Demolition Team members die the mission is abandoned and the Axis win.

Norwegian Radio Engineers

Once a German Guard is **ALERT**, he can then attack a Radio Engineer. If a Radio Engineer is killed, the Germans receive a Permanent Medal. Additionally, if the Radio Engineer's vacant Town/Mountain Town hex is occupied by a German Guard the Allies lose 1 BT Command Card (Actions #17) If a German Guard leaves the hex originally occupied by the Radio Engineers the BT Command Card is returned to the Norwegians.

Both Radio Engineers are equipped with a M1911A1 pistol that attacks (1/1/1). This gives them a slim chance to retaliate against German Guards if they are attacked.

The Radio Engineers are both protected by Camouflage (Actions #16) on their starting hex. This represents the measures that both Radio Engineers have taken to remain hidden and operate covertly.

The Radio Engineers may stay on their starting hex covertly supporting the Norwegian Commandos or they can attempt to exit the board between the Exit Markers for 1 Permanent Objective Medal. Leaving the board however leaves their covert position available for a German Guard to occupy (reducing the Allies number of playing cards) An unoccupied Radio Engineer's starting hex does not result in the Allies losing a BT Command Card.



2. Individual Not Unit Combat

Operation Gunnerside is an irregular Memoir 44 scenario - the fighting units are individuals - either a Norwegian Commando or a German Guard.

A successful attack is ONLY achieved by rolling a star or a flag if retreat is impossible.

A successful attack results in the elimination of the target. The Axis or Allies receive 1 Permanent Objective Medal for every individual that is eliminated.

3. Norwegian Commando Movement and Attack Changes

When the German Guards are **AT EASE** the Norwegian Commandos move and attack as Ski Troops (Troops #9)

Once all of the German Guards become **ALERT** the Norwegian Commandos become Specialized Troops (Troops #2)

At the beginning of the game Rønneberg has a Thompson SMG which attacks 2/2/2. If he (or any other Norwegian) leaves the Thompson SMG on any of the 5 hexes of Vemork Hydroelectric Plant then they will continue the game with a M1911A1 pistol which attacks 1/1/1. Place the M1911A1 pistol token beside that Commando on the board.



Special Rules

Sabotage (Customized Rules)

Two Norwegian Commandos must occupy 2 of the 5 Vemork Hydroelectric Plant hexes before a Sabotage can be attempted. At least 1 of these Commandos must be a member of the Demolition Team. If all Demolition team members are eliminated the Allies lose the game.

At the start of the Allies turn, with two Norwegian Commandos inside the Vemork Hydroelectric Plant, roll 2 Battle dice. At least one Star means a successful Sabotage. Change all factory hexes to Winter Ruins. At this point (if not already) all German Guards enter the **ALERT** phase. When changing the Factory hexes to Winter Ruins no one dies. The Norwegian Commandos and German Guards continue to occupy the same hexes. The Allies then proceed with their turn.

A successful sabotage and destruction of the Vemork Hydroelectric Plant earns the Allies 1 Permanent Objective Medal.

Leaving the Thompson SMG in the Vemork Hydroelectric Plant (following a successful sabotage) earns the Allies 1 Permanent Objective Medal.

Night Attacks (Actions #19)

Exiting The Board (Actions #23)

Norwegian Commandos / Radio Engineers can exit the board between the 2 Exit Markers on the German baseline or the lone Exit Marker on the side of the board.



The board cannot be exited until the Vemork Hydroelectric Plant has been successfully sabotaged. When a Commando / Radio Engineer exits they earn 1 Permanent Objective Medal for the Allies.

Radio Engineers (Troops #4)

The Radio Engineers are Combat Engineers (Troops #4) but they can only attack 1/1/1 with their M1911A1 pistols and are an individual figure not a unit.

They are eligible to pick up Rønneberg's Thompson SMG if he dies which increases the Radio Engineer's attack to 2/2/2.

Barracks (Terrain #17)

The Barracks is the starting point for one German Guard (Karl) in this scenario.

Minefields (Terrain #29)

The Axis lay out the Minefields.

There are 2 Minefields in this scenario.

When setting up the board the Axis player takes 5 landmine counters (0,1,2,3,4) and selects 2 without seeing their value. Once selected the value of the Minefield counter can be checked by the Axis player before being placed on the board. The Allies player does not know the value of the Minefield counters.

Frozen River (Terrain #47)

The Måna River is a Frozen River (Terrain #47) but only roll 1 Battle Dice.

In winter of 1943 the river was largely frozen over. Even so, crossing was risky. When crossing the river **ONLY** roll 1 Battle die.....a Star means that the ice has given way and the individual dies. This results in a Permanent Victory Medal for the other side.

If Rønneberg (or any commando) dies by falling through the ice on the Frozen River the Thompson SMG is lost and is removed from the game.

German MG 34 Machine Gun Post On Bridge

The German Machine Gun Post on the bridge attacks 3/2/1/1. If it moves it cannot attack in the same round - as it needs to be securely positioned to be fired.

Difficulty

At the beginning of the Axis first turn of the **ALERT** phase the Germans can deploy 0-3 Gebirgsjäger Reinforcements anywhere on the Axis baseline of the board (but not on top of an Exit Marker). The deployment can only be made at this time. These Gebirgsjäger Reinforcements can be ordered to move and battle in this first turn of **ALERT** phase.



Barrage, Air Power, Dig-In and Medics & Mechanics Cards are removed from the deck. Remove Ambush Card if playing solo.

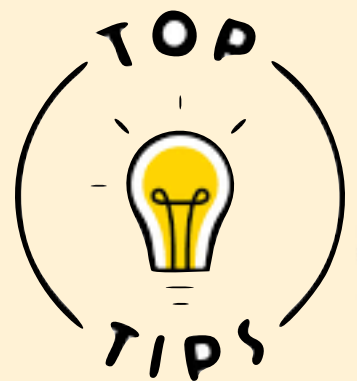
The Air Pack and New Flight Plan are not used.

- The Radio Engineers are a nuisance for the German Guards. Sure, the German Guards can most likely overpower them but are they willing to commit resources to their capture? Additionally, the Radio Engineers are armed and will most likely fight to the death.

- Use Equipment Pack Ski Troops to represent the Norwegian Commandos.

- Protect your Demolition Team members.

- During the early stages of the game the mobility of the Norwegians when they are Ski Troops is invaluable.





ARCHIVE ROOM

The Existing Scenarios

My research unearthed 4 scenarios that examine the Norwegian water sabotage. They each have various pros and cons.

Their text has been edited to provide consistency of terminology and design. Also, you'll find a ferry token included to replace the Aircraft Carrier token used in Scenario 4.

Importantly, they all undoubtedly influenced the design of my scenario - and made me contemplate incorporating the following features.

Troops

**Sniper
Machine Gun
Ferry**

Terrain

**Barbed Wire
Train Tracks
Frozen River
Base Camp
Power Plant
Minefields**

Actions

**Reduced Visibility
Night Attacks
Camouflage**

Operations

**Operation Sunshine
Aerial Bombing of Vemork.**

The Norwegian Heavy Water Sabotage I

Kampen om Tungtvannet/Nowegian Heavy Water Sabotage
Operation Gunnerside



Historical Background

Prior to the German invasion of Norway on April 9 1940, the Deuxième Bureau (French military intelligence) removed 185 kg of heavy water from the plant in Vemork in then-neutral Norway. The plant's managing director, Aubert, agreed to loan the heavy water to France for the duration of the war. The French transported it secretly to Oslo, to Perth, Scotland, and then to France. The plant remained capable of producing heavy water.

"In modern history, there are few examples of such small works of sabotage leading to such dramatic effect," one historian wrote. "Had the Nazis worked [on an atomic bomb] unhindered, the world's first atomic mushroom cloud may have loomed over London by the mid-1940s."

The Allies remained concerned that the occupation forces would use the facility to produce more heavy water for their weapons program. Between 1940 and 1944 a sequence of sabotage actions, by the Norwegian resistance movement, as well as Allied bombing, ensured the destruction of the plant and the loss of the heavy water produced. These operations—codenamed "Grouse," "Freshman," and "Gunnerside"—finally managed to knock the plant out of production in early 1943.

In 1943, a team of SOE trained Norwegian Commandos succeeded in destroying the production facility with a second attempt, Operation Gunnerside. Operation Gunnerside was later evaluated by SOE as the most successful act of sabotage in all of WW2.

Setup order

- 1  x8
- 2  x5
- 3  x4
- 4  x3
- 5  x3
- 6  x3
- 7  x2
- 8  x1
- 9  x1
- 10  x1
- 11  x1
- 12  x1
- 13  x1
- 14  x1
- 15  x1
- 16  x1
- 17  x2
- 18  x2

Briefing

Axis [Germany] : 4 Command Cards

Allies [Norway] : 4 Command Cards (FIRST MOVE)

Conditions of Victory

4 Medals

The Allies get 1 Permanent Objective Medal for sabotaging the Factory and 1 Permanent Objective Medal for sabotaging the Vemork Hydroelectric Plant.

Special Rules

Sabotage (Actions6)

Frozen River (Terrain #47)

4 Norwegian Commandos and 4 German Infantry are all regular infantry units.

Air Power and Barrage Cards are removed from the deck.

RECOMMENDED

Marcus's Scenario Evaluation

B-

- + Cartoonish and good fun.
- + It incorporates Ravine, Frozen River, Factory, Power Plant and Train Tracks into the scenario.
- Not historically accuracy. This is not a stealth mission - it is what would have happened if the presence of Norwegian Commandos was detected by the German Guards. The main task is getting units into position for when the shooting starts.



- Use Equipment Pack Ski Troops to represent the Norwegian Commandos.

The Norwegian Heavy Water Sabotage I

— river
Ravine on right is accurate

Train is accurate
line

Cartoonish - Germans can only attack once
they have spotted.
Camouflage?

Remove Air Attack + Barrage.

It is a two section game which means
a lack of cards can be a problem.

German 4 Norway 0

but could have been different. Norway
attempted Sabotage unsuccessfully on
both factory and powerplant.

No left section is critical.

Norway use reg troops
Germans ✓

Shuffle cards well.

The Norwegian Heavy Water Sabotage II

Vemork Hydroelectric Plant Sabotage Operation Gunnerside



Setup order	
1	 x24
2	 x15
3	 x13
4	 x1
5	 x1
6	 x1

Historical Background

The Vemork Hydroelectric Plant was capable of producing heavy water for the Germans. Heavy water is a deuterium rich water that is used as a moderator in nuclear reactors, and is used to produce weapons grade plutonium.

“Hunting is like war in that there is only one standard of success. Either one wins the war or one loses it. Either one gets the meat or one doesn’t.” (Knut Haukelid)

The allies were afraid that Hitler would be the first to have an atomic bomb. Two previous attacks on the plant failed. On the night of February 16 1943 the four man SOE* Norwegian Commando team that tried to destroy the plant before, parachuted along with another ten Norwegian Commandos into the area.

Their mission: to finally sabotage the plant so that further heavy water experiments could not be done.

After they sabotaged the plant, allied bombers took care of the rest.

Briefing

Axis [Germany] : 5 Command Cards

Allies [Norway] : 6 Command Cards ([FIRST MOVE](#))

Conditions of Victory

Axis: Must hold the Vemork Hydroelectric Plant (Factory hex) and take a further 4 medals to win. If the Vemork Hydroelectric Plant is destroyed you can still win by eliminating ALL allied units.

Allies: You must sabotage the Vemork Hydroelectric Plant and take three more medals to win.

Vemork Hydroelectric Plant is a Temporary Objective Medal for the Allies.

Special Rules

Ski Troops (Troops #9)

Sabotage (Actions #6) Three stars are needed to destroy the Vemork Hydroelectric Plant.

Night Attacks (Actions #19)

Reduced Visibility (Actions #27) **OPTIONAL**

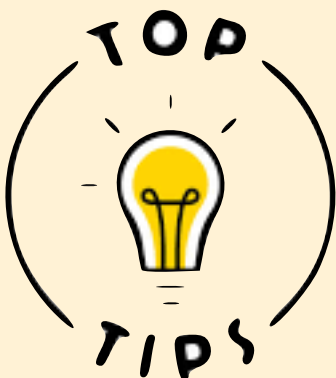
Frozen Rivers (Terrain #47)

Air Power and Barrage Cards are removed from the deck. **RECOMMENDED**

Marcus Scenario Evaluation

B-

- + Easy setup, Ski Troop rules suit the terrain. Night Attacks.
- + Fun and the action starts quickly.
- No stealth, artillery is too strong. Very difficult to complete sabotage.



- Reduced Visibility (Actions #27) makes the combat slower and improves the contest.
- Use Equipment Pack Ski Troops to represent the Norwegian Commandos.

Norwegian Heavy Water Sabotage 11

Speed Forces in Factory (Troops were of low calibre).

Air Attack → change Air Power.

Easy set up

Explosive Start.

Artillery makes Norway Ski Troops Vulnerable once the sun is out.

Axis Win - 4 medals + hold plant

Allies - 3

Close match

Fun

Inaccurate history

Artillery makes sabotage very hard.

No stealth.

Night Attacks worked well and a good addition.

1st Medal in

Factory

Objective

Temporary

Medal

for Norway

The Norwegian Heavy Water Sabotage III

The Battle For Heavy Water



Historical Background

The Battle for Heavy Water is based on the well known Commando raid in Norway during WW2.

Helberg once remarked that frostbite was so common that "If something hurt, we just hoped it was still there."

The resistance group Norwegian Independent Company 1 destroyed the Vemork Hydroelectric Plant in Telemark in February 1943.

Briefing

Axis [Germany] : 5 Command Cards

Allies [Norway] : 6 Command Cards ([FIRST MOVE](#))

Conditions of Victory

7 Medals

The Vemork Hydroelectric Plant hex with 2 medals is a double Permanent Objective Medal for the Allies.

The Allied Base Camp is 1 Permanent Objective Medal for the Axis.

If the center section of the map contains no allied units the Axis receives 1 Temporary Objective Medal. If an Allied unit re-enters the center section the medal is lost.

Setup order

- 1 x20
- 2 x6
- 3 x4
- 4 x4
- 5 x3
- 6 x2
- 7 x1
- 8 x1
- 9 x4
- 10 x2
- 11 x4
- 12 x1
- 13 x1

Special Rules

Brown Norwegian Commandos Units use British Commonwealth Forces (Nations #5) Stiff Upper Lip Rules. Green Norwegian Commando Units use French Resistance (Nations #1)

Ski Troops (Troops #9) for the two Axis Ski Units.

Sniper (Troops #10) for the German sniper.

Night Attacks (Actions 19)

The Axis lay out the Minefields (Terrain #29)

Air Power and Barrage Cards are removed from the deck.

RECOMMENDED

Use (SWA7) Late War Machine Gun Rules.

Marcus Scenario Evaluation

(B)

- + Sniper was a menace and interesting addition. Base camp I will use. Machine gun in front of Vemork Hydroelectric Plant was accurate.
- No river. Train lines in wrong position. Different colored units with different rules was confusing and not historically accurate. No stealth. Why are the Allies not Ski Troops?



- Use Equipment Pack Ski Troops to represent the 2 German Ski Troops.
- No Allies in center is a Temporary Objective Medal for Axis.....Don't forget!!

Norwegian Heavy Water Sabotage III ²⁵

Which machine gun rules. → Add to Special Rules
No water / river

British Stiff Upper Lip + French Resistance for Allies
Finn Ski Troops for Germans

→ Strange

Base Camp Good ✓

Sniper causes ^{many} problem for Allies in top left.

No stealth except for Night Attacks (A#19)

~~Agg~~

Sniper was good addition to game

Behind Enemy Lines is a great card for Allies to strike Vernak.

Final Score Axis 7 Allies 2

The Norwegian Heavy Water Sabotage IV

La Bataille De L'eau Lourde
La Résistance en Norvège



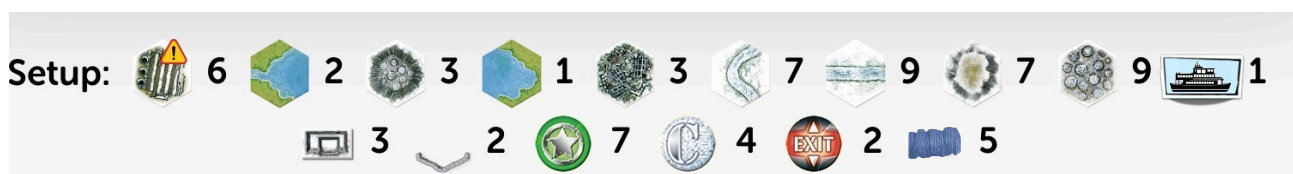
Historical Background

In February 1942, the Allies learned that the Germans were trying to develop an atomic bomb. To carry out this project, specialists consider that it is essential to have deuterium oxide, better known as heavy water. It turns out that the Germans continue production in the Vemork Hydroelectric plant.

A Norwegian agent, on site, informs the British authorities of the evolution of the situation. The decision is made to have the factory destroyed by a Commando.

On October 19, 1942, four Norwegian Commandos trained by the Special Operations Executive in Scotland joined the local agent to prepare for the arrival of a British Commando unit made up of engineering personnel from the British 1st Airborne Division.

The Germans strengthened their defense. The four Norwegian Commandos and their local agent hid all winter long in a mountain hut.



Historical Background (Continued)

In February 1943, six other Norwegian Commandos were dropped into the area, bringing the group's strength to eleven men. On February 27 1943, nine Commandos infiltrated the plant. They managed to deploy explosives and destroy vital parts of the facility.

"[It] was not very loud," "It sounded like two or three cars crashing in Piccadilly Circus."

In February 1944, the Germans decided to transfer the heavy water stock to Germany by sea. Two of the Norwegian Commandos who had remained in the region destroyed the SF Hydro ferry on Lake Tinnsjø. Germany's research to design the atomic bomb was permanently condemned.

Briefing

Axis [Germany] : 4 Command Cards

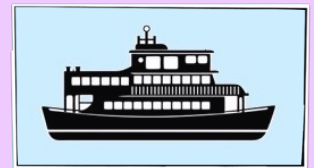
Allies [Norway] : 4 Command Cards ([FIRST MOVE](#))

Conditions of Victory

6 Medals

Ferry Rules

The Axis win by Sudden Death Objective if a heavy water Steel Drum (marked with a battle star) is transported to the ferry and leaves the plateau via the Exit Markers (Actions #23) The SF Hydro ferry can move normally on the lake and the frozen river, but it must stop if its passage is blocked by a unit.



An infantry unit (with a battle star) can load the heavy water on to the ferry. The unit does not board the ferry but must load from either of the two hexes of the Loading Zone. If it loads from Frozen River it rolls 2 Battle dice and a figure is lost for each star.

The ferry cannot be loaded and leave the docks in the same turn.

The Ferry uses Aircraft Carrier rules (Troops #11)

The Allies can win 6 medals by destroying the hexes of the Vemork Hydroelectric Plant. This destruction can be carried out by Sabotage or Air Attack (Grenade or Star destroys the Factory hex) The destruction of a Hydroelectric Plant hex by Air Attack cannot be done if a unit occupies the hex.

Special Rules

Occupying Mt. Gaustatoppen allows the Allies to call in Air Strikes (Actions #3) Sabotage (Actions #6)

Capturing Equipment (Actions #12) for the Steel Drums containing Heavy Water. Camouflage (Actions #16) for 4 of the Norwegian Commandos.

Destroyed Factory Complex hexes (Terrain #21) are replaced with City Ruins hexes (Terrain #45)

Frozen River (Terrain #47) for Lake Tinnsjø, except that 3 dice are thrown instead of 2 when a unit advances on it.

Marcus Scenario Evaluation



- + Combining the heavy water ferry escape, aerial bombing as well as Operation Gunnerside is an ambitious project. It looks daunting but plays surprisingly well.
- + Air Attacks on empty factory hexes mechanic works well as does the ferry escaping and camouflage.
- Merges Operation Gunnerside, Operation Sunshine SF Hydro Ferry bombing and the post sabotage aerial bombing raids into one scenario. While these events are all related the lack of boundaries between them makes the gameplay a bit messy. Aside from the Camouflage there is no stealth.



- Use the included SF Hydro Ferry token with this scenario.

The Norwegian Heavy Water Sabotage IV

No landmines.

To many missions included in scenario. It's a bit confusing to play.

No bridge.

Artillery for Axis X (no good)

No train tracks

Remove Barrage Card? (Recommended)

Night Attacks?

Can only move 1 unit per hex every turn
so Aircraft carrier when boarded
cannot move same turn.

When ^{Axis} infantry delivers drum can do from adjacent
Frozen River or empty hex beside ferry.

Unit on plant hex can be attacked but
the hex cannot be blown up by Air Attack
if unit is present
Replace blown up plant with ruins hex?

Axis win by escaping Heavy Water by Ferry.

DEN NORSKE FILMEN



KAMPEN OM TUNGTVANNET

MED SABOTØRENE
FRA KOMPANI LINGE

REGI: TITUS VIBE-MÜLLER

PRODUKSJON:
HERO-FILM

MOST SECRET

RECOMMENDATION FOR AWARDS. S.O.E. OPERATION "GUNNERSIDE".

7

Fenrik Joachim Holm Boe Ronneberg.
Fenrik Casper Idland.
Sergeant (A/Fenrik) Knut Anders Haukelid.
Sergeant Fredrik Thorbjørn Kayser.
Cpl. (A/Sgt) Storhaug, Hans.
Cpl. (A/Sgt) Strømsheim, Birger Edvan Martin.

After the tragic failure of C.O. OPERATION FRESHMAN, an S.O.E. party GUNNERSIDE was immediately mobilised to destroy the high priority product of the Norsk Hydro Works at VEMORK.

The complete technical and scientific intelligence was made available on 15th November, 1942, by Chemical Engineer Jomar Brun, who had just arrived in the United Kingdom after escaping from VEMORK, and Captain Leif Tronstad R.N.A. who participated in the planning and experimental erection of the actual plant. This proved that the essential damage could be carried out by a smaller party than was previously considered necessary, provided they were highly trained men who could render a good account of themselves and were in first class physical and mental condition.

The party finally selected were all volunteers who had full knowledge that the previous attempt had failed; that the enemy was fully alive as to the objective; that the area had subsequently been visited by Reichs-Commissar Terboven and Colonel-General von Falkenhorst, Commander-in-Chief of the German Army in Norway; and that the local garrison had been strongly reinforced.

The party were ready to fly during the December moon period, made an unsuccessful flight on 23rd January, 1943, and were eventually successfully dropped 60 Km.N.W. of the actual target at midnight on 16th/17th February, 1943.