

The CDSG Newsletter



The Coast Defense Study Group, Inc. — Special Edition



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CDSG/FSG Joint Tour to the Defenses of Switzerland

By Terrance McGovern & Norman Clark

A joint Coast Defense Study Group & Fortress Study Group tour of the modern (1890 to 2000) defenses of Switzerland took place from August 11 to August 19, 2018, with 30 tour members. The goal was to visit the full range of Swiss defenses from this period – from an air defense missiles site to long-range artillery works - during our week in Switzerland. This is the 12th special tour that Terry McGovern has organized for the CDSG or the FSG and the challenge this time was the large number of site owners and the logistics required to move our tour members quickly and efficiently through all regions of this mountainous country. Key to the success of this tour was our local CDSG member, Martin Egger, along with Maurice Lovisa and Pascal Bruchez of the Association St-Maurice d'Etudes Militaires (ASMEM). Through Martin's and Maurice's excellent efforts over the last three years that we actually visited every site on our schedule and several more that were not on our schedule. To make this tour happen, Martin and Maurice needed to gain authorization/access/guides for us to visit about 50 sites, to arrange hotels, ground transportation, daily meals, and many other logistics details that are required during such tours. The tour would not have occurred without their efforts and their detailed knowledge about each site we visited, as well as their translation services.

The format of the tour was a travelling study tour with a new hotel every night except one, so by the end of the tour we made

our way completely around Switzerland (see map), beginning and ending at the Zurich Airport. We used two 15-passenger mini buses (with a baggage trailer) as the roads we travelled were too difficult for large vehicles. Our drivers, Bruno Mattli and Stephan Funk, professionally and safely took us to all the sites with no issues, for which we were very thankful. Joining us at the Zurich Airport was Martin Egger, who was with us for the whole tour, while Pascal Bruchez and Maurice Lovisa joined along the way. These gentlemen acted as our guides, helpers, and interpreters.

Historical Background

It might be useful to say a little about the background to Switzerland's defences, or at least those we would see, for while some were built pre-WW2, the majority were built from the late 1930s and the rise to power of Adolf Hitler, as well as into the Cold War.

Following the defeat of Napoleon in 1815, the Congress of Vienna attempted, as much as it could, to put everything back where it had been, and, in the process, Switzerland confirmed its status and stance of armed neutrality with militia-based armed forces. Skip forward some years and we would see forts built in the late 19th century influenced or designed and often built with the help of other nations. The First World War and the period immediately before it saw another period of building and by now most of the artillery was designed and built in Switzerland. However, the most



significant era came after Hitler's rise to power. This involved construction of forts in line with plans developed in 1940 by General Guisan. The borders would be only lightly defended, and the main army would retreat into the alpine regions to the south of the country in a national redoubt (reduit) which would defend the three main routes through the country. This would be further developed during the Cold War. We would see examples of all these periods.

Day 1 – Saturday – Aug. 11
Arrival in Switzerland/Reuenthal-Full

Our joint tour began at midday on August 11 at Zürich Airport with tales of travel problems for some of our tour members due to cancelled or delayed flights. Soon after noon we moved out from the airport to the two buses to start the tour. The three missing tour members struggled to catch up to us via trains and taxis, and all did by the end of the day. Heading north to the German border, we stocked up with bottled water and within an hour we were at Full–Reuenthal for our first two stops - **Festung Reuenthal** and **Militärmuseum Full** – which are only a few miles apart.

Festung Reuenthal is a fortification built between 1937 and 1939 on high ground within a loop of the River Rhine, on the border with Germany. The fort has many common features with other forts we would see over the week. It was given up by the Swiss army, in this case in 1988, and handed over to an enthusiastic local community who converted it into a museum. The fort was left virtually intact with its original armament of two 7.5 cm gun positions and two machine gun blocks, but also the accommodation, communications, power generation and storage facilities, all dug into the mountain and connected by tunnels. Like many Swiss forts, there was an unobtrusive entrance, often at the lowest level, leading to an entrance way usually covered by an internal machine gun post beyond which a rock-cut tunnel or tunnels, sometimes concrete lined, led to the service areas. To



Entrance Bunker for Festung Reuenthal. *T. McGovern*

access the weapons meant a climb up ramps, stairs, or ladders, of various lengths, to the gun positions at higher commanding heights. This was an unguided tour, but we had all been issued a comprehensive set of study notes showing our visits, routes, and layout plans for the sites. There were people on site eager to help but our language skills were not up to it and they did not speak English, though Martin tried his best to help everyone. We would get used to the tunnel temperatures too, never more than about 10° C and sometimes it felt colder, but coming out we were quickly warmed by the sun. The weather, except for one day, was clear blue skies and warm temperatures.

From here it was a short bus trip downhill to the **Swiss Military Museum** in Full. This was on a large former industrial site with two of the massive buildings converted by the museum. The first formed a huge garage for an extensive range of military vehicles where we saw a WW2 British Bren-gun carrier being driven around the grounds. Inside was an eclectic mix of vehicles from the 1930s onwards: Swedish, American, French, British, German, and of course Swiss, as well as the obligatory Warsaw Pact vehicles. Self-guided, we walked over to the next building where the huge space had had about 5 floors built into it, every one of which was crammed with guns, missiles, and even their very own King Tiger tank under restoration. How the floors took all that weight we do not know. There followed a couple of hours of earnest searching, pointing, and numerous photographs. One charming display was several thousand metal model soldiers, flats as they are known, expertly painted and laid out to represent all



Main Hall at the Swiss Military Museum in Full. *C. Penfold*



Tank Hall at the Swiss Military Museum at Full.
T. McGovern

eras and conflicts.

The museum lies on a small flood plain and a line of concrete bunkers runs across it, one close to the site, and so the first of our many concrete “fixes” was in order, as the bunker was opened at our request, so we could view its fully equipped interior. Our next stop was on a country road to climb up the hillside to see the exterior of a mortar bunker. Back on the transport to our next stop at Friedhof Leuggern, a fortified cemetery was part of the infantry defenses in the town of Leuggern. We re-joined our coaches and headed south for an hour to the SwissEver Hotel Zug in Cham. Once our tour members found their roommates and room, they were on their own for dinner at the hotel or in the town.

Day 2 – Sunday – Aug. 12

Bloodhounds/Kommandoposten/Festung/Airfield

On Sunday we started early (don't we always!) and travelled south to the town of Gubel outside of which was one of Switzerland's **Bloodhound BL-64 Lenkwaffenstellung antiaircraft missile sites**. Waiting for us were Wolfgang Hoz and Urs Weber, members of the association that cares for the missile site. They gave us a detailed briefing on the function and history of the Bloodhound program, then we viewed an orientation film setting out the acquisition of Bloodhound from the U.K. and how it was designed to work before we set out on our tour in two groups. Both men had deep links with the site, as was the case with most of our guides, and were always enthusiastic and ready to answer any of our questions, whether easy or difficult, testing or daft. The decision to purchase the system was made in 1961 with construction starting in 1963, with 6 firing positions containing 9 batteries, each of 8 launchers. The system was part of an integrated air defence system along with the newly acquired Mirage fighter to deal with long-range high-altitude threats. The central control identified and assessed threats and then passed them to the appropriate weapon system. In the case of the Bloodhound, targets were acquired based on information received and the site then acquired them itself and when appropriate engaged. The missile followed the target illuminated by the site's own radar, and with a range of 85 km would have been capable of interception outside Swiss airspace. We visited the radar building with, beside it, an underground command facility. Nearby was the power



Bloodhounds on their launchers at BL-64 near Gubel. C. Penfold

generating building with all its gear in working condition (which would be the standard in the Swiss defenses we visited, making us realize that fortification sites we visit in the USA and UK are today just a fraction of their former selves). The missiles when active remained outside on their stands for instant readiness with the nearby garages being used to store reloads. We spent much time with the missiles, probing each part no matter how small, and inquiring about their function so we could have launched a missile if they let us.

From here it was less than an hour drive to our next stop, the **Kommandoposten-Selgis**. We enjoyed the box lunch provided by our hotel along a mountain stream, as we waited for our guides (Jean-Pierre Kälin, Paul Schönbächler, Josef Staubli, and Alois Mettler) to open the bunker just for us. This was a command bunker serving the staff of the 4th Army Corps (later CP of Mountain Division 9 and then for Reduit Brigade 24) and completed in 1941/2. The bunker was unarmed other than a typical machine gun covering the ends of the entrance tunnels. Construction showed some common features found in this and other interiors. Here two large parallel caverns were tunnelled out and a brick “house” was built within this space, with its external walls covered in a bitumen or similar waterproof coating. This prevented water seeping into the working spaces and gave some insulation too. This practise was seen in many other sites and as an added benefit was utilised in some to provide lighting and access spaces particularly around magazines. The bunker is noted for many murals of typical Swiss scenes completed by artist Willi Koch when he served here and is now a major feature for visitors. The most dangerous aspect was the entrances, where the bunker's two non-descript metal doors led almost immediately



Willi Koch's artwork on the wall of Kommandoposten-Selgis. C. Penfold

onto a very busy road.

Back to the buses, we travelled for an hour along the southern shore of the Vierwaldstättersee to **Festung Fürigen**, right on the edge of the lake as it looked out towards Lucerne. As with all forts its job was to cover a nearby road and rail bridge and a pass on the other side of the lake which it was feared would be used to bypass this choke point. It was armed with two 7.5 cm guns and three machine guns, plus a machine gun covering the entrance passage. The fort is significant because it sits on the northern edge of the Swiss redoubt into which the army would have withdrawn.

Our guides were father and son Alois and Simon Mathis, who



Entrance to Festung Furigen along the Vierwaldstättersee.

C. Penfold

showed us a film of the fort and how it was meant to be operated, and then took us around. We were impressed by the quality of the signage and audio-visual aids. We then went out to see the typical camouflaged gun positions where moveable fabric-covered mesh screens were fitted into the rocks then painted. Apparently, the artist hired to do this was in part guided by troops sent to the other side of the lake who send messages back, "a bit greener here, more gray there." The effect is surprisingly convincing even close up and led to us seeing gun positions at every turn, though often that was because they were!

En route to Sargans, close to the border with Lichtenstein, we took time to visit **Airbase Buochs**, where the Pilatus aircraft factory is now next to a runway. Over the wide road, a runway access, you come to the entrance to a series of large underground hangars, not unfortunately open, and last used in 1914. From here it was a long (1½-hour) bus journey to the Hotel Post Sargans, where the tour members were again on their own to select local restaurants for dinner.

Day 3 – Monday – Aug. 13

Schollberg/Centurion/Magletsch/Furggels

We travelled northward from Sargans down the Rhine valley, bordering Lichtenstein, to our first stop at **Festung Schollberg**, where we were met by David Kaufmann and Juerg Senn, who would guide us round Schollberg and Magletsch. Called Artilleriewerk Schollberg 1, Infanteriewerk Schollberg 2, and Infanteriewerk Schollberg 3, these works are at a pinch point where high ground narrows the Rhine Valley flood plain. For this reason, the old road runs along the edge of a steep cliff above the current entrance. Indeed, the defences were enhanced in the 1940s with a scheme to flood the valley and all the pillboxes on the river line are raised to avoid the flood. Defences, including anti-tank ditches and obstacles, were covered by the guns of the fort. However, the works have been much reduced due to nearby quarrying, one almost totally lost and the other now closed. The part still open, however, does provide plenty of scope for exploration. The fort was started in 1938 and by 1939 formed part of the integrated Sargans defences armed with anti-tank guns and machine guns. The part we looked at had three 7.5 cm guns as well as a 4.7 cm, later a 9 cm, anti-tank gun and two machine guns. Changes



Tour members ready to load and fire the Centurion 105 mm gun from within bunker. *C. Penfold*



Entering the Dragon House at Artilleriewerk Magletsch, the tour members are drawn to the 15 cm gun. *C. Penfold*



Our guides show us how a replacement 10.5 cm barrel is moved to the turret at Artilleriewerk Magletsch.

T. McGovern

continued up until 1993, when two Centurion tank turrets were installed in freestanding bunkers close by, covering an anti-tank ditch. The site was handed over to the trust who have now looked after the fortified area since 1999. We amused a group learning rope work for climbing who had strung a line across one of the entrances from which these strange people kept emerging from.

From here we travelled a little further down the valley and drove up to **Artilleriewerk Magletsch**. Like Schollberg, the fort was started around 1938 and armed by 1940. It is the northernmost of the defensive works and with seven cannons it is one of the strongest. It was built to control the Sargans area, one of the main north-south routes through Switzerland. A substantial entry tunnel designed for trucks led into the mountain, and almost 4 kilometres of tunnels (no we didn't walk down all of them). The lower level is still used by the army, so we headed up. First a long ramp, then 136 stairs, then another 36 stairs (or were we just losing count?) followed by another ladder. Do not think we were finished either, there were more ladders to get to the turrets. An introductory film covered the forts location with its main armament of three 10.5 cm turrets and four 7.5 cm casemate guns as well as two 8.1 cm fortress mortars, and numerous light and heavy machine guns. Above ground were various defensive positions, including anti-aircraft and observation positions. Interestingly, the top of the fort is now part of a large nature conservation area with

rare flowers and plants. Thanking our hard-working guides, we drove back past the town of Sargans (while munching our box lunches) south to **Festung Furggels**, and new guides Christian



Three ready-to-go Sulzer motor generators in the power room at Festung Furggels. C. Penfold



One of the stars of visit – the 8.1 cm fortress mortar at Artilleriewerk Magletsch. C. Penfold



Our guide put us through the gun drill on the 15 cm casemate gun at Festung Furggels. C. Penfold



Tour members model the 15 cm gun and it's chain mail at Festung Furggels. *T. McGovern*



Our shared dinner platter and beer at Festung Furggels restaurant; no table finished their platter. *C. Penfold*

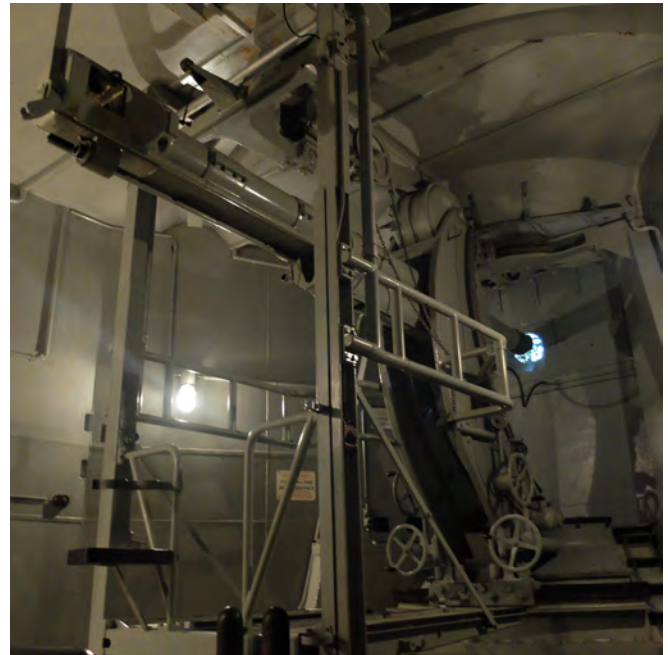
Rechsteiner and Peter Riederer.

As has been noted, camouflage is an integral part of the Swiss defences, with disguised positions and guns but Furggels was to provide us with some of the best and particularly its "timber hut" entrance off the main road. Construction began in 1939 of this, one of the largest forts in the country, which lies on two levels and provided accommodation for 541 men. The main armament was four 15 cm guns in casemates as well as four 10.5 cm turrets disguised as wooden pig sties. After a long underground tour, we emerged from the fort to look at the exterior of the 15 cm gun positions, before climbing the hillside to a not well disguised restaurant, where we were treated to an excellent meal of appetizers and beer on tap. The owner of the restaurant is also the owner of fort, which is for sale as the cost of running this very large fort is greater than the tour fees generated. Fortunately, we had more fortifications and artillery to view or we would have had even more beer and perhaps we would have purchased the fort in the

name of the CDSG or the FSG. Suitably filled we then walked uphill to see the disguised 10.5 cm turret positions and machine gun bunkers on top of the fort. It was then back on buses for our short return trip to our hotel in Sargans for another night's stay.

Day 4 – Tuesday – Aug. 14 Crestawald/Sperre Trin/Stalusa

Departing at 8:00 (yes, there is such a time), after counting heads we boarded the coaches to travel south for about an hour to **Festung Crestawald**, which is close to the Italian border, where our guides, Mario Fanconi and Peter Baumgartner, were



10.5 cm casemated gun at Festung Crestawald. *T. McGovern*



The exterior of the 10.5 cm casemate with the barrel fitted with a velocity gauge at Festung Crestawald. *T. McGovern.*

waiting for us. Planning for this fort began in 1936 with construction starting in 1938. The fort was armed by late 1940, though work continued until 1942. The site lies close to the village of Sufers with the fort's field of fire from its main armament of two 10.5 cm guns concentrated on two passes: the Splügen leading to Lake Como and the St Bernadino at the head of the Rhine, both eventually leading to Milan. The fort was used by the army through the Cold War and it was one of the few locations where live-firing was allowed using its two guns, named "Lucrezia" and "Silvia," each firing more than 5,000 shells. When released by the army, an association took over and opened a museum in 2001. The fort is constructed on three levels with the lower having the entrance and most of the services, such as generators and accommodations. The next two levels have a similar layout, with ammunition storage on one side of a central passageway and a gun room on the other side. Above the higher level was a short climb to the observation post 1,368 meters above sea level. The site had two machine-gun positions for defence and around the fort are six anti-aircraft guns, primarily to protect the infantry units in the area. Perhaps it is worth noting that all the forts of this era had some infantry protection, their number relating to location and the fort's size, but infantry generally did not use the forts as accommodation.

Now we retraced our route down the valley (consuming our box lunches along the way) and drove to **Festungsmuseum Sperre Trin** and our guides Urs Saner, Georges Kessler and Ernst Kagi. As usual, we split into more manageable groups and our intrepid guides took us in hand. The main road winds through the valley which has been an important barrier point with Castles Barcazi (9th to 13th centuries) and Hohentrin (13th century) sharing the area with works from the First World War and those we visited (construction started in August 1941 and finished around June 1943 as Sperre Trin). Anti-tank barriers can still be seen on the sides of the valley and anti-tank guns are in positions disguised as agricultural sheds. The work we visited is reached by an emergency access which involved a walk bent double under a rock-cut passage to the door as the primary access, for this work was reached via a cable car. Here machine guns covered the road in single and double positions. The water supply for the villages below passed through the site in a rock-cut ditch/tunnel and had to be accounted for in the building works. In one of the machine guns



Anti-tank bunker at Festungsmuseum Sperre Trin disguised as a water works structure. *C. Penfold*

positions, the association has placed a monitor; an external camera allowed us to view the camouflage screens from the interior as we raised and lowered them.

Driving further west for about an hour to Disentis/Muster, we arrived at **Fortezia Stalusa** and another group of enthusiasts who would guide us around, Thomas Hänggi and Fredy Camininada. Unusually for us, this position was built in 1967 during the Cold War. The fort is armed with two 8.1 cm fortress mortars as well as the usual defensive weapons covering the entrance. It also has a good collection of missiles and what is described as the best small arms collection in Switzerland. A long time was spent here with a full range of arms used by the Swiss armed forces and an extensive collection of small arms from many other nations. At Stalusa, we were joined by another tour organiser, Maurice Lovisa, who would be with us for the next two days. Leaving Stalusa we climbed over the Oberalpass and down into Andermatt in an hour-long trip with dramatic views. We checked into another of our one-night stays at Hotel Restaurant Badus in Andermatt and tour members set out to forage for their dinners. As we mentioned earlier, the Swiss identified three main routes through the country, each of which each formed a defended area. The first was around Sargans. Our move to Andermatt took us to the second, the Saint Gotthard area.



Part of the large small-arm collection at Fortezia Stalusa that intrigued our tour members. *C. Penfold*



A common view of our tour members at every stop – here it's an exterior view of an 8.1 cm fortress mortar at Fortezia Stalusa. *T. McGovern*

Day 5 – Wednesday – Aug 15
Stöckli/Gütsch/San Carlo/Sasso da Pigna/Ospizo

Our day started off with a small unplanned detour to the **Teufelsbrücke**, “The Devils Bridge,” which crosses the upper Reuss River near Andermatt in a spectacular bridged mountain gorge. After the French invaded Switzerland in 1798, the Second Coalition was formed and in 1799 a Russian Army under Suvarov marched down to link up with the Austrians in Upper Italy. The crossing was the scene of a battle over the damaged bridge and is commemorated by a typically vast Russian monument in Cyrillic carved into the mountain wall. Luckily, our Polish tour member could read the inscription to us.

Returning to Andermatt, we now began a long drive up to **Fort Stöckli** and **Festung Gütsch**, where the coaches deposited



Armored observation post at Fort Stockli at 2,400 meters. *JP Guichard*

us halfway between the two forts. While this was a self-guided walking tour of only the outsides of these two fortifications, Maurice and Martin were on hand to both guide and inform. The works are spread over a large area of ground with the higher peak forming Fort Stöckli, which was built in 1894 and was at the time the highest European fortification at 2,400 m. This fort was to a large extent superseded and built over when Artilleriewerk Gütsch was built, so it was taken out of service in 1947. However, there are still the remains of positions including the evidence of rails for Fahrpanzer turrets, small turrets on wheels which could be hidden away and brought out to pre-prepared sites when needed. The armament was two 12 cm 1891 howitzers



Test site for the 15.5 cm 93 Bison fortress artillery system at Festung Gütsch. *T. McGovern*

in cupola and by 1903 two 5.3 cm Fahrpanzer.

The building of Artilleriewerk Gütsch was commenced in August 1941 and it was armed by October 1942 and fully completed in June 1944 for its garrison of 300 men. The fort had three 10.5 cm turret guns with close defence provided by 11 machine guns in three double machinegun bunkers. The site also had four 20 mm antiaircraft guns. Beside the road, an aerial cableway from Göschenen provided access to the fort. The height difference was 1,200 meters, so the cable ride took a full 12 minutes. The fort was decommissioned in 1994. On the day we visited, which was fairly warm and sunny, the camouflaged bunkers and turrets were not difficult to find, and the view of the Alps was very impressive. However, the military was not quite finished with Gütsch as the site was used in 1991 as a test site for the 15.5 cm 93 Bison fortress artillery system of two guns in two bunkers. The Bison sites are now mothballed and slated to be decommissioned soon.

We loaded up our coaches and returned down the winding road to Andermatt, through the town and up to the St Gotthard Pass where, just below the crest, we visited **Festung San Carlo** (also called La Clastra), now owned by Rainer Geissmann. We



10.5cm turret with camouflage at Festung San Carlo near St. Gotthard pass. *T. McGovern*

scrambled up the hillside to visit the 10.5 cm turrets and machine gun bunkers before returning to the entrance of the fort to eat our box lunches. This fort was turned into an underground hotel several years ago. It has failed several times and is now a conference centre with a restaurant. We arranged for a small apéro (wine, cold meats, and of course cheese) inside the fort so we could explore its turrets and supporting features. The conversion of the fort into a hotel used freestanding housing units within the rock-cut tunnels to provide dining, bathrooms, and sleeping rooms. While the food prefab unit seemed fine, the other units were being overwhelmed with vast amount of condensation, resulting in running water underfoot making each of the galleries mini lakes. This combined with hardly any lighting, made this hotel one of the grimmest places to stay that we have ever seen.

Having rested after the rigours of eating and drinking, we travelled up to **Festung Sasso da Pigna** at the pass itself. The artillery fort became operational in 1943/1946 and contains two 2-gun groups with a large accommodation section for 440 troops. There are about 2,400 metres of passages, and yes, we did feel that we had walked most of them by the time we left this fort. Close to the entrance, an exhibition of rock crystals and other geological features was installed in 2012 when the fort was opened to the public as a museum after being decommissioned in 1998. There are about 1 km of tunnels that took us to the artillery section, then a cable way to take us up to the higher levels (or you could climb the 400 steps) where the fort's main armament of four 15 cm guns are located. One novel feature here was an observation post that has been opened and a viewing balcony constructed on the cliff face looking over the pass and situated between two of the 15 cm guns. Some of our party could not resist and climbed down to see the guns from the front with their distinctive chain curtains. Returning to the large main entrance we made our way on foot to our next fort.



Cableway transport inside Festung Sasso da Pigna that moved personnel from the accommodation level to the artillery casemate, more than 400 steps. *C. Penfold*



Dismounted 15 cm barrel in casemate at Festung Sasso da Pigna. *T. McGovern*



Overall view of Fort Hospiz St. Gotthard which was constructed in 1894, next to our hotel at St. Gotthard Pass. C. Penfold

Close to Sasso and on the road to our hotel was **Fort Hospiz St. Gotthard** that was constructed in 1894. By the First World War it had two 12 cm M1891 armoured howitzers, four 5.3 cm M1887 Fahrpanzer, two 10.5 cm M1917 compressed-air mine throwers, and seven M1894 Maxim machine guns. By 1939 the Maxims had been replaced, the mine throwers retired, and two of the Fahrpanzer positions were now 4.7 cm Model 1935/41 infantry guns. The fort was decommissioned in 1947 and opened as a museum in 1989. We could only visit the outside of the fort as the museum was closed. It appears the fort's current museum status was missed by an off-duty policeman as several of our tour members were detained because they were taking photographs of fortifications over 125 years old, based on a sign that itself was over 50 years old. After collecting detailed information, they were

let go with a warning (or the policeman's superior informed him that taking photographs of fortifications has not been restricted in Switzerland since 1991).

We stayed that night at Hotel Berggasthaus at the St. Gotthard Pass and had a group dinner, as this hotel and restaurant were the only ones available on this famous, high Alpine pass. The hotel itself was odd collection of old and new buildings which range from new sleeping rooms to ones that perhaps soldiers had used during the days of the Roman Empire. Our stay at St. Gotthard Pass marked the half-way point on our tour. We had several special sites and experiences in store for us in the coming days, but that story is part of the second half of the CDSG/FSG joint tour to the Defenses of Switzerland that will appear in the next CDSG *Newsletter*.

CDSG/FSG Joint Tour to the Defenses of Switzerland

The second half of tour report (Part 2/2)

Terrance McGovern & Norman Clark

A joint Coast Defense Study Group & Fortress Study Group tour of the modern (1890 to 2000) defenses of Switzerland took place from August 11 to August 19, 2018, with 30 tour members. The tour's goal was to visit the full range of Swiss defenses from the period – from an air defence missile site to modern long-range artillery – during our week in Switzerland. This is the 12th special tour that Terry McGovern has organized for the CDSG or the FSG and the challenge this time was the large number of site owners and the logistics required to move our tour members quickly and efficiently through all regions of this mountainous country. Key to the success of this tour was our local CDSG member, **Martin Egger**, along with **Maurice Lovisa** and **Pascal Bruchez** of the Association St-Maurice d'Etudes Militaires (ASMEM). Through Martin's and Maurice's excellent efforts over the last three years, we actually visited every site on our schedule and several more that were not. To make this tour happen, Martin and Maurice arranged authorization/access/guides for us to visit about 50 sites, to arrange hotels, ground transportation, daily meals, and many other logistical details that are required during such tours. The tour would not have occurred without their efforts and their detailed knowledge about each site we visited, as well as their translation services.

The format of the tour was a travelling study tour with a new hotel every night except one, so by the end of the tour we made our way completely around Switzerland (see map), beginning and ending at the Zurich Airport. We used two 15-passenger mini buses (with a baggage trailer) as the roads we travelled were too difficult for large vehicles. Our drivers, **Bruno Mattli** and **Stephan Funk**, professionally and safely took us to all the sites with no issues, for which we were very thankful. Joining us at the Zurich Airport was Martin Egger, who was with us for the whole tour, while Pascal Bruchez and Maurice Lovisa joined along the way. These gentlemen acted as our guides, helpers, and interpreters.

At the end of tour narrative in the first part of the Swiss Tour Report (*CDSG Newsletter*-Fall 2018), the group was staying at the Hotel Beggasthauss at the top of the St. Gotthard Pass (2,106 meters), so the night air was clear and crisp as we prepared to start to visit the defenses in western Switzerland.

Day 6 – Thursday – Aug 16th – Secret Locations/Forte Airolo/Nufenen Pass Troop Shelter

After breakfast, we went for an excellent talk given by **Col. Serge Monnerat** on the modern Swiss fortification weapon systems that we would be visiting that morning. As these two weapon systems are still part of the Swiss Armed Forces, we would be under security restrictions (no electronic devices, no photographs taken inside or outside the bunkers, and no information on these weapon systems should be made public). These rules would be repeated several times during our morning visit.

Since our visit to these two sites in the St. Gotthard Pass area, the Swiss Government has decided to no longer keep these weapon systems on caretaker status. The weapons will be scrapped and the structures sealed or sold in the coming years.

From St. Gotthard Pass we made our down the pass to the area around Airolo for our tours of the two special sites. These were detailed tours of a modern 12 cm fortress mortar position in a monobloc structure and to a large protected concrete structure that contained two 15.5 cm fortress cannon 93 L52, known as the BISON. We hope examples of these weapon systems are



Forte Airolo C. Penfold



Armored Casemate with 8.4 cm Model 1880 cannon at Fort Airolo C. Penfold



Dummy 12 cm Model 1879 in original armored turret C. Penfold

retained and become museums, so the apex of the Swiss fortress system and its ordnance are preserved for future generations.

After these visits we travelled to **Forte Airola**, where we met **Augusta Allidi**, who would take us round the site. The opening of the nearby St. Gotthard tunnel in 1882, and in the same year the triple alliance between Italy, Germany, and Austro-Hungary brought into focus that this was now the shortest route through Switzerland. For these reasons the fort was built between 1887 and 1890 and was a real mix, having been designed, armed and built by just about every nation which bordered Switzerland. An Austro-Hungarian engineer for design; armour and weapons from Bohemia and Germany as well as Belgium and much of the labor provided by Italy. The fort is a compact four-sided massif with an undulating granite roof and a plan like a Brialmont work with ditch covered by caponiers. The main armament was two 12 cm Model 1879 cannon mounted on the roof in a single turret; two 12 cm Model 1888 ball mortars; five 8.4 cm Model 1880 cannon; four 5.3 cm Model 1887 guns, and twelve 8.4 cm Model 1871 bronze cannons mounted in the three caponiers. Additionally, there is a one-kilometre tunnel connecting the fort to the St Gotthard railway tunnel which lies below the forts position. The fort continued to be improved before finally opening as a museum in 1989, though it remains within a military compound. Some of the tunnel defenses were also seen as well as a couple of mounted Fahrpanzer turrets, but not all in their original positions. The fort is in the Italian-speaking portion of Switzerland, so the language used in the fort is Italian.



Fahrpanzer Turret with 5.3 cm gun located near Forte Airola
T. McGovern

We now turned towards the Nufenen Pass, climbing to its summit where we stopped briefly to see from the outside a Swiss army shelter for mountain troops and of course took more photographs. From here we dropped down into the valley for a pleasant coffee break and stunning views. We finished our travels for the day in Brig. Our hotel for the night was the Hotel Good Night Inn, located in nearby Glis and our tour members were on their own to locate dinner.

Day 7 – Friday – Aug 17th – Festung Naters/Fort Commeire/ Fort de Champex

Leaving our hotel in the morning, we crossed the River Rhone into Naters and a short climb brought us to **Festung Naters**, where **Pascal Bruchez**, also involved in the tour organisation, joined us for the rest of the trip. Our local guides for this festung were **Erich Bumann** and **Theo Imhof**. Again, the fort was built to cover an important route, Brig-Naters, standing at the point where the Simplon Pass meets the Rhone valley. The fort was begun in 1939 with troops moving in in 1940 and the armament being ready by 1942. The armament initially comprised four 7.5 cm guns but by 1943 two additional 10.5 cm fortress guns had been mounted in a new western part to the fort. Flanking bunkers provided external defence with a 90 mm anti-tank gun, 20 mm anti-aircraft guns, and machinegun positions. The fort had all the usual barracks, stores, accommodations, and engine rooms, but a rare addition was a vault in which the Swiss National Bank held some of its gold reserves. We looked, but it was empty. The fort, which was declassified in 2002, also has other museums covering the local area, including one for the Papal Swiss Guard.

We now set out on a long drive to the west, passing into the third of the main routes through Switzerland and the defensive area around Martigny, with a pass over to Chamonix and France to the west, to the north to Geneva and to the south the Grand St. Bernard leading to Italy. Here in Martigny, we stopped for a lunch



10.5 cm fortress gun at Festung Naters *P. Bruchez*



Main gallery with passageway to 10.5 cm gun chamber at Festung Naters *P. Bruchez*



Festung Naters kitchen with cooking kettles P. Bruchez



7.5 cm fortress gun at Festung Naters C. Penfold



Power room with Sulzer motor generators and switchboard at Festung Naters C. Penfold



Plotting Room at Festung Naters with standard artillery calculator T. McGovern

break on the banks of the Rhone River facing a fort (**Follatèrres**) on the other side of the river. This fort has been decommissioned and its interior equipment has been removed. By this point we were seeing camouflaged gun positions in every shadow, but this site proved that not only were we right but looking harder just made you become aware of even more.

South of Martigny, we met **Jean-Pierre Salamin** and **Pierre-André Kuenlin**, who with Pascal would show us round **Fort Commeire** and then **Fort de Champex**. As we were now in the



7.5 cm gun bunker disguised as Alpine cabin at Fort Commeire P. Bruchez



Camouflage entrance to Fort Commeire C. Penfold



Main gallery in the barrack area of Fort Commeire C. Penfold

French-speaking area of Switzerland, the names of the forts and locations used French names. **Fort Commeire** is on the eastern side of the route to Italy opposite Champex above the town of Orsières. Construction of **Commeire** began in August 1940 and was completed by September 1943, but the fortress guns were only installed in May 1944. The fort had positions for four 7.5 cm cannons, two of which, as we had seen before, were disguised as alpine cottages. We were able to get close to these by squeezing out an emergency exit and walking round the steep slope above the public road. It was demilitarized in 1999 and became the property of the association in 2009.

Gathering our members aboard our two coaches, we headed down this side of the valley and up the other to **Fort de Champex**. This fort would come to hold a special place in the hearts of many of us because here we spent a night underground in a real Swiss fort. The fort was built between 1940 and 1943 and was armed with four 7.5 cm guns (two of these positions were converted to 10.5 cm guns at later date) as well as an outer defence including machineguns, 8.1 cm fortress mortar and six anti-aircraft guns. In addition, **Fort Champex** was the command post for the St. Bernard area, co-ordinating the fire of **Fort Champex, Commeire, Follatères** and **Dailly**.

For our overnight stay we were issued sleeping bags and assigned to typical barrack rooms with bunk beds, while using centralized latrines with group showers. We were treated to



Protective door system between barrack area and gun casemates at Fort Champex C. *Penfold*



Main gallery to Fort Champex's barrack area is well stocked for our overnight stay *C. Penfold*



Tour members enjoy dinner in Fort Champex's mess *C. Penfold*



Fort Champex's well stock magazines provide plenty of ammunition for the 10.5 cm and 7.5 cm guns *C. Penfold*

an excellent meal and good wine in the fort's mess. Staying underground beneath tons of rock in narrow galleries affected our tour members in different way. Some drank schnapps and sang patriotic songs late into the night, while other spend hours exploring and photographing ever inch of the fort, while some of tour members departed to stay at the hotel located above the fort. As I am not a fan of schnapps and a very poor singer, I opted for exploring the fort and practicing gun drill and ammunition handling on the fort's artillery and operating the fire control calculators in the plotting room. In the morning, we checked out of the fort and walked to the hotel above the fort for breakfast.



7.5 cm gun has been reinstalled at Fort Champex
T. McGovern



Late night gun drill on 10.5 cm gun at Fort Champex
T. McGovern

Day 8 – Saturday – Aug 18th – Fort Dailly/Fort Scex/Fort Cindey

Saturday was to be our last day of touring and leaving Lac du Champex we travelled to **Fort de Dailly** sitting above St. Maurice via our hotel at Martigny. Here we dropped off our luggage trailer so our coaches could climb the mountain road to the fort. Driving north we crossed the river and after running alongside it began climbing taking a sharp hairpin bend – hence the reason for dropping the luggage trailer. The more sharp-eyed noted on the wall against the road a small red plaque carrying the number 29. Yes, that was the number of switchbacks we would take to reach the fort. It did though once again recall the enormous engineering efforts required to build and arm these alpine forts and the extent of the national drive particularly in the period from the late 1930s. There would be photographic evidence in the fort of the problems of moving guns up this road. Passing hairpin Number 1 we were not actually finished, and we went

through some of the narrowest gaps we had met in a village. There was still a climb before we entered the compound which surrounded this large multi-level fort. Our guides for the rest of the day here would be **Pascal Bruchez, Serge Monnerat, and Christian Vaucher.**

Fort de Dailly is just one part of Fortress Saint-Maurice, which commands this part of the Rhone Valley. The fort is one of the largest and most heavily armed of Switzerland's forts, with an entrance on the Massif Dailly at 1,250 meters (4,100 feet). Work began on the fort in 1892 and was initially armed with six 12 cm guns plus an additional six in open positions with disappearing mounts along with two 15 cm mortars in open positions, two 12 cm howitzers each in a cupola, two 8.4 cm guns in casemates,



The long galleries of Fort Dailly occupy almost 60km a many levels in this mountain massif *T. McGovern*



Pascal discusses the impact of the 1946 magazine explosion on this gallery and the rebuilding effort *T. McGovern*

and several mobile 5.3 cm pieces. This extensive work raised concerns in France who put in a substantial espionage effort to find out what was going on by interviewing labourers and eventually obtaining photographs from a Swiss officer in 1901.

The open gun positions were considered safe because of the height of the fort but by WW1 that confidence was ebbing, and these were abandoned in the 1930s and replaced by artillery galleries. At **Battery Rossignol**, a gallery of sufficient size was cut to allow towed artillery to be brought in to arm side galleries. Here ten 105 mm Bofors Model 1935 guns were installed. Four were aimed to the north and formed **Battery des Buits**; four were aimed to the south, becoming **Battery de Plex**; two aiming to the east were named **Battery de Rosseline**. **Fort Dailly** was the scene of a catastrophic ammunition explosion in May 1946,



The 10.5 cm gun of Battery Dailly Nord which was installed after the explosion *T. McGovern*



Pascal demonstrates the operation of the digital plotting calculator introduced in the 1980's *T. McGovern*

when shells in three magazines totalling about 449 tons exploded, throwing all four guns of **Battery de Plex** from their emplacements and damaging six more. The blast killed ten workers there to complete a funicular for bringing in supplies. The explosion resulted in further changes, with four 10.5 cm fortress guns being installed. **Battery de Plex** was not replaced, it being considered that the rock cover was now insufficient. Added were two new 15 cm turret guns on 50-meter armoured barbettes, two 8.1 cm fortress mortars, and a battery of twin 12 cm fortress mortars added in the 1960s. The fort was partially deactivated in 1995 and fully decommissioned at the end of 2003, yet some of the underground structures are still in military use.

Upon disembarking from our coaches, we headed underground for a speed-walking tour around the fort's kilometres of tunnels until we were not sure where we were located. We saw a small exhibition of model forts, a battery of guns, and a plotting room using more modern computer-based system. This contrasted with the mechanical method previously used and seen operating in many of the introductory films we saw at other forts. Pascal, an artilleryman, was particularly keen we see and understand it and a couple of members were asked to complete the computations and let us all see how the system functioned. Later he would get us to man one of the guns and "follow the pointers" to aim at our targets. Then, peering through the open breech, he would announce "spot on!"

Pascal led us down a trail from the top of the fort to the "star attraction" of Fort Dailly, the 15 cm turret 58 L42 cannon sporting a camouflage cage to allow the turrets to look like a mountain hut. The group took turns posing with this largest turreted weapon in the Swiss fortress system. These turrets were mounted on a barrette 50 metres (160 ft) deep, with a rate of fire of 22 rounds per minute in bursts, or 15 rounds per minute sustained. Design began in 1949, with the first test firings in 1960. The range of these new guns approached 24 kilometres (15 miles),



Martin Egger and Stefan Klinger pose by the 15 cm turret of Battery T1 *T. McGovern*

sufficient to reach Montreux, Sion, or the Chamonix valley in France. **Battery T1** (for tourelle or “turret”) was located at the old E3 mobile 120 mm battery position at an elevation of 1,300 metres (4,300 ft). **Battery T2** was located at 1,500 meters (4,900 feet) on the Rosseline Heights near **Battery Planaux** (two 10.5 cm turrets installed in 1940). Both batteries were operational from 1962 to 1994.

Going back inside the mountain, we visited the impressive inclined funicular that moved men and supplies from Fort Dailly to the upper part of **Fort Savatan**, which in-turn connected with the valley below. We then toured the ammunition handling and magazines for the 15 cm turret Battery T1 which seem more like a factory production line, as shells and powder filled casing were assembled and moved 50 meters up a shaft to the turret. Pascal narrated a film showing this complex machinery in operation. We moved through the tunnel system to emerge in the garrison area which was completely devoid of personnel but had a nice 12 cm disappearing gun on display. A short walk took us to a lunch provided by the Association St-Maurice d’Etudes Militaires (ASMEM) where we met many of those who had helped us while Pascal’s brother sat at his table melting cheese over braziers. There was no lack of appetites as with the Swiss cheese, we had potatoes, gherkins and wine while in the background we had a trio of Alphorn players serenading us – and marvellous views up the Rhone Valley too.



The incline funicular connects Fort Savatan and Fort Dailly through a tunnel inside the mountain C. Penfold



Battery T1 ammunition handling room at Fort Dailly C. Penfold



Shell and Casing lift at Battery T1 that elevates up a 160 foot barbette to the gun allowing 15 rounds per minute C. Penfold



Turret support chamber with crew lift and spare barrel with access shaft to turret at Battery T1 C. Penfold

Now it was back to the buses, slowly, and our winding route back to the valley and across the river to Sainte Maurice. Here at a bridging point was the **Chateaux de Saint-Maurice**, a customs point at the bridge dating from 1472 with **Tower Dufour**, 1831, above it. This was part of the blocking works at this choke point with, hidden by the forested slopes opposite, many barricades and other defenses also built at the same time. We climbed up a steep trail to the entrance of deep caves that were open to the public, but some way into them lay the entrance (closed to the public, but open to us) of **Fort du Scex** and adjoining **Fort Cindey**.



12 cm disappearing gun on display at the garrison area of Fort
Dailly C. Penfold



Alphorn player serenade the tour group as we have lunch at Fort
Dailly P. Bruchez

Fort du Scex is built into the Scex cliff face had its construction starting in 1911. The fort is in galleries which run approximately parallel and about 10 meters back from the cliff face. Side galleries go back into stores and accommodation with others going out to the embrasures for its gun positions. It was initially armed with four 7.5 cm 1903 guns in 1911, along with four machine guns. It was expanded in 1915 to provide additional dormitory space. A connection to the caves at the Grotte aux Fées was created in 1935-6 and in 1938-9 a further four-gun 7.5 cm battery was added. Supplies were delivered by an aerial cableway built in 1922. More tunnels improved the habitability, along with an 800-meter tunnel connecting it to Fort Cindey.

Fort Cindey was built in two phases, 1941-46 and 1948-54. The fort was initially armed with two 10.5 cm guns, with four 90 mm anti-tank guns and machineguns added in the 1950s. The fort also had four mobile 81 mm mortars. In 1984, the forts became a regional command post and all the guns in Fort du Scex were removed, though one was reconstructed for display in 2001, those in Fort Cindey being left in place, the forts being finally deactivated in 1995.



Barrack bunk room at Fort Cindey C. Penfold



Group photo time for the CDSG/FSG Joint Tour to the Swiss Defenses P. Bruchez



10.5 cm fortress gun at Fort Cindey *C. Penfold*



Pascal oversees gun pointing drill on 10.5 cm fortress gun at Fort Cindey *T. McGovern*

During our tour of these forts, I think that our host sensed that we were all hitting our limit on underground galleries for barracks, magazines, power room, and gun rooms after eight days of touring. They took pity on us and scaled back our tour. After visiting the aerial cableway, we retreated through the caves and down the steep trail to our coaches. While being shown round these forts and looking out and over the sights of the guns, it was pointed out that all the bridges had locations for the emplacement of explosive charges to destroy them if needed. Also visible were rows of concrete anti-tank barriers, “toblerones” as they were called. As we headed back to Martigny, we had several stops to visit the remains of these anti-tank barriers. Most had of course been removed in recent years, but numbers remained and these, along with some canalised streams, would have served the purpose of halting an enemy’s advance under the guns of these forts. Crossing the river, we visited a second site with these concrete barriers as well as the positions for road blocks to be inserted in time of crisis. Our last stop was the rail defenses for the rail line



Lavey anti-tank barrier to block approach to Fort Savatan and to the Dailly Massif in the background *T. McGovern*



Fort de Vernayaz occupies a unique location at the mouth of the Trient Gorges overlooking the rail line and Verayaz *C. Penfold*

that climbs up to Salvan. The rail tunnel had armoured doors while several machine guns and artillery emplacements were evident in the cliff face above the rail line.

We now drove back to Martigny to Hôtel-Restaurant Forclaz to get ready for our final tour dinner. We walked from our hotel to a very tall and distinct building topped by a restaurant (at least tall for Martigny!). It was to be the setting for a farewell dinner organised by our Swiss hosts where many of those who had so generously given of their time to show us round and allow us to see the unique military architecture of Switzerland were present. All the elements were there wine, good food, good company, and Serge with a bottle of schnapps – or maybe two. There were deserved thanks to Terry McGovern and Martin Egger too. After several speeches giving thanks and wishing farewell, we return to the hotel for our last night in Switzerland.

Day 9 – Sunday – Aug 19th – Return to Zurich Airport

We left the hotel early for our almost four-hour drive to Zurich Airport. Our journey on the motorway allow us to review our



Farewell dinner for the CDSG/FSG Joint Tour to the Swiss Defenses where good food and drink was provided
T. McGovern

tour with our old and new friends as well as to discuss future tours. There were hurried farewells with one eye on departure boards, with some taking onward flights and some staying for a few more days. The Joint CDSG/FSG Tour to the Defenses of Switzerland 2018 was over.

Attending this tour were Julie Ann Antal, Michel van Best, Hans Boerst, Patricia Boerst, Carl Chappell, Craig Dyson, Martin Egger, Mariusz Jachimowicz, Tom Kavanagh, Terry McGovern, Gary Paliwoda, Ian Wolfe, David Bevan, Roy Bowden, Stephen Cannon-Brookes, Norman Clark, Ragnall Craighead, Phillip Doorbar, Barrie Eden, Christopher Foss, Alan Fyson, Martyn Gregg, Jean-Philippe Guichard, John Harding, J. Henry L. Humphreys, Svein Wiiger Olsen, David Page, Clive Penfold, John Shipman, and Tim Wellburn. We had a short guest appearance from Christian Casartelli and Stefan Klinger as well. The success of the tour was primarily due to the effort of our local organizers, Martin Egger, Maurice Lovisa, Serge Monnerat, and Pascal Bruchez, and our support team of drivers and local guides. They made sure we were able to visit every site on our tour plan and that local guides were on hand with keys to allow us inside and to explain each fort's form and function.

* * * * *

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The Service of Coast Artillery, by F. Hines and F.W. Ward (1910), hardcover reprint \$40 / \$60

Permanent Fortifications and Sea-Coast Defenses, Congressional Report No. 62, U.S. House of Rep. (1862), hardcover reprint \$30 / \$45

American Seacoast Matériel, Ordnance Dept. Doc. #2042, (1922), Hardcover reprint \$45 / \$65

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