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# CDSG Newsletter



The Coast Defense Study Group, Inc. — Norway Edition



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## CDSG Special Tour to Norway

Norwegian and Atlantic Wall Defenses

Part I: Defenses of the Oslofjord

By Terrance McGovern



CDSG Norway.Tour Sites

The CDSG Special Tour to the Coast Defenses of Norway took place June 8 to June 19, 2013, with 24 tour members. The goal of this tour was to visit the world's best collection of surviving coast artillery, especially the dozen "big guns" (greater than 280 mm) that remain, as well as other wonderful coast defense sites that still have their smaller artillery. During World War II, Germany built (or converted existing Norwegian defenses) over 280 coast defense batteries in Norway, mounting over 1,000 guns. Many of these "Atlantic Wall" defenses were used by Norway during the Cold War, when Norway added modern 75 mm and 120 mm batteries and maintained the defenses into the 1990s. The group was able to visit over 50 examples of surviving coast artillery during the tour, many in their original emplacements.

This is the ninth special tour that I have organized for the CDSG and the most complex logistically, due to the remoteness

of the locations and the long distances between coast defense sites. The tour's planning and ultimate success was due to the efforts of our local tour leaders, Svein Wiiger Olsen, Vic Phillipson, Pål Johnsen, and Harald Isachsen, who arranged access to the many sites and guided us to these defenses. This tour would have never happened without their efforts and we owe them many thanks for a great tour. We also want to thank tour members Mike Fiorini, Alan Fyson, Terry McGovern, Michel van Best, and Keith Estes, who each undertook the responsibility to organize and drive one of our five rental vehicles. They did a great job considering they had never been to Norway before, and they succeeded in keeping track of all their passengers during the long tour. Finally, we want to thank Denise Agostino from Premiere Travel for arranging the air, hotel, and rental vehicles for the group.



The Oslofjord – Norway (Google Maps)



Northern and Southern Kaholmen Islands  
Fortress Oscarsborg

#### Oscarsborg Fortress Sites

A. Drøbaksund strait, B. Drøbak town, C. Heer settlement

1. Main fort at S. Kaholmen island, 2. Torpedo battery on N. Kaholmen island, 3. Battery Husvik, 4. Battery Kopås,
5. Battery Veisving, 6. Seiersten redoubt, 7. Infantry strong point Heer, 8. Batteries Heer, 9. Batteries of Håøya island.
10. Mine station on Bergholmen island, 11. Battery Nasset, 12. Battery Luftvern

The CDSG tour started at Oslo Gardermoen International Airport, 35 km northeast of Oslo, on June 8, 2013. We divided up into our 9-passenger rental vans for the 82 km ride to Drøbak Narrows on the Oslofjord, where we took a short ferry ride to the former **Oscarsborg Fortress**. The main fortress is on two small islets (Kaholmane); the former military reservation also included lands west and east of the fjord. The fortress was a military reservation until 2003, when the Norwegian coast artillery school closed. The school facilities were turned into a resort hotel and the rest of the military reservation is now a historic/recreational site. A large, round masonry fort was completed in 1848, with additional casemated defenses for rifled muzzleload-

ing cannons added by 1853. The fortress was named in 1855 after a visit by Swedish-Norwegian King Oscar I. By the end of the 19th century, military technology had developed rapidly and the fortress was soon obsolete. Tension was also growing within the union of Sweden and Norway, and the Norwegian Army decided to upgrade the fortress. An underwater barrier was built in 1874–79 to block ship passage on the western side of the fortress and Armstrong RML cannons were installed in front of main fort as a new main battery. Another round of modernization was undertaken in the late 1890s. In addition to one Krupp 305 mm M1877 gun purchased in the 1880s, the new main armament consisted of three Krupp 280 mm M1889 guns and an underwater torpedo battery was completed in 1901. A number of smaller guns (150 mm and 57 mm) were installed on the mainland shoreline, as well as several large-caliber batteries on the island of Håøya. These turn-of-the-century defenses were still in use at the start of World War II. The fortress is best known for sinking the German heavy cruiser *Blücher* on April 9, 1940, as a German invasion force attempted to reach Oslo. After aerial bombardment, the Germans took Oslo by another route and the fortress surrendered, remaining in German hands until 1945. The Norwegians upgraded the island's defenses during the Cold War. These defenses were phased out in the 1990s, though the island retained its coast artillery school until 2003.

Once the group checked into the former coast artillery school dorms of **Oscarsborg Hotel & Resort** (we were told at front desk that the hotel's spa had recently burned down; so much for the resort part!). Tour members took advantage of the long summer days, with a late sunset at 10:30 PM and an early sunrise at 4:00 AM, to explore the island fortress on their own. After breakfast



CDSG Norway.Tour Sites  
The Oslofjord – Norway (Google Maps)



the next morning at the hotel, we boarded the ferry to return to our rental vans to drive 75 km to Øyenkilen to visit **Torgauten Fort**, constructed by the Germans as *Heeres Küsten Batterie HKB 6/980*. The battery was armed in April 1941 with four 100 mm K17/04 guns. After the war, the fort was modernized by the Norwegians in 1960 to include a radar fire control station and



Torgauten Fort – 105mm SKC/32 in casemate  
June 9, 2013



Torgauten Fort – Fire Control Position with Radar  
June 9, 2013



Kjøkøy Fort – 105mm SKC/32 in casemate – June 9, 2013



Fredriksten Fortress – 120mm Schneider in armored turret – June 9, 2013

two casemated 105 mm SKC/32 guns. In 1993, the fort was deactivated, but still retains the 105 mm guns in casemates and one of the 100 mm field guns on a turntable. Svein Olsen led us to a hole in the fence around the back of the fort so we could enter, as the association that maintains the fort was not available on the day of our visit. The fort has very distinctive fire command post disguised as a summer cabin.

We then drove 22 km to Kråkerøy to visit **Kjøkøy Fort**, constructed by the Germans as *Heeres Küsten Batterie HKB 7/980* and armed in May 1941 with four 100 mm K17/04 guns. After the war, the fort was modernized by 1960 to include a radar fire control station and two casemated 105 mm SKC/32 guns. In 1995, the fort was deactivated, but it still retains the 105 mm guns in casemates and the fort is now a local park. Svein Olsen led us around to the various emplacements and through the extensive concrete/stone trench system connecting all the key defenses.

We drove 45 km toward the Norwegian-Swedish border and the city of Halden to visit the **Fredriksten Fortress**. Construction of Fredriksten started in 1661 after Norway lost the Bohuslän district and Bohus Fortress to Sweden in 1658. Three subsequent attacks by the Swedes on Halden in 1658-1660 convinced Fredrik III, King of Denmark and Norway, that a stronger, more modern fortress was needed. During the war in 1718, Swedish King Charles XII fell before the walls of Fredriksten fortress. The large central citadel has several small forts as part of its outworks. The primary item of interest for the group was a 120 mm L/40 Schneider gun in an armored turret that was originally installed in 1905, but was then removed when Norway separated from Sweden. The gun and turret were first moved to a border fortress, then used by the Germans in WWII for coast defense, before were returned to Fredriksten in the 1980s.

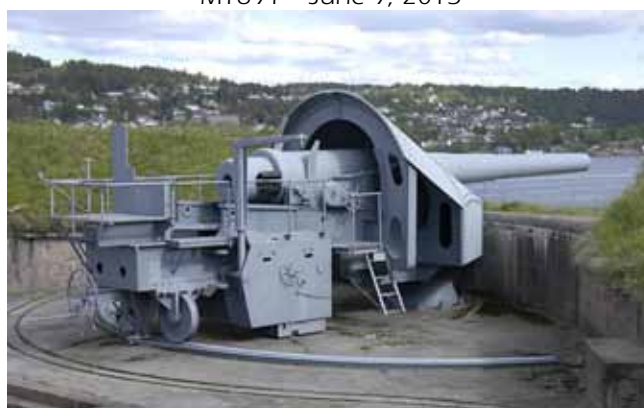
We next drove back 38 km toward the Oslofjord, stopping at **Fredrikstad Fortress** for a quick visit of the walled city. Fredrikstad Fortress was constructed according to Dutch architectural models, with wide, water-filled moats and high earthen ramparts. On its eastern side, facing away from the river, are three bastions and two counterscarps. There are ravelins in the moats and several outworks, including Kongsten Fort, beyond the main fortress. Facing the river is a massive stone wall, reinforced by earth ramparts. After our quick walking tour of the walled town



Norwegian Coast Artillery Museum Collection as Oscarsborg Fortress – June 8, 2013



Main gun line at Oscarsborg Fortress – 280mm Krupp M1891 – June 9, 2013



Main gun line at Oscarsborg Fortress – 280mm Krupp M1891 – June 8, 2013

#### Oscarsborg Fortress (left)

- A. island of S. Kaholmen, B. island of N. Kaholmen  
 1. Main fort, 2. Lower Western shore battery, 3. Lower Eastern shore battery, 4. Main battery, 5. Lower South battery, 6. East battery, 7. Coastal Redoubt, 8. Parade in front of the CA School barracks, 9. Range finder post and Signal battery, 10. Torpedo battery, 11. Residence of the commandant of the fortress



we drove 70 km to Drobak and the ferry back to Oscarsborg. That evening we were treated to a special group dinner inside a barracks casemate of the old masonry fort.

June 10 started with another early morning self tour of Oscarsborg Fortress. Most sought after was the collection of German and Norwegian coast artillery guns near the Lower West Battery. This line of guns represents nearly all the coast artillery used in Norway during the last 100 years. To the south of this collection, the Lower South Battery originally mounted two



East Battery – Oscarsborg Fortress – 226mm Armstrong RML – June 9, 2013



Lower South Battery – 105mm SKC/32 with camouflage turret shield – June 9, 2013



Main Sally Port for Masonary Fort at Oscarsborg Fortress – June 10, 2013

Armstrong RMLs, replaced in 1960 with two 105 mm SKC/32 dual purpose guns in separate emplacements with camouflage metal shields. After breakfast, tour members gathered near the bridge between the two islands for the formal guided tour of the fortress. We were guided to one of best sites of our entire tour — the fortress' famous **Torpedo Battery** on North Kaholmane Island, which has three dual torpedo launchers, torpedo and warhead storage, and supporting equipment constructed



Lower East Battery – Casemated Cannons – Oscarsborg Fortress – June 10, 2013



Torpedo Battery – Fortress Oscarsborg – Observation Position, next to entrance – June 10, 2013



Torpedo Battery – Fortress Oscarsborg – Dual Torpedo Elevator over underwater portals – June 10, 2013



underground inside a large rock bluff along the East Passage of the Oslofjord. Completed in 1901, the battery was armed with Whitehead torpedoes which could be lowered in metal cages below the water line and launched through underground pools directly into the Oslofjord. Above the launching chamber is the observation station for aiming the torpedoes. The group was very excited to be able visit this one-of-a-kind installation, as it was here on April 9, 1940, that Norwegians launched the battery's torpedoes at the German heavy cruiser *Blücher*, sinking the ship



Torpedo Battery – Fortress Oscarsborg – Torpedo loading station – June 10, 2013



Torpedo Battery – Fortress Oscarsborg – Control Station – June 10, 2013



Norwegian Coast Artillery Museum – Fire Control Exhibit – Oscarsborg Fortress – June 10, 2013

in the fjord with the loss of about 800 sailors and soldiers. The torpedo battery was modernized in the 1960s and remained active until 1993 before becoming part of the island's coast artillery museum, still fully equipped. The guided tour continued along the edge of the two islands to Lower East Battery (constructed in 1848), with a casemated gallery of muzzleloading cannon and magazines tunneled into the side of the island. We were able to walk through a tunnel to the main fort, where we were given a tour of the both the **Fortress Oscarsborg Museum** and the **Norwegian Coast Artillery Museum**, which has a nice bookshop. Of special interest and not normally not open to the public, the section of the museum on fire control contains a wonderful collection of optical and electronic fire control devices dating from 1890s to the 1990s. Some of the large German rangefinders are very impressive. With a few minutes to spare the tour group was able to pack up and check out of the hotel to catch the 11:45 AM ferry to our vans. As we traveled across the fjord, we wished we could have stayed longer to explore all the island defenses, but other coast defenses awaited us.

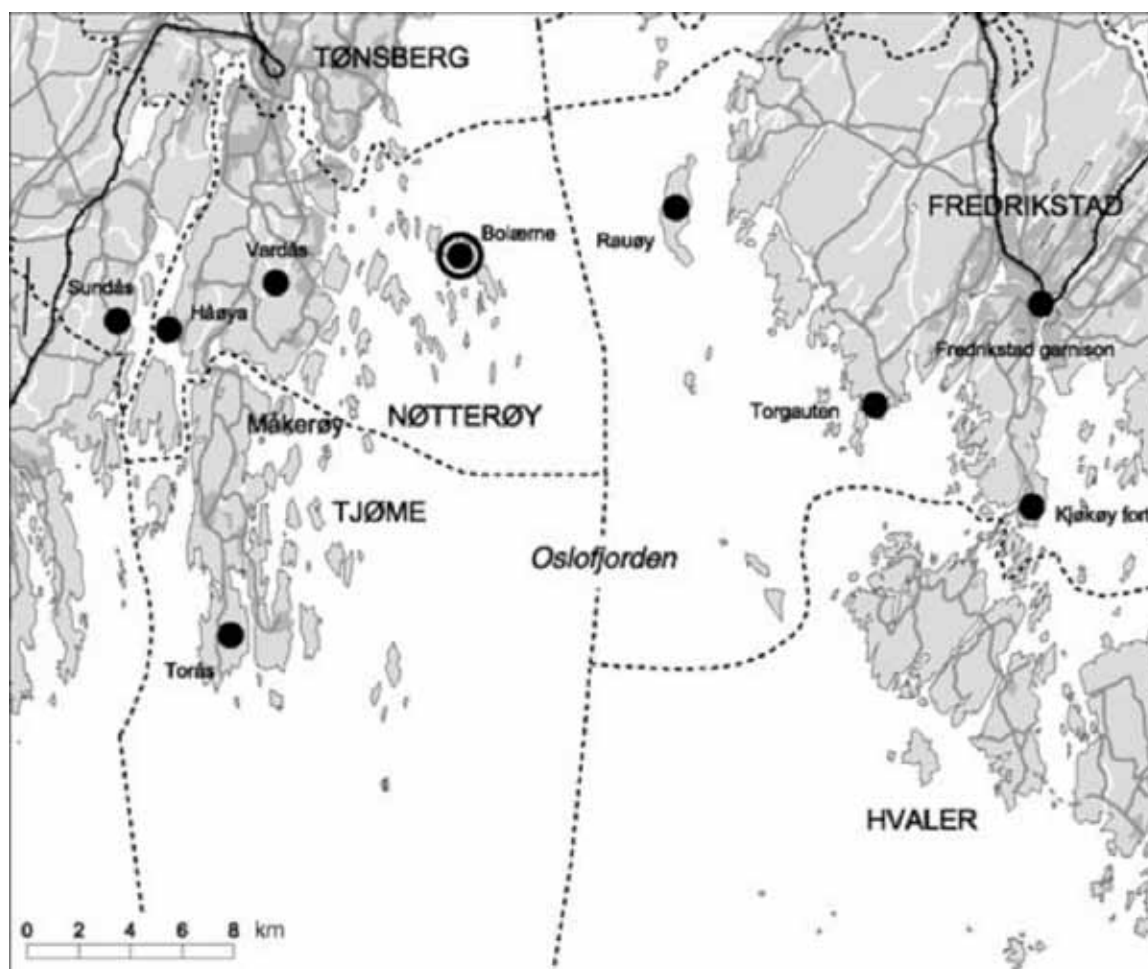
After loading our luggage, we hiked up the hillside to tour **Kopas Battery** constructed by the Norwegians in 1900 for three 150 mm Armstrong breechloading guns. These guns played an important part in battering the German naval task force in 1940. Part of the battery was rebuilt for two casemated 105



Kopas Battery – Oscarsborg Fortress – 105mm SKC/32 in Casemates – June 10, 2013



Veisving Battery – Oscarsborg Fortress – 226mm Armstrong RML – June 10, 2013



The Outer Defenses of Oslofjord

Places visited by tour: Kjekoy Fort, Torgauten Fort, Bolaerne Fort, Torås Fort, Vardås Fort

mm SKC/32 guns, which remain today, although the battery is no longer in use. The Germans added a large fire command bunker to the upper part of the battery. Returning to our vans, we briefly stopped by **Husvik Battery**, which had mounted two 57 mm rapid fire guns, but only the emplacements remain today. These guns scored more than 30 hits on the *Blücher* in 1940. We drove up to the top of the fjord to visit **Veisving Battery**, which

still mounts three 227 mm Armstrong RML and one 267 mm Armstrong RML in open positions. These guns are in excellent condition and the batteries provided a great view of Oscarsborg Fortress and the fjord.

Driving under the fjord in a deep tunnel, we made our way about 100 km to Horten for a guided tour of the **Royal Norwegian Navy Museum**. The collection, started in 1853, contains several decommissioned ships, naval equipment used by the Norwegian, Allied, and German navies, ship models, paintings, and pictures. The museum also includes the Royal Norwegian Navy Library, started in 1805. The museum and library have book collections of about 25,000 volumes. Parts of the museum were destroyed during an allied bombing raid on Horten in February 1945. A nice collection of naval ordnance (such as a 267 mm M1866 RML and two 105 mm SKC/32 guns) is on display outside the main museum building. The Horten Naval Base is no longer active, so we were able to drive around former base buildings and out to the shoreline of the fjord to visit several battery sites that once defended the shipyard. These RML emplacements and nearby open emplacements for WWII batteries are now part of an open green area. We drove 30 km to the nearby city of Tonsberg and our hotel for the next two nights, **Thon Hotel Brygga**.



The HNoMs Utstein - Kobben class or Type 207 – Royal Norwegian Navy Museum, Horten – June 10, 2013



After a hotel breakfast the next day, we made our way to the other side of Tonsberg, where we took a water taxi to **Bolaerne Fort** on East Bolaerne Island. The 25-minute cruise allowed us to see the island's defenses from seaward before we docked in the island's main harbor. Svein Olsen led us by foot to visit this fort that, along with similar works on the island of Rauøy on the other side of the fjord, provided the outer coastal defenses of the Oslofjord. In 1916, the Norwegians placed four 120 mm guns and two 65 mm guns on island. The island's primary defenses



75mm Bofors Turret – Western Position – Bolaerne Fort – June 11, 2013



HKB 8/980 Kongshaven – 127mm SKC/34 in casemates – Bolaerne Fort – June 11, 2013



HKB 8/980 Kongshaven – New uses for gun casemate – Bolaerne Fort – June 11, 2013

were started in 1935 when three 150 mm L/50 Bofors guns were installed in permanent open emplacements along with fire control structures and supporting underground magazines. These defenses engaged the German Navy on April 9, 1940, as they entered the fjord on the way to Oslo. The battery traded fire with these vessels until they pulled back as the primary German invasion force passed on its way to Oslo. The Luftwaffe then bombed the island's defenses until the battery was knocked out. The Germans strengthened the defenses by restoring the 150 mm guns and added an additional 150 mm gun, designating the battery *Marine Küsten Batterie MKB 3/501 Bolaerne*. They also constructed a large underground battery, *Heeres Küsten Batterie HKB 8/980 Kongshavn*, in a rock bluff with four R671 casemates, each containing a 105 mm K331(f) gun. The Norwegians replaced these guns in 1950 with 127 mm SKC/34 guns, and the 150 mm Bofors battery was decommissioned in the same period. In 1972, two 75 mm L/57 Bofors turret positions were built, with a third position built in 1974. The "tunnel battery" of 127 mm guns was decommissioned in 1999 and the 75 mm turret battery was mothballed in 2001. In 2004, the fort came under the control of the Vestfold County Council as a recreation area.

The island has been "cleaned" up with defenses sealed, such as the "tunnel battery" with guns still in place but each casemate sealed in concrete so the gun barrel is sticking out. While we were visiting this battery, a large group of rock climbers was using the sealed casemates and bluff above to develop their skills. We were unable to enter the interior of this unique battery. During our visit we were treated to the sorry sight of the 75 mm turret positions being scrapped. One had already been gutted and sealed, while another one was actively being worked on; we could see internal turret mechanism being lifted from its concrete emplacement. The turret and its barrel would be returned to its former position but the emplacement inside will be empty. A benefit of this activity was that Svein was able to convince the crew working on this battery to let us into the remaining 75 mm turret position. Each turret is a stand-alone position – hundreds of meters apart. After exploring the exterior of the battery's radar and optical station, we visited the exterior of the southernmost 75 mm turret. The turret is on the spine of the island, so we climbed down the rock bluff to the main entrance.



Elevator/Shaft for Fixed Ammo to reach 75mm Turret – Eastern Position – Bolaerne Fort – June 11, 2013





75mm Bofors Turret – Central Position – Gutting the position – Bolaerne Fort – June 11, 2013



MKB 4/501 Toarraas Battery – 150mm SK L/50 Bofors – Toras Fort – June 11, 2013



Fire Control Position for Bolaerne Battery – Norwegian design 1935 – Bolaerne Fort – June 11, 2013

Being a Cold War defense designed to resist nuclear, biological, and chemical attack, an inner bomb-resistant door about a foot thick led to a gas-proof chamber with decontamination showers. Seven men manned the position – three in the turret and four in the magazine. The self-contained multi-floored emplacement had a power room with two generators, fuel storage, supply room, and water supply on the lower level. The next level had the crew room with galley and communications room, and the upper level had the magazine and shell handling rooms with a shaft rising about 5 meters to the turret, allowing an elevator to bring the fixed ammunition to the breech. While the position had been mothballed for a quite a while, most of its equipment was still in place. Visiting the inside one of these “modern” 75 mm gun turrets was a treat for the group, as it was not planned. As time was up and the water taxi was at the dock, the group hustled down to return to Tonsberg. On the return trip, we were able to convince the taxi captain to stop at Western Bolaerne Island so we could visit the now disused underground NATO naval munitions depot. Several truck-size tunnel entrances led into the storage areas that honeycombed the island; the main shaft passed all the way through to the other side of the island. Back aboard our water taxi, we returned to the mainland and our vans.



MKB 4/501 Toarraas Battery – Fire Control Position – Toras Fort – June 11, 2013

We drove 35 km south to our next stop, **Toras Fort** on the island of Tjome. Before we reached this fort, the group had a lunch break at a local gas station. As this is a rural part of Norway, having five vans and 24 customers all at the same time provided to be a traumatic experience for the clerk, as she had more business in 10 minutes than all day long. Toras Fort is now deactivated, so Svein arranged for a representative of the local mayor to meet us and guide us to the fort's defenses. This visit was another highlight for the group due to its battery's dramatic



Emplacement for 380mm gun at MKB 6/501 Notteroy – June 11, 2013



Emplacement for 380mm gun at MKB 6/501 Notteroy – June 11, 2013



Operational 380mm gun at MKB 6/501 Notteroy – 1945

location on a succession of “Sugar Loaf” rocks. Each of the four 150 mm L/50 Bofors guns was emplaced on its own rock, while the largest rock had the battery’s TDP fire control station. Built by the German as *Marine Küsten Batterie MKB 4/501 Torraas*, the Norwegians retained this fort until 2004. Three of the four 150 mm guns remain on site. The group had a great time climbing up one rock and down to the next. From the top of these rocks one can see shipping in the Skagerrak.

We headed 22 km north, back to the center of the Notteroy Peninsula to visit **Vardas Fort**. This former fort was built by the Germans for three 380 mm KM36/36 (f) guns, *Marine Küsten Batterie MKB 6/501 Notteroy*. This was to be the principal German coast defense site for the Oslofjord, but construction did not start until 1944, as the three cannons, originally built for the French battleship *Jean-Bart*, had to be shipped to Norway from France, while the carriages for the guns were designed and constructed. To save on construction effort, the sites for the three emplacements were carved from the hillside, so rather than building a large concrete structure to support each gun a series of underground tunnels were bored into the hillside for the magazines and other supporting activities; only the actual base for the carriage had to be constructed of reinforced concrete. Only one emplacement was operational by the end of the war in 1945. The Norwegians

planned on finishing the battery as their principal defense of the fjord, but the French requested the return of the barrels to refit their battleship. The Norwegians agreed to trade for the three guns at Battery Todt at the Pas-de-Calais. The switch was made but by the time the new guns arrived the Norwegians had decided not to complete the battery. The group visited each of the three sites and a few climbed to the top of the hill to visit the incomplete fire command bunker (later used by the Norwegians). The group then made its way separately to our hotel in Tonsberg.

This completed our tour of the defenses of the Oslofjord. Part two of our tour required us to drive about three hours to the coast defenses of Kristiansand, where over two days we visited Battery Vara with its 15-inch gun and casemated bunker, as well as several other forts in the area. Part three of the tour had us travelling to Trondheim and its U-boat bunkers via airplane from Kristiansand. We visited the triple 11-inch naval turret from the *Gneisenau* at Orland and other defenses of the Trondheim Fjord over three days. Part four had us flying on to the Harstad/Narvik area, where we visited several fascinating batteries over two days, but the main attraction was the four 16-inch guns at Battery Trondenes. From Harstad we flew back to Oslo and the tour ended. Due to the length of the tour and the resulting tour report, it will be published in the CDSG Newsletter over several issues.





CDSG Special Tour to Norway – June 8th to 19th 2013

## CDSG Special Tour to Norway

Norwegian and Atlantic Wall Defenses

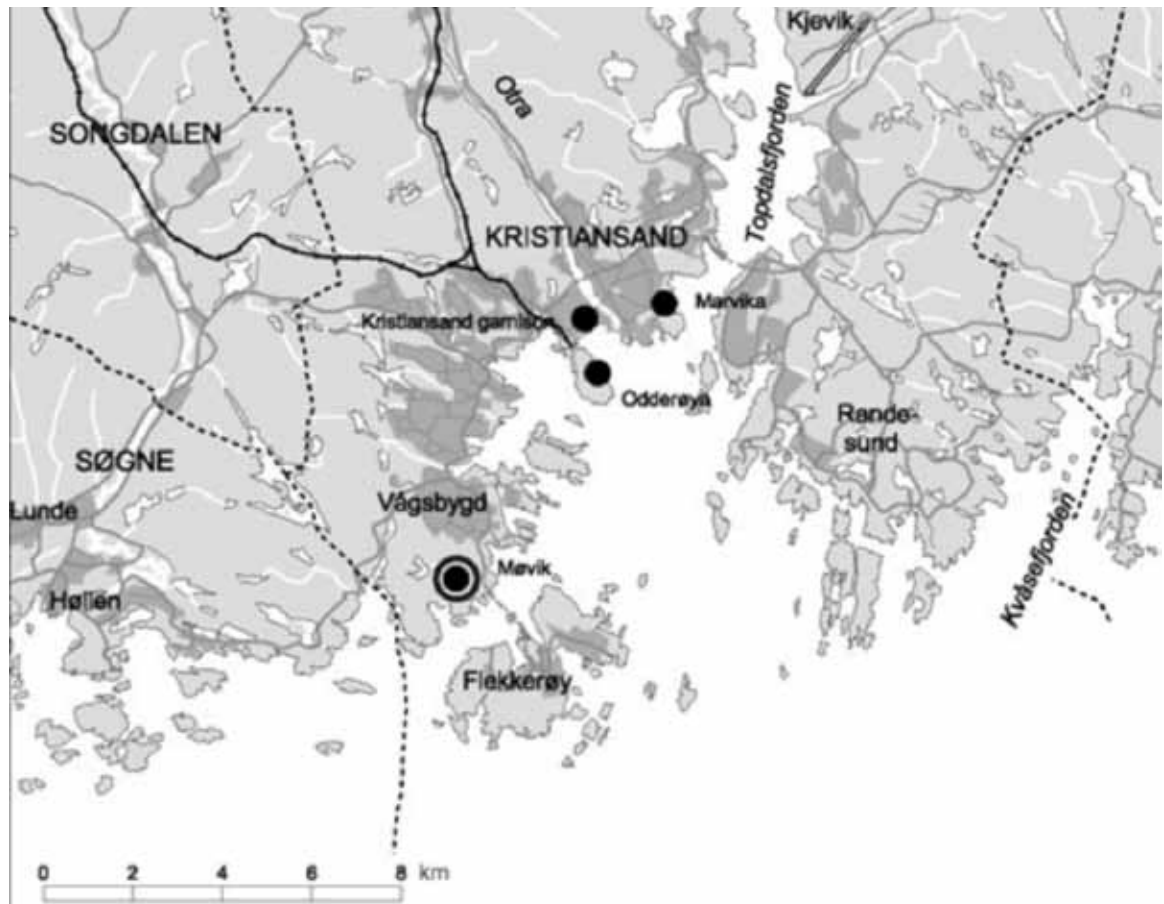
Part II: Defenses of the Kristiansand

By Terrance McGovern

The CDSG special tour to the coast defenses of Norway took place from June 8 to June 19, 2013, with 24 tour members. The goal of this tour was to visit the world's best collection of surviving coast artillery, especially the dozen "big guns" (greater than 280 mm) that remain, as well as other wonderful coast defense sites that still have their smaller artillery. During World War II Germany built (or converted existing Norwegian) over 280 coast defense batteries mounting over 1,000 guns in Norway. Many of these Atlantic Wall defenses were used by the Norwegian coast defense service after the war and many were maintained into the 1990s. The Norwegians added modern 75 mm and 120 mm batteries during the Cold War. The tour was able to visit over 50 examples of surviving coast artillery during the tour, many in their original emplacements.

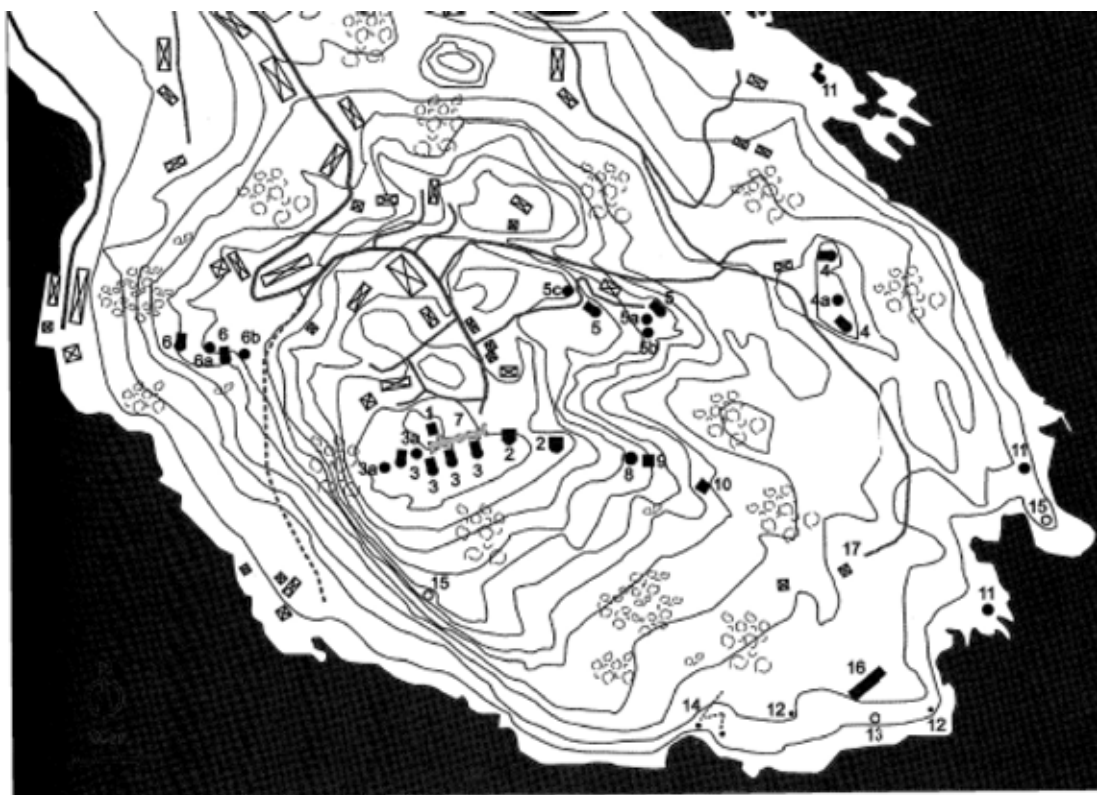
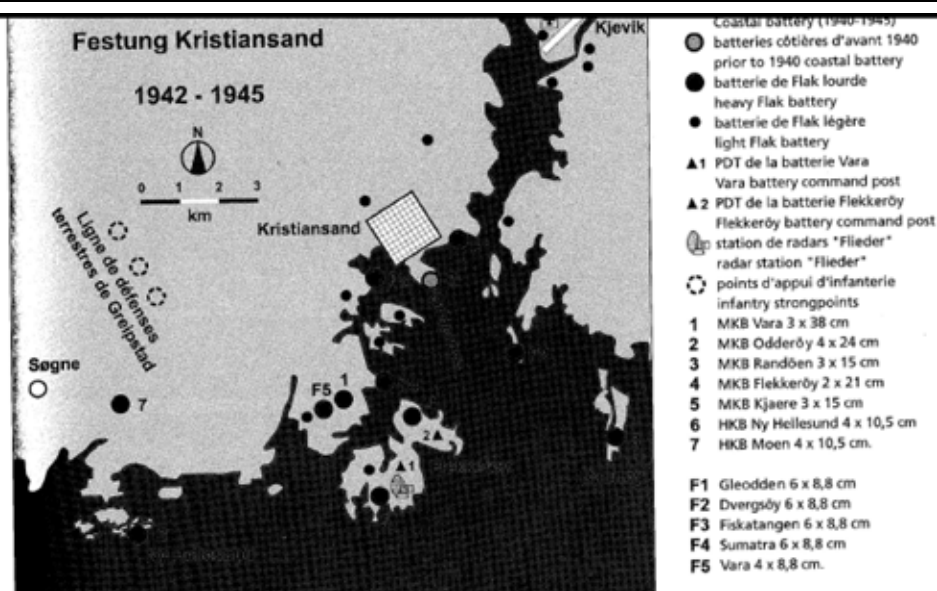
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Kristiansand  
Defenses - Places  
visited by tour:  
Odderoya Fort  
Laksevik Fort  
(Flekkeroy)  
Battery Vara  
Command  
Bunker  
(Flekkeroy)  
Movik Fort  
Sandviktøppen  
NATO Command  
Bunker



tour. We also want to thank tour members Mike Fiorini, Alan Fyson, Terry McGovern, Michel van Best, and Keith Estes, who each undertook the responsibility to organize and drive one of our five rental vehicles. They did a great job considering they have never been to Norway before and they successfully kept track of all their passengers during the long tour. Finally, we want to thank Denise Agostino from Premiere Travel for arranging the air, hotel, and rental vehicles for the group.

The November 2013 issue of the *CDSG Newsletter* contains the tour report for Part I of the tour to the defenses of the Oslofjord. Part II of



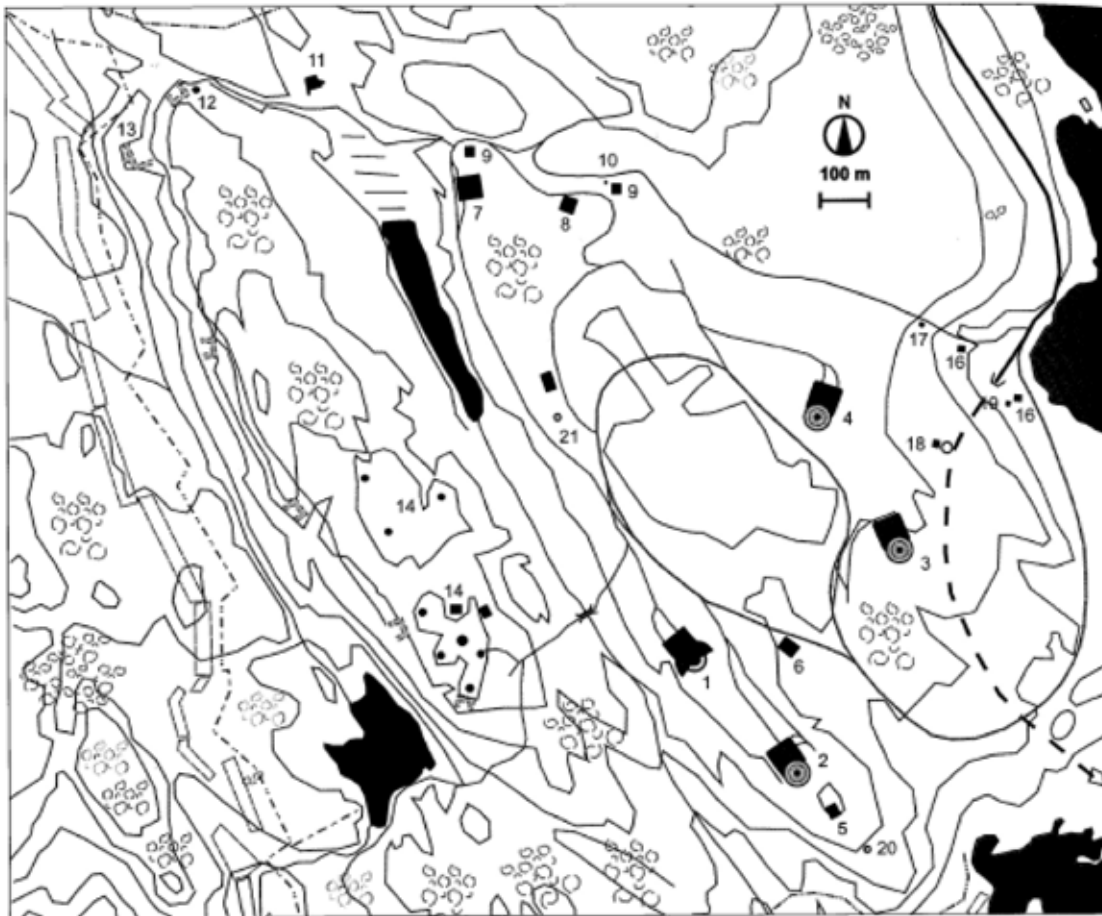
Position d'Odderøya  
(Kristiansand, 1900-1945, 1945-1995)

Position d'Odderøya  
(Kristiansand, 1900-1945, 1945-1995)

our tour began on the morning of June 12, 2013, (Day 5 of the tour) with our rental vehicles leaving Tonsberg for the 230 km (about 3 hour) drive to visit the coast defenses of **Kristiansand**, on the Skagerrak (the strait between Norway and Denmark) at the mouth of the Otra River. It has a spacious, ice-free harbor, protected by offshore islands, and is the largest community of the Sørlandet region (current population is about 160,000). It is an important seaport including shipyards and a naval base, and as a result, several coast defense forts were built by both the Norwegians and the Germans. The first site we visited was **Odderøya Fort**, which is an island connected to the mainland by bridges

south of the city. The island creates a natural division between the eastern and western port of Kristiansand as it rises about 200 meters above the city. The canal Gravenekanalen separates Odderøya Fort from the city center, but four bridges ensure that the island is easily accessible. This fort has been the location for military fortifications from the time of the Great Northern War (1700-21) to the end of the Cold War. There has been military activity on Odderøya from 1667 until 1993, when the fortress was phased out. In much of this period Odderøya served as a base and boot camp for the Norwegian Coastal Artillery. The most notable event took place on April 9, 1940, against German





MKB 6./502 Vara (1941-1945) - Mövik Fort (1945-1990 ?)

MKB 6./502 Vara (1941-1945) - Mövik Fort (1945-1990?)

aircraft and warships during the invasion of Norway in Operation *Weserübung*. The site today is open to the public with variety of civic organizations occupying the former military buildings. Repurposing the fort continues today.

Our tour focused on defenses constructed in the early 20th century. This was a period of military build-up, not least due to the tense relationship with Sweden. **East Battery**, **Central Battery**, and **Western Battery** stood ready in the summer of 1903, each with two Armstrong 15 cm L/47.5 cannons. Primary armament was in **Main Battery** (with two St. Chamond 21 cm cannons) and the Howitzer Battery (with four St. Chamond

24 cm howitzers) which was fully operational late in the winter of 1904. Later that same year, two 6.5 cm Cockerill guns were mounted in the eastern shore battery. During the WWI several command positions for the protection of fire control instruments were constructed at each battery, and the first air defense positions were established.

It was with these old weapons that eventually Odderøya Fort met the German invasion April 9, 1940. The fort fired upon the approaching German warships, 30 rounds from the 21 cm guns, 60 rounds from 15 cm cannons, and 12 howitzer rounds. Several



Signal Station at Odderøya Fort, Kristiansand

West Battery (2 x 15cm L47.5 Armstrong)  
at Odderøya Fort, Kristiansand





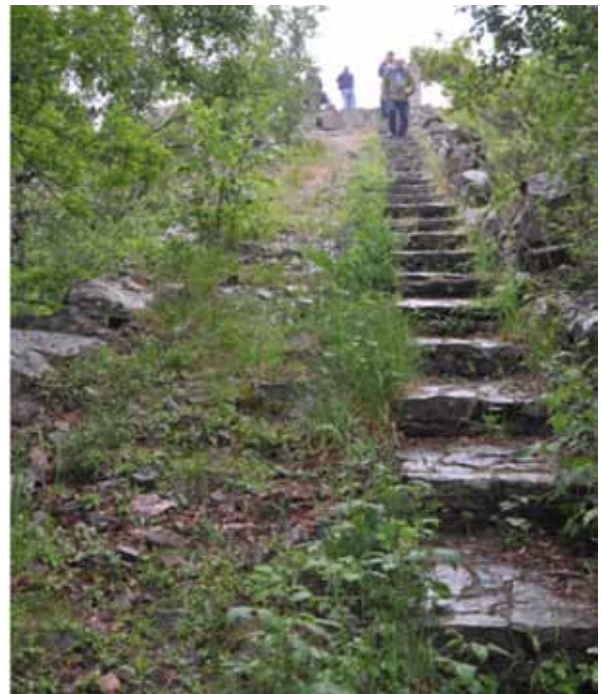
Fire Control Station for Howitzer Battery (4 x 24cm L/16 St-Chamond) at Odderoya Fort, Kristiansand



10.5cm SKC/32 at Central Battery at Odderoya Fort, Kristiansand



Emplacement #2 for Howitzer Battery (4 x 24cm L/16 St-Chamond) at Odderoya Fort, Kristiansand



Cableway to 21cm emplacement at Laksevika Fort, Flekkerøy



Filled in Howitzer emplacement for memorial to German attack in 1940 at Odderoya Fort, Kristiansand



Fire Control Station for Central Battery (2 x 15cm L/47.5 Armstrong) at Odderoya Fort, Kristiansand



German built emplacement for 21cm gun at Laksevika Fort, Flekkerøy





Battery Vara Fire Control and Command Bunker on Flekkerøy

German ships were hit, but only an unfortunate merchant vessel, the *M/S Seattle*, that got in the middle of the battle was sunk. The Germans bombarded the fortress, both with naval guns and from the air. The fortress had 8 killed and 13 wounded in the fighting. During the German occupation of the city, they established the Artilleriegruppe Kristiansand headquarters at Odderøya Fort. They moved the 21 cm and 15 cm guns in 1940-1941 to new coastal forts on Flekkerøy and Eastern Randøy as Odderøya was too far within the harbor for the range of its guns. In the postwar era, Odderøya received a three-gun 10.5 cm training battery. After some time, these guns were replaced with newer artillery guns of the same caliber; 10.5 cm SKC/32. Two of these guns remain in place today, along with a memorial to the events of 1940.

We were able to drive our vans right up to the top of the island and park behind the main gun line around 11 am. The area is open parkland today, so most of the emplacements have been sealed. Tour members quickly dispersed to visit various batteries and other structures as it began to rain. A very wet group gathered for a field lunch before leaving the fort at 2 pm for the island of Flekkerøy. This island is about 15 km from Odderøya via an undersea tunnel once you drive through downtown Kristiansand. Access to **Laksevika Fort** on Flekkerøy is complex, so we relied on our local guide, Vic Phillipson, to show us the way through the woods and marshes to the two single gun emplacements that the German built (as MKB 3/502 *Flekkerøy*) to mount the two 21 cm St. Chamond L/45 guns they moved from Odderøya Fort in 1940. In addition, the fort had three positions for 40 mm Bofors, four positions for 20 mm Flak, as well as four positions for 60 cm searchlights. When the Norwegians abandoned the fort in 1958 they removed these guns. Each emplacement is located on high rocks that rise out of the forest so a series of cableways was needed to transport ammunition from the wharf. The Germans used a mixture of concrete and carved rock to build the fort's emplacements. After spending an hour exploring these slippery emplacements in the rain, we drove about 3 km to the Battery Vara Command Bunker. This multi-level fire direction bunker (S-100 model) was built by the Germans to be the principal position finding location for Battery Vara (as MKB 6/502) with four 38 cm guns. The bunker is now used as a telecommunication installation, surrounded by a fence and cemented closed. After a brief visit, the group head back the 14 km to Kristiansand to check into Scandic Kristiansand Hotel for the next two nights.



Battery Vara Secondary Fire Control Bunker at Movik Fort



CDSG members visit Battery Vara Secondary Fire Control Bunker at Movik Fort



Emplacement #2 with surviving 38cm SKC/34 gun at Battery Vara, Movik Fort



Main Hall of Kannon Museum in Emplacement #2 at Battery Vara, Movik Fort

Day 6 began with a hotel breakfast and 10 km drive to Movik, which was the site of **Battery Vara** (as MAB 6./502 *Vara*) during World War II. After the war, the Norwegians named it **Møvik Fort**. The fort was constructed between 1941 and 1944 by the German navy to mount four 38 cm/52 SK C/34 guns in single S-169 emplacements on center-pintle mounts (C/39) with splinter shields. Together with four other coastal batteries, it formed the Kristiansand Artillery Group. Together with its sister battery at Hanstholm in Denmark (roughly 116 km away), Møvik Fort was built to obstruct Allied naval forces by blocking the Skagerrak Strait and the seaways to Eastern Norway, as well as the access to the Kattegatt Strait leading to the Baltic Sea. Only a gap of 10 nautical miles in the Skagerrak could not be covered by the guns of these batteries. This gap was therefore mined to stop ships from avoiding the batteries' fields of fire.

Construction at Møvik commenced in the spring of 1941. At the initial stage, the work force was comprised of 750 Norwegians, 350 Danes, and 300 Germans. From early 1943, 200 Russian prisoners-of-war were also used, and they remained until the end of the war in 1945. As construction proceeded and guns were completed, the battery crew of 600 Germans arrived (450 sailors to man the guns and 150 soldiers for close-in defense). Trial rounds were fired from Cannon #2 and #3 on March 12, 1942, and from Cannon #4 in November of the same year. By then, the emplacement for Cannon #1 had been completed, but

the gun itself had not yet been delivered. It was not until summer 1944 that work on Emplacement #1 was taken up again, but now as a casemated emplacement to protect the gun from aerial attack. The cannon well was covered with a casemate with a 4.5 meter-thick roof and 3.8 meter-thick walls, built in 10 weeks.

Then the process of delivering the cannon parts was started. By the beginning of 1945, all the parts were in place, except for the barrel, which was the heaviest single part of the cannon (19.76 meters long and 110 tons). It was shipped on the *Porto Alegre* from Germany in February 1945, but on the night of February



Powder Room of Kannon Museum in Emplacement #2 at Battery Vara, Movik Fort



Shell Room of Kannon Museum in Emplacement #2 at Battery Vara, Movik Fort



Shell Wagon waiting for projectile at flash proof doors at Kannon Museum in Emplacement #2 at Battery Vara, Movik Fort





Shell Room of Kannon Museum in Emplacement #2 at Battery Vara, Movik Fort



Fire Control computer at Kannon Museum in Emplacement #2 at Battery Vara, Movik Fort



Power Room of Kannon Museum in Emplacement #2 at Battery Vara, Movik Fort



Loading table with flash-proof doors behind at Kannon Museum in Emplacement #2 at Battery Vara, Movik Fort



Chris Bristow purchases some large souvenirs at the Kannon Museum in Emplacement #2 at Battery Vara, Movik Fort



38cm SKC/34 gun and mount in Emplacement #2 at Battery Vara, Movik Fort



38cm gun showing breech and block at Emplacement #2 at Battery Vara, Movik Fort



Central Pintle in Emplacement #2 at Battery Vara, Movik Fort



38cm gun showing breech and block at Emplacement #2 at Battery Vara, Movik Fort



Inside 38cm mount with shell lift, loading table, and air ram for Emplacement #2 at Battery Vara, Movik Fort



CSDG watch loading drill for 38cm gun in Emplacement #2 at Battery Vara, Movik Fort



Large artifact on display at the Kannon Museum at Battery Vara, Movik Fort





Tank turret used in defense of Kristiansand's airport during WWII at the Kannon Museum at Battery Vara, Movik Fort



Huge casemate for Emplacement #1 at Battery Vara, Movik Fort



Rear of casemate for Emplacement #1 at Battery Vara, Movik Fort



Inside the casemate for Emplacement #1 at Battery Vara, Movik Fort



Entrance to reserve ammunition bunker at Battery Vara, Movik Fort





Entrance to bunker for Emplacement #4 at Battery Vara, Movik Fort



Emplacement #4 without 38cm SKC/34 gun at Battery Vara, Movik Fort



4 cm Flak position at Battery Vara, Movik Fort



Entrance to bunker for Emplacement #3 at Battery Vara, Movik Fort

22 it was sunk in the Kattegatt by a British air attack. In addition to the main cannon, there were 16 smaller guns, as well as many bunkers, defense posts, tunnels, barracks, and a 2.6 km railway network to transport ammunition from the two large bunkers approximately 1 km to the rear of the cannons. For a few years after the war, Møvik Fort was an operating Norwegian fortress. In 1953 it became part of Kristiansand fortress. On April 20, 1959, the fort was closed and in 1962 Cannons #3 and #4, as well as the existing parts of Cannon #1, were scrapped. Fortunately, Cannon #2 was saved, and is today the only remaining example of this type. After extensive renovation in the late 1980s and early 1990s by local armed forces and the Foundation Kristiansand Cannon Museum Møvik, a part of the fort was opened to the public in 1993. The **Kristiansand Cannon museum** is run today by the Foundation Kristiansand Cannon Museum Møvik and administered by the Nasjonale Festningsverk (National Fortresses).

Our group gathered in the museum parking lot with our cameras and field lunches in hand, as we were scheduled to spend most of the day exploring Battery Vara. Our local guide, Vic Phillipson, started our guided tour at the battery's secondary fire control position. The challenge of a foggy day mixed with moss-covered rocks resulted in a number of slip and falls. Retreating to the safety of Cannon #2's S-169 bunker we visited the museum in the ammunition magazines of the emplacement. We also visited the power rooms and ammunition handling area before walking to the topside of the emplacement to see the 38 cm gun and its mount. By this time it was noon, so we picnicked next to the emplacement before moving on to a storage building built by the museum to house its larger artifacts, ranging from an German 88 mm AA gun to a small railway unit for the narrow-gauge line that



Entrance to NATO Command and Control Complex at Sandviktoppen, Movik





Control post at NATO Command and Control Complex at Sandviktoppen, Movik



Operations theatre at NATO Command and Control Complex at Sandviktoppen, Movik

served the fort. We next visited the huge casemate constructed over Emplacement #1, very similar to the German batteries along the English Channel in France. We then visited one of the S-174 reserve ammunition bunkers before exploring the emplacements for Cannons #4 and #3, which are abandoned. We also visited several 4 cm flak positions as well as several MG casemates and shelters, including a few Tobruk positions. Our last stop was a communication/generator bunker before one last visit with the wonderful 38 cm gun.

Back in our vans, we now traveled a few kilometers to an adjunct property where the abandoned underground command complex called **Sandviktoppen** is located. Sandviktoppen was NATO's hardened command and control bunker for all of Southern Norway. We parked our vans at the bottom of a hillside, at the former barracks and motor pool garage. We hiked up the road that led to a camouflaged entrance to a tunnel that led to heavy blast doors of NATO's Atlantic North Command and Control Bunker, built during the Cold War. This NBC-proof (nuclear, biological, chemical) facility was in service until 1992. After being decommissioned, the bunker has been locked and sealed awaiting a decision about its future use, and is now owned by the local government. We explored the operations theatre, map

room, command center, troop quarters, and all the engineering spaces, which are still in relatively good condition, although with limited lighting. A few hardy tour members climbed the some 300 steps in the service tunnel to the radar and signals installation above the complex. Returning to our vans we made our way back to our hotel in Kristiansand.

This completed our tour of the defenses of the Kristiansand. Part three of the tour had us flying to Trondheim and its U-boat bunkers from Kristiansand. We visited the triple 28 cm naval turret from *Gneisenau* at Orland and other defenses of Trondheim Fjord over a three-day period. Part Four had us flying on to the Harstad/Narvik area, where we visited several fascinating batteries over two days: the main attraction was the four 40.6 cm guns at Battery Trondenes. From Harstad we flew back to Oslo and ended the tour. Due to the length of the tour and resulting long tour report, it will be published in the *CDSG Newsletter* over several issues.

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## CDSG Special Tour to Norway Norwegian and Atlantic Wall Defenses

Part III: Defenses of the Trondheimsfjord

By Terrance McGovern

The CDSG Special Tour to the coast defenses of Norway took place from June 8 to June 19, 2013, with 24 tour members. The goal of this tour was to visit the world's best collection of surviving coast artillery, especially the dozen "big guns" (greater than 280 mm) that remain, as well as other wonderful coast defense sites that still have their smaller-caliber artillery. German armed forces built (or converted existing Norwegian defenses) over 280 coast defense batteries mounting over 1,000 guns during their occupation of Norway in World War II. Many of these Atlantic Wall defenses were used by the Norwegian coast defense service after the war and some were maintained into the 1990s. The Norwegians added modern 75 mm and 120 mm batteries during the Cold War. The tour was able to visit over 50 examples of surviving coast artillery during the tour, many in their original emplacements.

This was the ninth special tour that I have organized for the CDSG and the most complex logistically, due to the remote locations and the long distances between sites. The tour's planning

and ultimate success were due to the efforts of our local tour leaders, Svein Wiiger Olsen, Vic Phillipson, Pål Johnsen, and Harald Isachsen, who both arranged for our access to the many sites and guided us to these defenses. This tour would have never happened without their efforts and we owe them many thanks for a great tour. We also want to thank tour members Mike Fiorini, Alan Fyson, Terry McGovern, Michel van Best, and Keith Estes, who each undertook the responsibility to organize and drive one of our five rental vehicles. They did a great job considering they have not been to Norway before and successfully kept track of all their passengers during the long tour. Finally, we want to thank Denise Agostino from Premiere Travel for arranging the air, hotel, and rental vehicles for the group.

The November 2013 issue of the *CDSG Newsletter* contained the tour report for Part I of the tour to the defenses of Oslofjord, while the May 2014 issue contained our Part II tour report to the defenses of Kistiansand. Part III of our tour began very early on the morning of June 14, 2013, (Day 7 of the tour) with our departure from our hotel and a 30-minute drive to the Kistiansand Airport. Our 6:30 am flight took us to Oslo Gardemoen Airport, where we connected with an 8:00 am flight to Trondheim. We flew, as the 820 km road trip to Trondheim would take over 10 hours. We rented new vans at the Trondheim Airport (in Værnes) for the 45 km drive through Trondheim to the car ferry at Flakk on the south shore of the Trondheimsfjord. The 7 km crossing to the northern side of the Trondheimsfjord took roughly 25 minutes. The Trondheimsfjord, an inlet of the Norwegian Sea, is Norway's third longest fjord at 130 km (81 miles) long. It is in the west central part of the country and stretches from Ørland in the west to Steinkjer in the north, passing the city of Trondheim on its way. Its maximum depth is 617 m (2,024 ft), just inside Agdenes. We were met at the ferry landing in Rørvik by our local guides for this segment of the tour. Pål Johnsen and Jan Egil Fjertoft had ridden their motorcycles from Ørland to guide us to the defenses of the Trondheimsfjord. Our first stop was lunch at the Guri Kunna restaurant, on the grounds of the former Hysnes Fort at Hasselvik. This was one of three coast defense

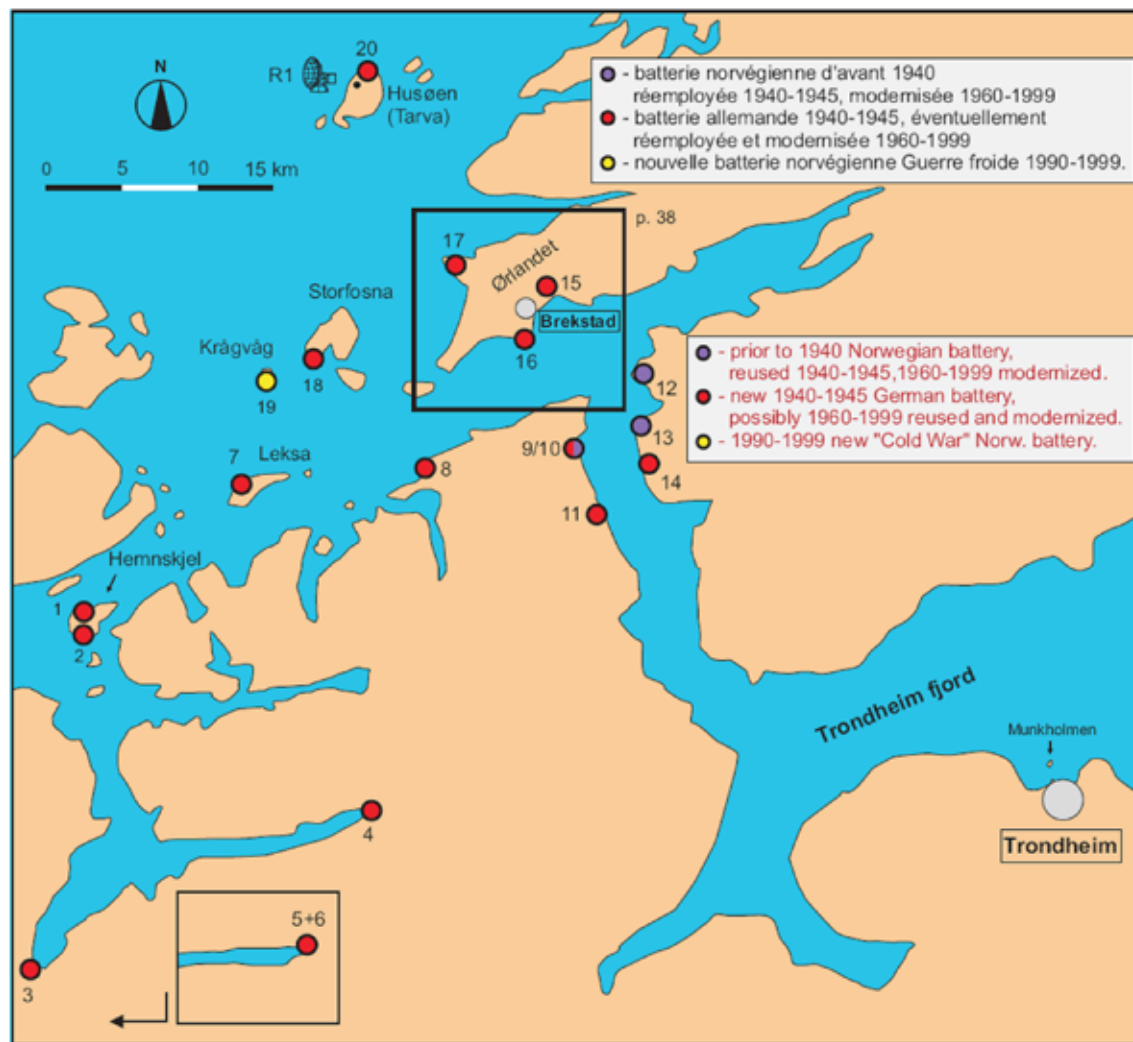


The CDSG Norway Tour  
All maps provided by Jean-Bernard Wahl.



1. Flakk-Rørvik Ferry on Norwegian National Highway 715 that connects the peninsula of Fosen with Trondheim.





- 1 - HKB Hevnskjøl-Nord, 4 x 15,5 cm K416(f)
- 2 - HKB Hevnskjøl-Süd, 6 x 21 cm Mrs.(t),
- 3 - HKB Hemnefjord, 4 x 15,5 cm sFH414(f)
- 5 - HKB Vinjeffjord, 4 x 7,65 cm FK(ö)
- 6 - Zug Lian, 2 x 15,5 cm sFH414(f)
- 7 - HKB Leksa, 4 x 15,5 cm K416(f)
- 8 - MKB Lökhaug, 3 x 15 cm SKL/45
- 9 - MKB Hambara, 3 x 12 cm L/44 Armstrong
- 10 - Torpedo-Batterie Hambara, 4 x 53 cm
- 11 - MKB Stördal, 3 x 10,5 cm SKC/32 /  
HKB Selnes, 3 x 21 cm Mrs.(t)
- 12 - MKB Brettingnes, 2 x 21 cm L/45 Armstrong  
+ 4 x 15 cm SKC/28

- 13 - MKB Hysnes, 2 x 21 cm L/45 Armstrong  
+ 2 x 15 cm L/47,5 Armstrong
- 14 - Torpedo-Batterie Hasselvik, 4 x 53 cm
- 15 - MKB Ørlandet, 3 x 28 cm SKC/34
- 16 - HKB Hovde, 5 x 10,5 cm K335(h)
- 17 - HKB Hoö, 4 x 10,5 cm K331(f)
- 18 - HKB Storfosen, 6 x 15 cm K403(j)
- 19 - Krågvåg fort, 3 x 12 cm Bofors (1994-1999)
- 20 - MKB Husøen, 3 x 28 cm SKL/45 + 4 x 8,8 cm Flak.

R1 - station radar "Tanne".

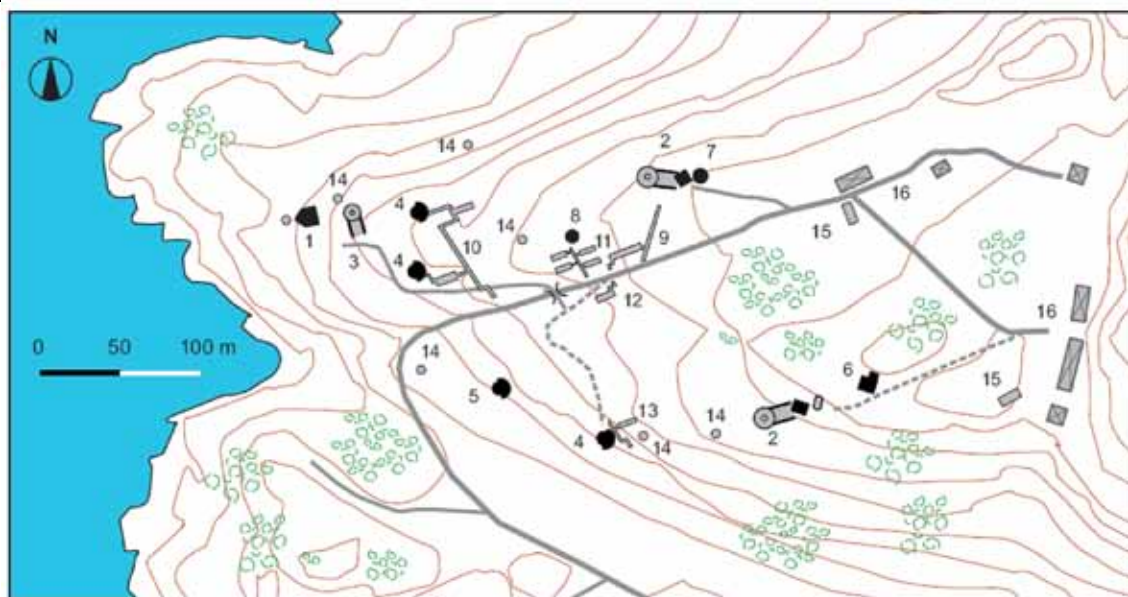
Map 2. Trondhjemsfjord Defenses - Places visited by tour:

Hysnes Fort, Brettingnes Fort, Oriandet Fort, Kragvåg Fort, Hambara Fort, Dora I and Dora II, Hegra Fort

forts (Brettingen, Hysnes, and Hambara) built by the Norwegians in 1897 as part of the **Agdenes Fortress** at the mouth of the Trondeimsfjord. Our cafeteria-style lunch also allowed some of tour members to catch up with us after having gotten lost and missing the Flakk-Rørvik ferry we took.

After lunch, we drove to the nearby **Brettingen Fort** to start our tour. The Norwegians constructed Brettingen's gun emplacements between 1897 and 1900, while the garrison facilities, such as the barracks, administrative buildings, etc. were constructed later and finished around the start of the First World War. The fort's

original armament was three 15 cm Armstrong L/47.5 M1897 cannons, two 21 cm Armstrong L/45 M1896 cannons, and two 65 mm Hotchkiss QF cannons. During the Second World War, Brettingen briefly challenged the German naval invasion, only getting a few shots off before power to the fort was severed by fire from the German ships, rendering the searchlights inoperable and communication with the central command at Hysnes difficult. The Germans proceeded up the fjord to take the city of Trondheim and then returned with a landing party, forcing the fort to surrender. The fort was occupied by German forces



## MKB 1./506 Brettingen

- 1 - Command bunker and fire command post, M 120-type
- 2 - 21 cm Armstrong gun positions (1897-1945)
- 3 - 15 cm Armstrong gun position (1897-1942)
- 4 - 15 cm SKC/28 casemates (1960 to nowadays),  
former 15 cm Armstrong gun positions (1897-1942)
- 5 - 15 cm SKC/28 gun casemate (1960 to nowadays)
- 6 - Main command bunker and fire command post for  
Brettingen / Hysnes / Hambaara (1897-1940)
- 7 - 21 cm battery command bunker  
and fire command post
- 8 - 15 cm Armstrong battery command bunker  
and fire command post
- 9 - Tunnel (before 1940)
- 10 - Underground system, access to both north  
15 cm SKC/28 casemates
- 11 - German underground ammunition dump
- 12 - Underground power station (German)
- 13 - Underground ammunition magazine, adjoined to  
south 15 cm SKC/28 casemate
- 14 - AA emplacements (after 1960)
- 15 - Monier magazines (1897)
- 16 - Modern Norwegian military buildings.

and was upgraded in 1942 with the four 15 cm SKC/28 Skoda guns (German - *MKB 1./506 Brettingen*), while the original 15 cm Armstrong guns at Brettingen were moved to Hysnes and Hambåra Forts. After the war, the Norwegian coastal artillery once again took possession of the fort. Further enhancements were made during the following 50 years by the Norwegian coast artillery, but in 1997 (100 years after its establishment), the fortress was abandoned. The garrison area was used sporadically for military training and by the home guard for a few more years before it was eventually sold off in 2012 for redevelopment as holiday homes. This development had yet to begin as of our visit in June 2013.

We drove to the garrison area on the plateau behind the gun emplacements to begin our tour. We walked past several Monier



Brettingen Fort – Monier magazines (1897)



Brettingen Fort – Main command bunker and fire control post

(early reinforced-concrete) magazines from 1897 on the way to the first 21 cm emplacement and the main fire control post for the fort. The emplacement is an open concrete position with a low parapet. Ammunition storage was below, with a chain lift to bring shells to the loading platform. Behind the gun emplacement were storage areas for additional ammunition and an enclosed



battery commander's station. We then made our way over the crest of the main ridge to the west, where we visited the second 21 cm emplacement and its battery commander's station. We proceeded down the main access road for the fort (carved several meters down into bedrock) and viewed several tunnels bored into the rock walls, but the doors were sealed. These tunnels were for the main power plant and reserve ammunition storage for the fort. We visited several 15 cm Armstrong (later 15 cm Skoda) gun emplacements. Figuring out the construction design was challenging, as they were first built for three 15 cm Armstrong guns in open emplacements, then replaced by the Germans with

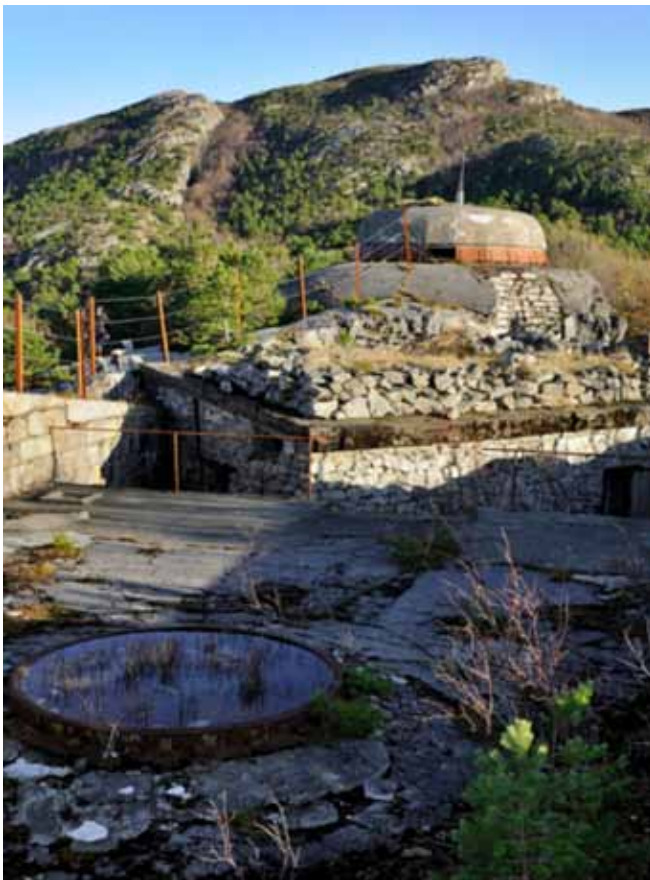
four 15 cm Skoda in open positions, not all in the same locations as the Armstrong guns. In 1960, Norway constructed casemates for the four guns and modernized the fire control system. The two northern casemates are empty but the southern pair still contains the Skoda guns. One of these casemates had been cemented closed (with the barrel sticking out) as part of turning the fort into a private development, but the other was still in the same condition as when the fort was closed. We continued closer to the fjord to visit a German M120 command post and fire control post for the 15 cm guns. We climbed back up the hill to the garrison area to return to our vans and returned to Hysnes Fort to visit its fortifications and museum.



Brettingen Fort – Southern 21 cm Armstrong gun positions (1897-1945)



Brettingen Fort – 15 cm Armstrong battery command bunker and fire control post



Brettingen Fort – Northern 21 cm Armstrong gun positions (1897-1945)



Brettingen Fort – 15 cm SKC/28 casemate (1960 to 1999) – former 15 cm Armstrong emplacement



Brettingen Fort – 15 cm SKC/28 gun (1942 to Present) - Casemate added in 1960





Brettingen Fort – German command bunker and fire command post – M120 type



Brettingen Fort – Leif Hogberg inspects the armored periscope on the M120 bunker

Construction of **Hysnes Fort** was undertaken between 1897 and 1899; its original armament consisted of two 15 cm Armstrong L/47.5 M1897 cannons, two 21 cm Armstrong L/45 M1896 cannons, and three 65 mm Hotchkiss QF cannons. During Second World War, Hysnes Fort also engaged the German naval invasion forces on the night of April 9, 1940, but only managing to get a few shots off before fire from the passing German ships severed power to the fort, rendering the searchlights inoperable. None of the rounds fired from Hysnes that night hit any of the German ships. The Germans returned later that



Brettingen Fort – 15 cm SKC/28 gun (1942) and casemate (1960) – Alan tests the barrel

day with several destroyers to land troops behind the fort. The Norwegian batteries took them under fire and the German ship *Theodor Riedel* was so severely damaged it had to be run ashore to prevent it from sinking. The German landing force and the fort's defenders fought for several hours before the fort's commander decided to surrender. No Norwegians were killed during this engagement but 22 Germans were reported killed. The Germans took over the fort and reinforced it with antiaircraft defenses,

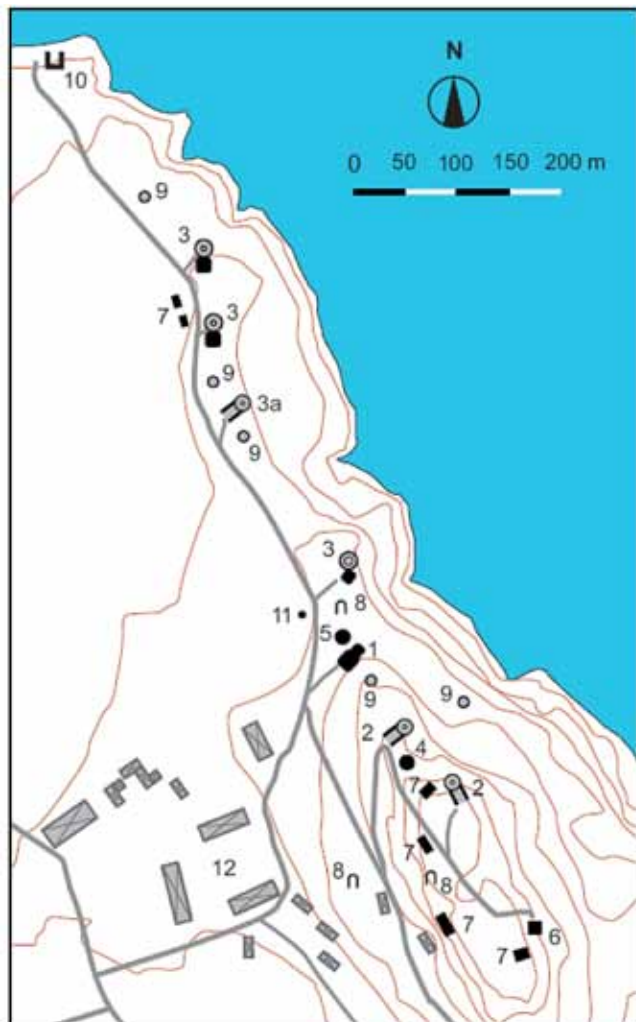


Hysnes Fort – Double 81 mm automatic mortar position



new land defenses, and fire control positions (German - *MKB 2./506 Hysnes*). They also established a primitive torpedo battery Hasselvika at Hysneståa, using the aft torpedo launcher from the destroyer *Paul Jacobi*. This torpedo battery was eventually moved to Sørviknes, 6.5 km further into the fjord, where a reinforced torpedo bunker, command bunker, and other close defense works were constructed. Norway reclaimed the fort at the end

of World War II and continued to use the facilities, upgraded in 1960 when they replaced the 15 cm Armstrong guns with three 10.5cm SKC/32 guns with adjoining personnel and ammunition bunkers. Military activity at the fort declined until 2002, when the entire fort was abandoned. The military reservation has been gradually taken over by the Rissa municipality, and the Hysnes Health Rehabilitation Center has been built in the former garrison area. The battery area has been turned into a nature zone, with the German Type 157 command bunker and fire control post as a military museum.



### MKB 2./506 Hysnes

- 1 - Vf 157 type command bunker and fire command post, with postwar adjunction
- 2 - 21 cm Armstrong gun positions (1897-1945)
- 3 - 15 cm Armstrong battery (1897-1945) emplacements, replaced after 1960 by three 10,5 cm SKC/32 guns, with adjoining personnel and ammunition bunkers
- 3a - 15 cm Armstrong gun emplacement in original stand
- 4 - 21 cm battery fire command post
- 5 - 15 cm battery fire command post
- 6 - Norw. observation post
- 7 - Bunkers, shelters or ammunition magazines
- 8 - Tunnels, shelters and ammunition dumps
- 9 - 4 cm Bofors AA positions (after 1960)
- 10 - Torpedo battery Hasselvika first site
- 11 - Rs 64a flame-thrower tobruk
- 12 - Barracks (postwar buildings).



Hysnes Fort – 21 cm Armstrong battery command bunker and fire control post



Hysnes Fort – Southern 21 cm Armstrong gun positions (1897-1945)



Hysnes Fort – Special concert for the CDSG in reserve ammunition magazines

Upon our return, we parked in the fort's garrison area and climbed up about 30 meters to the two 21 cm gun emplacements and related fire control positions. A Norwegian 81 mm mortar bunker has been added behind one of the former 21 cm gun emplacement for close-in defense, while the 21 cm gun loading platform has been covered with turf. The top of the hill contained several supporting bunkers (ammunition, crew, fire control, anti-aircraft, close-in defense), which we explored. We made our way down the support road to behind the hill, where several



Hysnes Fort – German VF 157 Type command bunker and fire control post (modernized)



Hysnes Fort – Museum plotting room in command bunker and fire control post



Hysnes Fort – Museum crew room in command bunker and fire control post



Hysnes Fort – Restored 10.5 cm personnel and ammunition bunker



Hysnes Fort – Restored 10.5 cm SKC/32 gun

tunnels were bored for ammunition and stores. We were invited into the main tunnel to be greeted with hundreds of small lighted candles that led us into one of the ammunition storage areas. This room had its walls covered with more small candles while chairs had set out for us to listen to a two-person music concert using the special acoustics of the camber. This unexpected event was a first for a CDSG tour! After our concert, we were treated to coffee within the restored German Type 157 command bunker and fire control post. The bunker museum has been preserved as used by the Norwegian coast artillery in the 1990s, with many items going back to their German roots. We continued down the ridge to the fjord, visiting a restored 10.5 cm SKC/32 gun and its adjoining personnel and ammunition bunker. We visited several more 10.5 cm and 15 cm emplacements (without guns) until we reached the fjord and viewed the remains of *Torpedo Battery Hasselvika*. The convoy of vans, cars, and motorcycles departed for the 75 km (about an hour and half) drive to Ørland on the Fosen peninsula, which faces the Norwegian Sea to the west with the Trondheimsfjord and the mouth of the Stjørnfjord to the east. We spent two nights at the Hovde Gard (a farm turned into an excellent hotel) in the town of Brekstad.





Our hotel in Brekstad – the Hovde Gaardi

The start of Day 8 began with a hotel breakfast and 7 km drive to Austrått, the site of **Austrått Fort** (German - *MAB 4./507 Örlandet*), a prime target for our tour. One of the most interesting batteries of the entire Atlantic Wall, it is on a rocky hill near the old Austråttborgen, a medieval mansion. Like its sister battery at Sotra (German - *MKB Fjell*) near Bergen, a shaft was cut out of the rock for a gun turret (*Turm Caesar*) from the former German battleship *Gneisenau*. The triple 28 cm SK C/34 turret became available after the discontinuation of the rebuilding plans for the much damaged ship in early 1943. About 650 Yugoslavian slave laborers (former partisans) worked under awful conditions on the tunnels and bunkers around the hill. In a very short time, a large underground tunnel system with supporting chambers was finished. In August 1943 the guns were test fired. The battery was not involved in any engagements during World War II and it was incorporated into the Norwegian coast defenses at the end of the war. The Norwegians kept the battery active until 1968 and in caretaker status until 1977, at which point the battery was deactivated. After being abandoned for 13 years, about NOK 10 million was spent in 1990 to turn it into a museum. Today, it is the most complete example of a turreted coastal battery in the world.

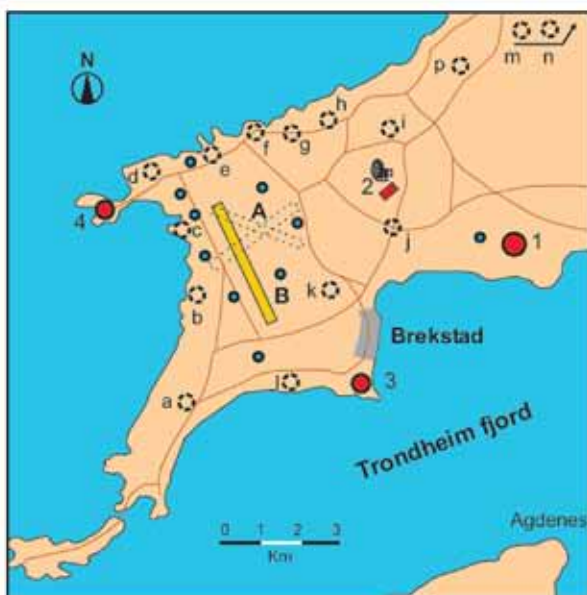
As our vehicle convoy made its way to the turret, we passed through a land-defense zone around the battery made up of trenches, barbed wire entanglements, Tobruks, several bunkers, and an anti-tank wall. The group quickly attacked the impressive triple-gun turret (both inside and out) with their cameras. After we exhausted ourselves on the incredible complex upper turret, we walked down behind the battery to the double entrances to the underground barracks, ammunition storage, power plant, and access to the turret shaft. Our underground tour took us



Austrått Fort – 28 cm SKC/34 triple turret



Austrått Fort – 28 cm SKC/34 triple turret



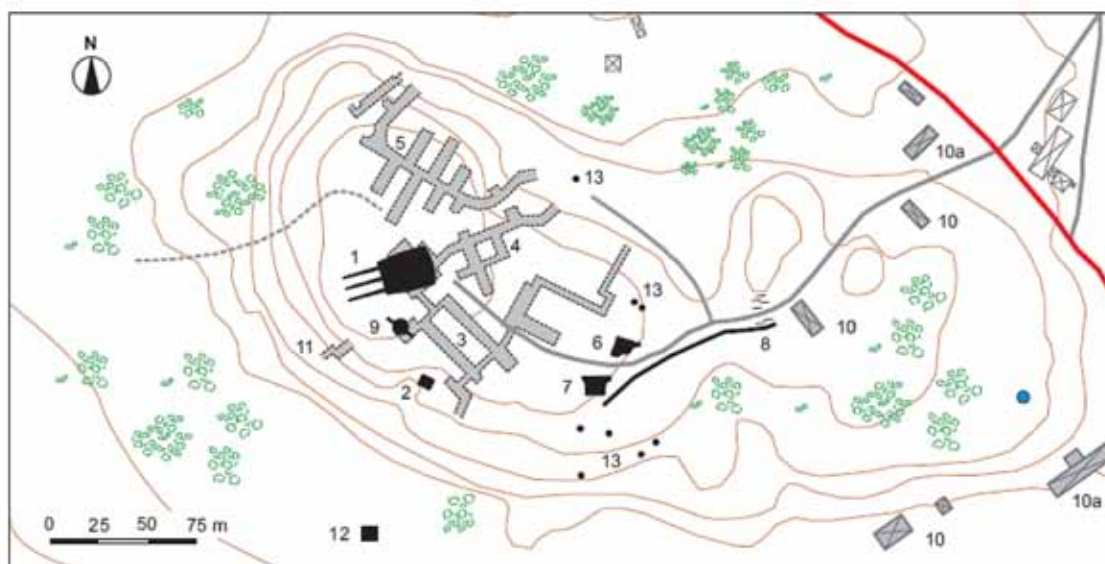
### Festung Örlandet / Festung Örlandet

- Batteries côtières / Coastal batteries
- batteries de Flak / Flak batteries
- points d'appui d'infanterie / Infantry strongpoints
- radar

- 1 - MKB Örlandet - Austrått fort 3 x 28 cm
- 2 - PDT de la MKB / MKB Örlandet fire command bunker
- 3 - HKB Hovde 5 x 10,5 cm
- 4 - HKB Hoø 4 x 10,5 cm
- A - aérodrome allemand / German airfield
- B - aérodrome et base aérienne actuels. / Present runway.

### Points d'appui d'infanterie / Infantry strongpoints

- a - WN Grande
- b - WN Melhus / Meldalen
- c - WN Djupdalen
- d - WN Neset
- e - WN Uthaug-West
- f - WN Uthaug-Ost
- g - WN Utstrand
- h - WN Innstrand
- i - WN Berg
- j - WN Lerberen-Süd
- k - WN Kirkehaugen
- l - WN Flatneset
- m - WN Bjugn
- n - WN Botngaard
- p - Reitan (L484).



## MKB 4./507 Örlandet

- 1 - 28 cm SKC/34 triple turret
- 2 - Auxiliary fire command bunker
- 3 - Underground barracks
- 4 - Underground system (power station, access to the turret ammunition magazines)
- 5 - Underground ammunition dump
- 6 - Anti-tank R 631-type bunker (with its 4,7 cm Fest.Pak)
- 7 - R 622-type personnel shelter
- 8 - Anti-tank wall
- 9 - Present range-finder turret site (on display)
- 10 - Barracks / 10a - intact
- 11 - Underground shelter
- 12 - Spare water well
- 13 - MG tobruks.



Austrått Fort – Close up of 28 cm SKC/34 gun with shell tray and power rammer



Austrått Fort – Inside the 28 cm SKC/34 triple turret – looking at power rammers and open breeches



Austrått Fort – Rear entrance to ammunition storage area – Mr. Olson is enjoying his lunch





Austrått Fort – Double entrance to underground tunnel system – power room on left – ammo on right



Austrått Fort – 15 cm SKC/32 – was used for star shells for the battery



Austrått Fort – Ready shell store for the 28 cm SKC/34 triple turret



Austrått Fort – Ready powder room for the 28 cm SKC/34 triple turret



Austrått Fort – Shell handling room 28 cm SKC/34 triple turret that transfers the shell to the lower turret



Austrått Fort – Barracks area for the 28 cm SKC/34 triple turret



Austrått Fort – Power room for the 28 cm SKC/34 triple turret – diesel motor generator



Austrått Fort – Armoured rangefinder from Leitstand for the 28 cm SKC/34 triple turret



Austrått Fort – 4.7cm Fest. Pak in anti-tank R 631-type bunker



Austrått Fort – Auxiliary fire command bunker for the 28 cm SKC/34 triple turret



Austrått Fort – Original site of armored rangefinder for the MKB Orlandet Leitstand – military airfield in background.



Austrått Fort – Inside the S 446 Leitstand bunker – Operations room

directly to the bottom of the turret well. We took staircases to each level of the barquette as we marveled at the complex machinery needed move projectiles and powder bags to the top of the turret while the turret was in motion. We retraced our path back to the main access tunnel and visited the battery's power plant, where we were treated to a running massive diesel motor, one of those that turned the electrical generators which provide the power to operate the turret. Passing through more tunnels, we came to the battery barracks area that supported the large gun crew and related support personnel. We viewed many underground rooms with bunks, messing areas, kitchens, latrines, and storage areas along a maze of corridors. Using a connecting tunnel, we entered the ammunition storage complex, now a museum. The ammunition rooms contain historic artifacts from the battery and other coast defenses in the area. Making our way out of the tunnel system, we took the opportunity to eat our box lunches next to a 15 cm SKC/28 gun (used to provide star shell illumination for the battery during WWII). After lunch, we visited the battery's infantry defenses, with a restored anti-tank bunker (Type 631) and its beautifully renovated 4.7 cm Festungspak 36 (t) in working condition. The gun covered an anti-tank wall through the woods which protected the main entrance of the complex. We spent another hour retracing our steps to view the battery in even closer detail. One of the items on display next to the turret is the battery's rangefinder turret from the S 446 leitstand, 5 km from the battery site.

Our convoy made the short drive to **Lørberen and Austrått's fire-control post**. While the armored rangefinder was removed, the underground bunker could still be accessed by climbing down the steep hillside to its lower entrance tunnel. Today the bunker is abandoned, but our local hosts had a key to unlock the protected door. The multi-level bunker has been stripped of most of fittings and fixtures, and is without lighting. The lower-floor served as a living area, which included quarters for troops, rooms for officers, an administration room, a standby room, a room for a central-heating plant, and a coal store. The upper-floor includes the operations room, washroom, toilets, first aid room, and telephone exchange. The main entrance is on this floor, defended by two embrasures. The most interesting room was the operations room that provides underside access to the missing rangefinder. Lørberen is the highest point on Ørland, so we had a great view of the entire peninsula, including the military airfield constructed by the Germans. Today, the airfield is still in use by the Norwegian Air Force and we watched jet fighters come and go as we visited the leitstand. We could also spot the triple 28 cm turret near Austrått. Twelve other batteries, both army and naval, were situated around the entrance to the Trondheimsfjord. Around the airfield were four heavy flak batteries, and scattered over the peninsula are infantry defenses, usually at crossroads or road blocks.

Another short drive took us to the Garten Ferry, which transported us and our vehicles to the island of Storfosna, between Kråkvåg and Garten at the mouth of the Trondheimsfjord. Another short drive over a long, specially built bridge led to **Kråkvåg Fort**, built in the late 1980s to defend the inlet to the fjord with three 12 cm m/70 guns, made by Bofors in Sweden. The three guns are controlled by a master and a secondary "measuring





Kråkvåg Fort – Look across the island to the long bridge to the island of Storfosna – high ridge in the background is the site of HKB 19./975 Storfosen



Kråkvåg Fort – Rebecca McGovern shows off the 12 cm m/70 gun, made by Bofors



Kråkvåg Fort – Land defenses for the fort

station.” Each of these has multiple radars and range finders, as well as optical TV/laser equipment. If this all failed or was hit they could fire independently with help from a periscope and a laser rangefinder inside the turret. The fort is now abandoned, its underground facilities scrapped and entrances buried. The 12 cm gun turrets remain and we visited the southernmost position.

We backtracked across the long narrow bridge to Storfosna and made our way to a long ridge overlooking the fjord where the German-built **Storfosen Battery** (German - *HKB 19./975 Storfosen*), a row of six 15 cm K403(j) gun positions, with a command bunker/FCP (Regelbau, or fire-control post) and flak positions, along with modern radar, strung out along the ridge, giving a fine view over the sea and islands. Underneath are a series of tunnels, modernized and used in the Cold War. The Norwegians have recently “cleaned-up” the site and attempted to seal the underground portions. Several metal doors have been removed so we were able to visit the large underground tunnel



Storfosen Fort – emplacement for a 15 cm K403(j) gun





Storfosen Fort – Observation post overlooking the fjord



Storfosen Fort – Multi-level underground system running under the ridge



Ferry from the island of Storfosna to Garten on Orland

system. We returned to the ferry landing for the ferry to Garten. Tour members not worn out from a full day visited two German batteries – **Hoo** (German - *HKB 18./975 Hoo*) and **Hovde** (German - *HKB 16./975 Hovde*) that are in poor condition, having been abandoned for many years. Members sought their own dinner after we returned to our hotel.

The start of Day 9 begun with a hotel breakfast and check out. We had a short drive to the center of Brekstad to take the ferry to Agdenes so we could drive back to Trondheim. The 5.3 km crossing takes 20 minutes. Our first site of the day is the **Hambaara Fort**, part of the **Agdenes Fortress** defending the mouth of the Trondeimsfjord. The fort is made up of the Hambaara Gun Battery and Torpedo Battery (German - *MKB 4./506 Hambaara + Torpedobatterie Hammbaara*). The torpedo battery was established in April 1940 from the rear 4 x 53 cm torpedo launcher from the German destroyer *Theodor Riedl*. Today, the launcher is gone, but its base and 60 cm rail system remain. Across the highway on a steep hillside is the Hambaara Battery constructed by Norway in 1897 for two 15 cm K L/47.5 Armstrong guns. The Germans added a VFM 157 FCP bunker with three decks (open and derelict) and a third 15 cm K L/47.5 Armstrong gun in 1943. These emplacements are overgrown and hard to locate on the steep hillside. In 1944, the Germans removed the guns and replaced them with three 12 cm K L/44 Armstrong guns. The Norwegians took over the battery and maintained the battery into the 1960s. Back on the road to Trondheim, we drove



Hambaara Fort – Inside of the triple VFM 157 FCP





Hambaara Fort – 60 cm rail line to move 53cm torpedoes to the launcher on the edge of fjord

by the German built **Stördal Battery** (German - *MKB 5/506 Stördal*) that had 3 x 10 cm SKC/32 guns. The drive to Trondheim was about 80 km and we had field lunches along the way, as we needed to meet our local guide, Knut Slivertsen, to show us **Dora I** and **Dora II**, which protected German submarines from aerial attack by the Allies.

Finding our way the commercial harbor for Trondheim, we first visited two German air raid shelters built for the dockyard workers. These multilevel round luftschutz towers could hold up to 250 workers during an air raid. We drove to the other side of the harbor to visit the U-Boat shelters. The construction of Dora I in Trondheim started in April 1941 and was finished in 1943. In 1942, the construction of the second bunker, Dora II, started but never completed. Today, you can still see the unfinished part of this bunker; without part of its roof and some parts of its walls.



Trondheim - Luftschutz towers could hold up to 250 workers during an air raid

Dora II (153 m x 105 m) is somewhat smaller than Dora I (167 m x 102 m), which is a concrete monster adapted for modern offices by driving an entrance through at ground level, building a ramp to the upper level, and building an office block on top. We were given a tour by the director of the company which owns Dora I, through vast corridors with mounted torpedoes and photos of the construction work in progress. Between the two bunkers lies a big red bunker containing the power station for the whole site. Our convoy was on the move again for the 50 km drive to Hegra



Trondheim – Power plant bunker for the U-Boat bunkers and dockyard



Trondheim – Dora II U-boat bunker – note close-in defenses



Trondheim – Dora I U-boat bunker – note submarine conning tower has been placed on pen wall

Fortress, about 18 km from the Trondheim Airport.

**Hegra Fortress** is a small mountain fortress built 1908–1910 as a border fort as defense against the perceived threat of a Swedish invasion. After the 1905 dissolution of the union between Norway and Sweden, the Norwegian military harbored continued fears of a Swedish invasion to retake Norway. The fortifications consisted of 300 meters of halls and tunnels dynamited into the mountain at Ingstadkleiva, as well as trench systems and gun positions excavated from the rock with explosives. There are two main parallel underground tunnels of around 80 meters, with a 35-meter tunnel connecting them at a right angle. One of the main tunnels served as crew quarters while the other was in direct connection with the above-ground artillery emplacements. The fortress artillery consisted of two 7.5 cm and four 10.5 cm fixed artillery pieces in half-turrets placed in pits dynamited from the rock and lined with concrete, as well as four Krupp M/1887 field guns. The fort's guns came from the dismantled Ørje Fortress in Marker.

Between 1910 and 1926, the fort was used as a major military base for the Trøndelag border area with Sweden. Ingstadkleiva Fort (its original name) was put in caretaker status as part of the post-World War I cuts in defense spending in 1926. In 1940, from April 15 to May 5, Hegra was attacked by the German invaders seeking to remove a rag-tag collection of Norwegian soldiers and civilians. The first week of attacks consisted of two infantry assaults; however in the last two weeks attacks mostly



Hegra Fort – Entrance to the fort and underground tunnel system



Hegra Fort – 10.5 cm gun with access from tunnel system – battery commander's and fire control post in background

featured heavy artillery fire and Luftwaffe bombing, as well as aggressive patrolling. The fort has quite a place in the story of Norwegian resistance in the war, fending off German attacks for 25 days in a run-down, unmaintained fort with appalling living conditions in the tunnels. The shelters and one FCP show signs of serious war damage. The fort's guns were reinstalled when the fort was turned into a museum. The fort remains as a museum with exhibits detailing the fort's history with an emphasis on the 1940 siege. There is also a café and a souvenir shop. We were given an excellent tour in English on the fort's construction, use, and the history of the siege. After partaking in the café, the convoy headed for the airport for dinner before our 7 pm flight to Evenes Airport that serves Harstad and the next part of our tour plan. We needed to fly to Harstad (north of the Arctic Circle), as driving there (1,020 km) would take about 14.5 hours. After our hour and half flight to Evenes Airport, we again rented our fleet of vans for the 45 km drive north to Harstad. We arranged to spend three nights at the Thon Hotel Harstad in the city of Harstad.

This completed our tour of the defenses of the Trondheimsfjord. Part four had us flying on to the Harstad/Narvik area, where we visited several fascinating batteries over a two day period, but the main attractions were the four surviving 16-inch guns at Battery Trondenes. From Harstad, we flew back to Oslo and the tour ended. Due to the length of the tour, the resulting long tour report is being published in the *CDSG Newsletter* over several issues.



\* \* \* \* \*

## CDSG Special Tour to Norway Norwegian and Atlantic Wall Defenses

### Part IV: Defenses of the Harstad/Narvik

Terrance McGovern

The CDSG Special Tour to the coast defenses of Norway took place from June 8 to June 19, 2013, with 24 tour members. The goal of this tour was to visit the world's best collection of surviving coast artillery, especially the dozen "big guns" (greater than 280 mm) that remain, as well as other wonderful coast defense sites that still have their smaller-caliber artillery. German armed forces built (or converted existing Norwegian defenses) over 280 coast defense batteries mounting over 1,000 guns in Norway during their occupation of Norway during World War II. Many of these "Atlantic Wall" defenses were used by the Norwegian coast defense service after the war and a portion were maintained into the 1990s. The Norwegians added modern 75 mm and 120 mm batteries during the Cold War. The tour was able to visit over 50 examples of surviving coast artillery during the tour, many in their original emplacements.

This is the ninth special tour that I have organized for the CDSG and the most complex logistically, due to the remoteness of the locations and the long distances between coast defense sites



CDSG Special Tour to Norway – June 8 to 19, 2013

we visited. The tour's planning and ultimate success were due to the efforts of our local tour leaders, Svein Wiiger Olsen, Vic Phillipson, Pål Johnsen, and Harald Isachsen, who both arranged access to the many sites and guided us to these defenses. This tour would have never happened without their efforts and we owe them many thanks for a great tour. We also want to thank tour members Mike Fiorini, Alan Fyson, Terry McGovern, Michel van Best, and Keith Estes, who each undertook the responsibility to organize and drive our five rental vehicles. They did a great job considering they have not been to Norway before and successfully kept track of all their passengers during the long tour. Finally, we want to thank Denise Agostino from Premiere Travel for arranging the air, hotel, and rental vehicles for the group.

The November 2013 issue of the *CDSG Newsletter* contained the report for Part I of the tour to the defenses of the Oslofjord, while the May 2014 issue contained Part II, the tour report to the defenses of Kirstiansand. The February 2015 issue of the newslet-



Map of the Vasfjorden – Site of Trondenes Fort and Meløyvær Fort (Jean-Bernard Wahl)



Map of the Krøttøy and Meløyvær – Site of Meløyvær Fort

ter contains our report on Part III of the tour, to the defenses of the Trondeimsfjord. Part IV of our tour begins with us having breakfast at the Thon Hotel Harstad in the city of Harstad on



Thon Hotel Harstad in the city of Harstad

Day 10 (June 2, 2013) prior to our short walk to the nearby dock for the 8:15 AM ferry to Krøttøy and Meløyvær, two small islands about 50 minutes north of Harstad. Our local organizer, Harald Isachsen, arranged the day's program and made sure we made it to all the sights. These isolated islands were the site of the Norwegian **Meløyvær Fort**. This was completed in 1988, with a 12/70 coast artillery battery consisting of three fully independent 12 cm gun emplacements, a command center, ranging stations, and a close-in defense system with AA guns, mortar positions, and troop shelters.

The 12/70 system was designed to be installed in large holes blasted in the bedrock. Once installed several meters of densely reinforced special concrete were placed over the underground structures. The Bofors 12/70 gun is a fully automatic, water-cooled, vertical-sliding wedge design mounted in an armored turret that electrically traversed under computer control while the



elevation motor is controlled manually. It is fed from a magazine several meters below the turret, where the crew uses special air-cushion carts to feed cartridges onto a loading table. From the loading table, the cartridge is fed through a hoist system and loaded into the gun using a pendulum loader. Spent cartridges are passed down a chute into a space at the bottom of the gun well, which is over 18 meters (59 feet) deep.

The turret is manned by three men (gun commander, traverse operator, and elevation operator), with the rest of the gun crew working in the magazine or the crew/utility levels below. To

protect the gun system from ground shockwaves and overpressure in case of a nuclear detonation, the barrel is lowered into its storage position in a special "ground attachment fork" and the turret is hydraulically lowered and anchored to its foundation. The muzzle is automatically sealed when the barrel is lowered into storage position. During a nuclear attack, the turret crew may not stay in the turret because of the initial radiation, but they may reoccupy it and be ready to fight immediately after the attack thanks to a special liner which reduces induced radiation to the point that it is safe to immediately reoccupy the turret.



Map of Trondenes & Harstad-Nord

MKB 5./511 Trondes

- 1 – Command bunker and fire command post, S 100 type
- 2a – S 384 type emplacement with restored 40.6 cm SKC/34 i.Bett.SGC gun (museum)
- 2b-2c-2d – Three S 384 type emplacements with 40.6 cm SKC/34 i.Bett.SGC/39 gun
- 3 – 8.8 cm Flak battery, one gun remaining, command post and fire command bunker
- 4 – Three medium and light Flak platoons, with three gun positions each
- 5 – Main underground ammunition dump, with two entrances, ten cells L 15 to 30 cm
- 6 – Vf marine type ammunition bunker (likely M 145 type)
- 7 – Battery entrance defense: Vf SK for 4.7 cm Fest.Pak + R 632 bunker
- 8 – Infantry defenses: R 622 shelter, tobruks, trenches
- 9 – Modern barracks (former German barracks site)

MKB 1./511 Harstad-Nord

- 10 – Command bunker and fire command post, Vf type
- 11 – Three 17 cm SKL/40 gun positions



High-speed ferry from Harstad to Krøttøy  
(and Meløyvær Fort)



View from the top of Krøttøy looking at Meløyvær –  
Valhall Hotel & Inn in foreground

Each gun emplacement is supported by a three-story structure placed below the magazine and turret levels, with a power supply, accommodation, and galley. This enables at least 60 days endurance when cut off from the outside world. It consists of a steel-framed structure placed on rubber cushions for protection from ground shockwaves.

The fort's command and control center is a larger installation consisting of a five-story underground building of a similar design and standards to the gun emplacements. It also has a more capable kitchen and a sickbay with surgery capability. In addition to cables and ordinary radio masts, the 12/70 command features reserve masts which are normally stored in silos below ground and may be raised as needed. The 12/70 system uses a digital fire control system that allows for fire control information from several type of ranging stations, chiefly a radar system which consists of a radar antenna normally stored below ground under an armored hatch. At least two surveillance radars are attached to the battery, and so when a target is detected the fire control radar may be raised and used for ranging, reducing the time it is exposed above ground. The other main fire control ranging instrument is a laser rangefinder installed along with a low-light TV camera in an armored turret called the "laser eye." This can be remotely controlled from the ranging station or command center and takes the place of the periscopes used in older installations.

In the late 1980s eight guns were exported from Sweden to Norway, where they were installed in two 3-gun batteries and one 2-gun battery between 1989 and 1994. Unlike the Swedish installations, the Norwegians decided to implement complete EMP protection and enlarge the supporting installations in order to improve crew comfort. The Norwegian installations, being about 10 years newer the Swedish, also feature a more modern fire control and communications system. All these guns were mothballed in 2001; seven of the guns were dismantled in

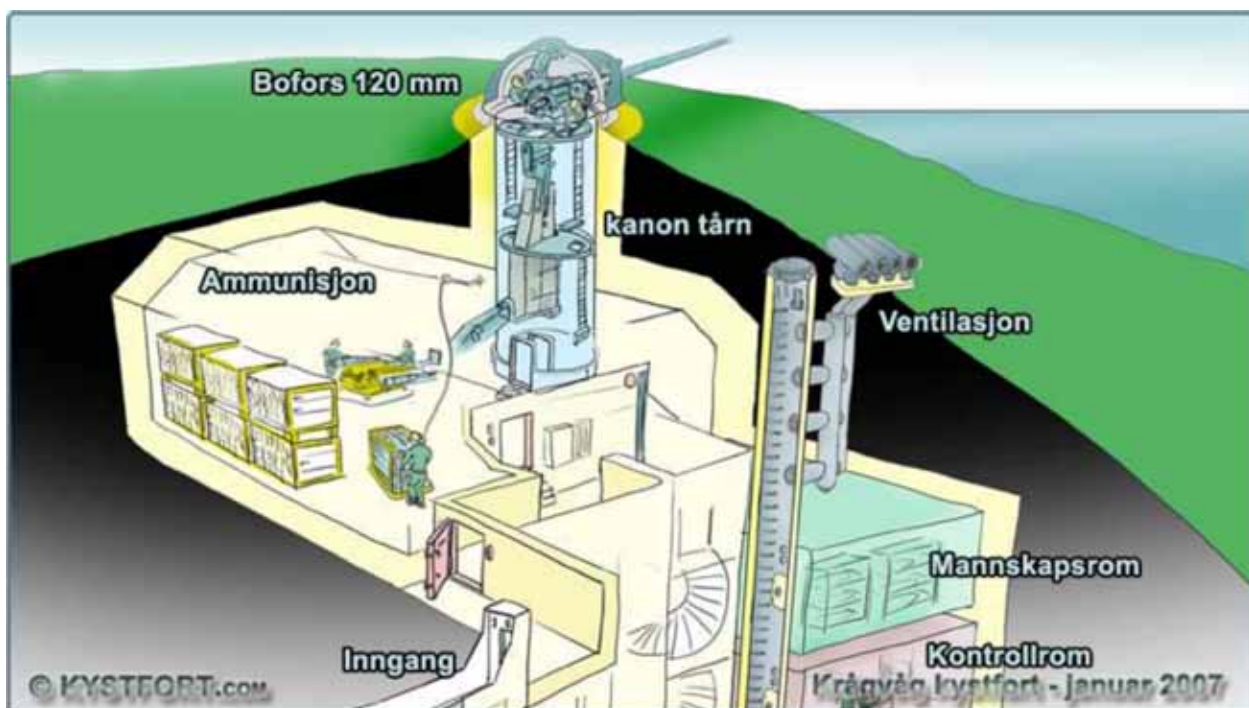


Diagram of the 12/70 gun emplacement – Showing the main level and turret (lower portion not shown)



2012/2013. One gun at Meløyvær Fort is preserved along with the command central as a museum for guided tours. Temperature and humidity are monitored in order to avoid damage to the equipment over time. Meløyvær Fort was one of the last three coastal forts built in Norway. The other two forts, Nes Lodingen and Kråkvåg Trondheimsfjorden, have now been sold to private firms. Today, Meløyvær stands out as the last complete fort in authentic condition showing the fort's historic importance in relation to Northern Norway's role during the Cold War.

The ferry deposited us on the vacant dock on the south end of Krøttøy and quickly left to return to Harstad. For a while we were worried that our island hosts had forgotten about us, but soon a small mini-bus from the Valhall Hotel & Resort appeared and we crammed aboard for our ride to the north end of the island. Our first stop had us at a turreted 12 cm Bofors, one of three, hiding under a fiberglass cover, pretending to be a rock, but soon the group was led through armored doors and decontamination



12cm L/70 gun at Meløyvær Fort - Fiberglass camouflage in place



Getting the close-up photo of the 12 cm L/70 gun barrel

showers to the underground works with six levels supporting the one gun. There was great excitement and interest here, where we not only had full access up into the turret interior (tight, as it is an auto-loading system), but even more so in the magazine room full of plastic racks of shells and a high-speed shell handling system (with our group trying out the feeding of shells).



Unlocking the armored blast doors to enter the 12/70 gun emplacement



Magazine for the 12 cm L/70 gun – Shell racks, pallet mover, and shell loader

Our next stop was the command and control center where we first viewed the external features – armored laser rangefinder turret and several protected radar antennas. Proceeding underground through the heavy blast doors and NCB defenses we visited the multi-floor control center with almost all of its equipment just like the day the fort was deactivated. The tour group inspected the five-story structure from top to bottom. Our next stop was everybody's favorite - lunch.



The automatic shell loader for the 12 cm L/70 gun – door behind loader leads to turret



Mariusz Jachimowicz has a souvenir but will it fit in the overhead bin on the airplane?



12/70 gun emplacement- ladder up the turret well into the turret for the 12 cm L/70 gun



12/70 gun emplacement - crew mess area – just missing the food!



The normal CDSG dilemma - who is going to move first to be out of your photograph



12/70 gun emplacement – Mercedes Benz engine





12/70 gun emplacement - crew berthing area



12/70 gun emplacement -kitchen area – very clean!



Armored turret for the 12/70 laser rangefinder – another photograph stand-off!



12/70 command and control center – target radars console for each gun



12/70 command and control center – surveillance radar console



12/70 command and control center – spiral staircase take you from one level to the next



12/70 command and control center – plotting room for the 3 gun battery



The CDSG lunchtime at the Valhall Hotel & Resort on Krøttøy

After a very leisurely lunch at the Valhall Hotel & Resort, where half of us fell asleep in their lounge after lunch as the pace of the 12-day tour was taking its toll. The stronger members of our tour launched into a 2 km walk across one of the bridges that connects the islands to visit another of the 12/70 gun sites (turret views but only from outside). These islands and their surrounding waters provide us with raw beauty and at 69° North this would be the farthest north as we would go on this tour. Reunited at the hotel we wedged our way back on to the mini-bus for our ride to the ferry landing where the waiting ferry returned us to Harstad for a brief excursion out to Åsegarden Camp (caretaker status - used for NATO training) where we photographed two abandoned German 88 mm Flak 36 guns in front of one of the camp's barracks. We finished the day with a visit to **Stangesodden** (an inactive military installation), where the Germans had constructed a battery during World War II and Norwegians continued to use post-war. Several abandoned concrete structures remain with the principal one being an M162a Fire Control Position. We then returned to the hotel and our tour members sought out dinner in town.



Glen Williford searches for a serial number on German 88 mm Flak 36 at Åsegarden Camp



M162a fire control bunker at Stangesodden (south of Harstad)

Our final full day (Day 11 – June 18) of the tour was upon us with the best site for last – Battery Theo with its surviving four German 40.6cm SKC/34 guns! We convoyed in our vans from the hotel to **Trondenes Fort**. The fort is an active Norwegian military establishment (which hosts the Kystjegerkommandoen (KJK: “The Coastal Ranger Command”), so we needed special permission for our tour and were escorted by four military police throughout our visit. Our local organizer, Harald Isachsen, was essential in arranging this access and guiding us around this large battery.

Trondenes is a forested peninsula on the northern part of Norway's largest island – Hinøya - about 4 km north of the city of Harstad. However, the importance of this area was as great for the Germans in World War II as it was for the Norwegians during the Cold War. These fjords (Vestfjord and Vagsfjord) almost cut Norway into two parts. The importance for the Germans was to protect the shipping of Swedish iron ore from Narvik to Germany. British, Polish, and French forces landed in Harstad during the April 1940 before attacking the German forces that were occupying Narvik.



The big gun – 40.6cm SKC/34 at Battery Theo – Emplacement No. 1 (“Barbara”)



This battery was called Trondenes I during building, but upon its completion it was officially named Battery Theo (*MKB 5./511 Theo*). Two such batteries were built in Norway by the German navy, Batteries Dietl and Theo, which were commenced in 1942 and built simultaneously. Theo protected the northern entrance to the port of Narvik, whilst its sister battery Dietl, on the island of Engeløya, protected the western entrance. The battery at Trondenes had four 40.6 cm guns and Battery Dietl had three. These guns were built by Krupp and originally intended for six new super battleships. The guns, nicknamed “Adolf” guns, had 70-foot barrels with a lifespan of 250-300 firings. They could fire a 1,300 lb. shell about 34 miles and a standard 2,200 lb. shell about 26 miles. The guns firing rate at less than 20 degrees elevation was theoretically one round for minute. As the loading had to take place at zero elevation, loading when the gun between 20 and 52 degrees took a little longer, reckoned at 3 minutes per round. The gun crew was 68 men - 20 in the turret and 48 in the magazine. The bunker type chosen for both was S-384 with S-100 as the command bunker. Russian prisoners of war were used as slave labor for all the heavy work during the construction and many of them died due to starvation and neglect. The number of deaths is uncertain, but some estimate as many as 1,300 Russians (for both batteries) perished. The batteries fired their first test shots in May 1943, but did not participate in any war-related actions. In addition to the 40.6 cm guns, the Germans installed three 170 mm guns, eight 88 mm guns, and nine 20 mm AA guns at the battery site.

After the war, Battery Theo became part of the peacetime complement for the Norwegian Coastal Artillery from 1951, along with 1,227 shells. The battery was last fired in 1957 and formally decommissioned in 1961. The three Battery Dietl guns were sold for scrap in 1968, but the four guns at Trondenes were spared. The battery was withdrawn from active use in 1964 as technological development rendered the guns obsolete. The bunkers were painted and improved so that the original WWII environment was partly lost. The battery at Trondenes has the only remaining German 40.6 cm guns in the world and it is also one of the best preserved Atlantic Wall fortifications.

Our military escort led our van convoy to the battery site, where we parked our vehicles next to Emplacement No. 1, which is now a museum and open to guided tours arranged through the city's



Our Norwegian military police escort - exciting duty guarding the CDSG!

tourist information center. Harald Isachsen, who had led us the day before, guided us around the gun (named “Barbara”) and the excellent museum in the bunker underneath, as he is the author of a superb book on the battery ([www.adolfkanonen.com](http://www.adolfkanonen.com)). We inspected the gun, mount, gun well, magazines, power rooms, crew rooms, shell/powder lifts, rail car system, plotting room, and fuel and water supply; in fact we crawled and climbed over every single inch of this emplacement and of course took photographs of everything. By this time it was noon and Harald had arranged for us to have lunch at the base's mess, so we departed the battery to drive to the barracks area, where we joined the chow line with the Norwegian marines.



Harald Isachsen ready to teach us about Battery Theo and its 40.6 cm guns



Shell table with overhead hoist to transfer projectile from magazine into gun well – one at a time.



Powder canisters with transfer table in background to move powder to the gun well and lift



Shell wagon to move projectile to shell lift as the gun rotates to firing position



Harald Isachsen explains the 40.6 cm gun drill to an audience of CDSG members



40.6 cm projectiles await use in the magazine



The shell table is now swung into place so the hydraulic rammer can do its job



Two of several motor generators to power the gun emplacement



Rebecca McGovern models the breech of the 40.6 cm gun for our group

After recharging ourselves at lunch, we returned to the battery site, as we had arranged for a special tour of the remaining three 40.6 cm guns (the normal tour is only to Emplacement No. 1). We walked to the S-100 fire command bunker on the crest of the peninsula overlooking the fjord. The site today is used for military communications, so our military escort would neither allow us to photograph nor enter the structure. Backtracking by Emplacement No. 1, we were able to visit the exteriors of Emplacement





The 40.6cm gun and carriage in its emplacement – note our tour members size on the left



Lunchtime in the Trondenes Fort mess



Locked door to the magazines for Battery Theo's Emplacement No. 2

No. 2 and No. 3, as they are close together. We confirmed they each contained the impressive 40.6 cm gun and carriage. Our visit to the heavy flak battery with a surviving German 88 mm Flak 36 gun was canceled due to a live-fire exercise being conducted in that area. The crack of rifle fire convinced us that visiting that site might indeed be hazardous. Emplacement No. 4 is further away, so we hiked around to this site. Our military escort in the lead spotted a moose ahead so we needed to wait until it was all clear to proceed. We were told that moose don't like sharing their space with CDSG members and can become very aggressive. We verified that the 40.6 cm gun was still in place and getting along well with the moose family. We then returned to our parked vans



Battery Theo's Emplacement No. 1 and 40.6 cm gun – for the record



Battery Theo's Emplacement No. 2 and 40.6 cm gun – for the record



Battery Theo's Emplacement No. 3 and 40.6 cm gun – for the record



Battery Theo's Emplacement No. 4 and 40.6 cm gun – for the record – note no moose!



The official CDSG Tour group photograph – taken by Svein Olsen (with a Norwegian marine's help)

and departed the fort as the other battery related structures were off-limits to us. Our military police left us at the main gate and we had to deal with the fact we had visited our last battery on this tour. Just as this depressing fact started to affect us, Harald offered to show us one more German coast artillery battery. Addicted as we are, we all agreed to follow him.

Playing “follow the leader” in our vans, we followed him over the mountains NW from Harstad to former **Elgsnes Fort (HKB 13./983 Elgsnes)** which mounted four 15.5 cm K418 (f) guns in open positions. The drive was long with very impressive scenery, but a lot of effort for not a lot – four overgrown emplacements and a small concrete box used as an FCP. Yet this battery visit allows us to come down from our tour highpoint - the visit to Battery Theo and its 40.6 cm guns.



German “Panama mount” emplacement at HKB 13./983 Elgsnes for one 15.5 cm K418 (f) gun



The CDSG photographs an AA emplacement at Elgsnes Fort (HKB 13./983 Elgsnes)

We returned to our hotel to prepare for our special group dinner on the final night. At the end of a terrific day, we had a splendid final dinner at Restaurant Røkenes Gård on a farm outside of Harstad – the restaurant itself is located in a converted barn. We partook of the same menu enjoyed by the Kings and Queens of Norway and Sweden that very lunchtime. The royal Norwegian yacht was seen in the harbor at Harstad in front of our hotel when we returned from Trondenes Fort. After our five-course dinner, we were ready to return to our hotel and prepare for our next day flight from Evenes Airport to Oslo's Gardemoen Airport. The final day (Day 12 – June 19) began when we took our vans back to the airport and flew to Oslo. This marked the official end of the CDSG Tour to the Norwegian and Atlantic Wall defenses of Norway. The group said its farewells and departed for their homes around the world. A few members of our tour





The CDSG tour final night group dinner starts with a round of drinking at Restaurant Røkenes Gård

still wanted to see more steel and concrete, so they travelled to Stockholm to tour Swedish fortifications for three days with Lars Hansson, but that is another story.

Attending the tour was Alan Bailey, Charles Blackwood, Christopher Bristow, Andrej Bristow, Kenneth Estes, Genevieve Perrin, Pamela Fiorini, Michael Fiorini, Alan J. Fyson, Christian Casartelli, Maurice Gehlen, Alan Hardey, Leif Hogberg, Mariusz Jachimowicz, Thomas Kavanagh, Scott Loomer, Terrance McGovern, Rebecca McGovern, Svein Wiiger Olsen, David Page, Gary Paliwoda, Karl Schmidt, Andrew Rohde, Michel Van Best, and Glen Williford. Our local organizers were Svein Wiiger Olsen, Vic Phillipson, Pål Johnsen, Jan Egiland Fjortoft, and Harald Isachsen.

## BIG GUNS in NORWAY



In June 2013 the Coast Defense Study Group ran a Special Tour to the Coast Defences of Norway with the avowed intention of seeing as many as possible of the huge number of guns still mounted in Norwegian coast defences, especially those of the larger calibres.

I count it a privilege to have been part of this amazing trip, with the most complicated logistics ever, involving four internal flights, five hotels, three van hires (of five vans) and numerous ferries. The trip was further complicated by the large distances involved between the main locations of Oscarsborg and the Oslofjord defences, Kristiansund, Trondheim and Harstad.

This report is a fairly brief summary of the highlights, of which there were many.

For a fully detailed report you need to read **Terry McGovern's** report, Part 1 in CDSG Newsletter November 2013 (Parts 2, 3, and 4 to follow), which you can find online at [www.cdsg.org](http://www.cdsg.org).

Terry writes During WW2 Germany built (or converted existing Norwegian defences) over 280 coast defence batteries in Norway, mounting over 1000 guns. Many of these Atlantic Wall defences were used by Norway during the Cold War, when Norway added



modern 75mm and 120mm batteries and maintained the defences into the 1990s. The group was able to visit over 50 examples of surviving coast artillery during the tour, many in their original emplacements.

### Before the main tour

But my tour started a couple of days earlier when I met up with **Mike** and **Pam Flaxen** to share an apartment for a couple of nights enabling us to visit the old bastioned fortress of Akershus on Oslo's harbour side followed by a day visiting Norwegian defences against Sweden, led and organised by **Svein Wiiger Olsen** and his Swedish friend

**Leif Hogberg** who did all the driving on a long day.

**Akershus** started as a castle around 1300, rebuilt in the Renaissance style with a modern bastion trace in the first half of the 17th. The castle remains at the core of the fortress and has numerous historic displays, some super tapestries and is well worth a visit; there is an entry charge. The walls are typical of Norwegian fortress construction being built of large granite blocks (top: there is one full bastion and two demi-bastions).

Next day we were collected by Svein and Leif at 09:00 returning at 21:30 after a round trip of about 400km.

[www.hogfort.com](http://www.hogfort.com)

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The CDSG Tour to Norway makes big news in both Swedish and English publications

