



The Military Survey (Geo) Branch

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Forth Bridges Survey

By SSgt Ollie Teasdale, Sgt Scott Vickery, Cpl Warren Slade, LCpl Kevin Bryant - 42 Engineer Regiment (Geographic)

Introduction

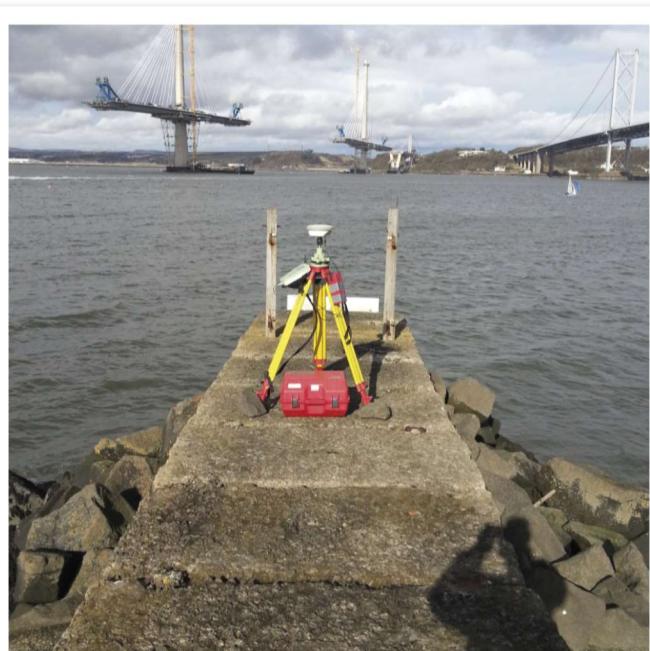
The end of February 2016 saw a four man survey team from 42 Engineer Regiment (Geographic) deploy to the Firth of Forth in Scotland. Tasked by the United Kingdom Hydrographic Office (UKHO) at the bequest of the Navigation Officer on board HMS Queen Elizabeth, the team's objective was to conduct a survey of the navigation lights on the Forth Bridge and Forth Road Bridge. This was to be done in collaboration with HMS Gleaner, the Royal Navy's home waters coastal and inland waters survey vessel. This article details the geodetic survey work undertaken by surveyors from 42 Engineer Regiment (Geographic).

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Background

Having been built in modules at various shipyards around the United Kingdom the Royal Navy's new aircraft carriers are currently being assembled in the Rosyth Dockyard, Fife. Located on the north bank of the Firth of Forth approximately ten kilometres west of Edinburgh, Rosyth has played host to many warships over the years; most notably the Dreadnought Battlecruiser Squadron used Rosyth as its war station during the First World War. More recently the Invincible class carriers were frequent guests with HMS Illustrious undergoing refit there in 2010/11. Standing between Rosyth and the open ocean are two and a half large obstacles. The first is the half, more commonly known as the Queensferry Crossing. This is the new bridge being constructed over the Firth of Forth due to be completed in the winter of 2016/17. The second is the Forth Road Bridge. The current road bridge was constructed in the late 1950's and early 1960's and is of suspension bridge design. The third and final obstacle is the iconic Forth Bridge. Built in the late nineteenth century, the Forth Bridge was and still is a marvel of engineering, so much so it is now listed as a world heritage site along with the likes of the Great Pyramids of Giza and Stonehenge.



GNSS observations on a pier. Note the new Queensferry Crossing under construction in the background

HMS Queen Elizabeth and her sister ship the Prince of Wales are the largest warships ever commissioned for the Royal Navy. It was therefore quite understandable that the Navigation Officer of HMS Queen Elizabeth would be keen to ensure that there wouldn't be any mishaps when the ship sails out of the dockyard for sea trials later in the year. The Firth of Forth is well accustomed to dealing with large ships with a regular seasonal flow of cruise liners however the new carriers are quite a different proposition. The Admiralty Chart published by the UKHO gives worst case scenarios for the clearance under the bridges with maintenance gantries in place and at Highest Astronomical Tide. Taken at face value and given the vessels design heights they simply would not fit under the bridges. The Port of Edinburgh Authority have published values for the clearance under the bridges that indicate the carriers would fit with perhaps a metre or so to spare but no survey data to back it up. Combined with the significant changes to the bathymetry in the Firth of Forth due to the construction of the Queensferry Crossing a complete survey of the area was deemed appropriate.

Having the Queen's namesake multi-billion pound flagship of the Royal Navy crash into a world heritage site on her maiden voyage would not make for pretty headlines. To that end HMS Gleaner were tasked with conducting a full bathymetric survey of the Firth of Forth whilst 42 Engineer Regiment (Geographic) were tasked with determining the heights of the navigation lights on the Forth Bridge and Forth Road Bridge.

Planning

The task first came onto the radar in the autumn of 2015. On first appearances it appeared a relatively simple problem. "How hard can it be to measure the clearance of a bridge above the water?" was the stock answer given by the uninitiated. The Forth Bridge was indeed a fairly straightforward problem. Built using the cutting edge technology of its day, the Forth Bridge takes its strength from its cantilever design and the sheer weight and strength of the materials used in its construction. This means it is effectively rigid and stands the strains imposed upon it by man and the elements through brute force. The Forth Road Bridge is quite a different prospect. Modern construction techniques are based on different principles. Despite being built in the middle of the twentieth century the Forth Road Bridge is still a modern structure. It is designed to move with the forces imposed on it and in so doing that is where its strength lies.

The Forth Road Bridge is quoted as having a maximum deflection (up and down) range of approximately ± 3 metres. It has a longitudinal range of motion of approximately ± 7 metres. As surveyors we are used to positioning static features at the millimetre or centimetre level. There was also some caution at the prospect of accepting the task. The stakes for getting it wrong would be high and incredibly embarrassing.

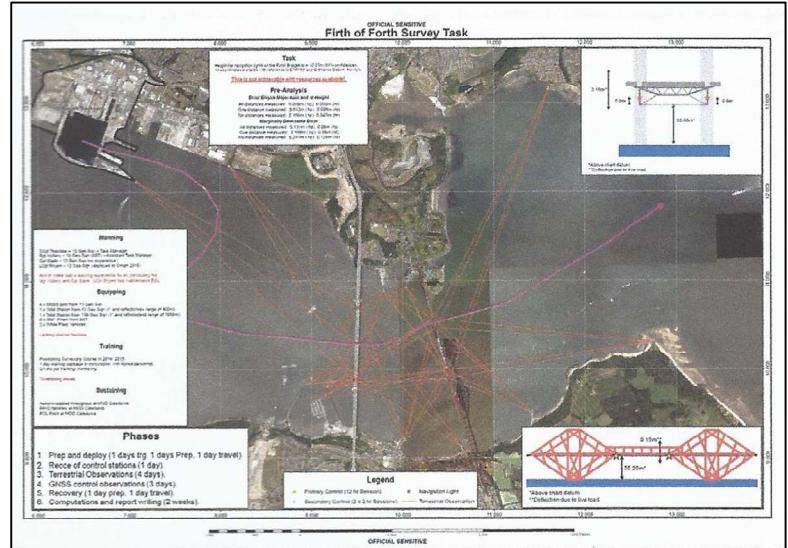
A reconnaissance was conducted in January. During this visit to Rosyth the problem was discussed with the crew of HMS Gleaner and work already undertaken was highlighted. The Gleaner crew had already established a number of geodetic control stations in and around the Firth of Forth and identified potential terrestrial observation stations. With this information in hand a meeting of the Royal Engineers (Geographic) community's survey experts was convened to discuss the problem. This saw involvement from within the regiment along with participation from 135 Geographic Squadron (Volunteers) and the Royal School of Military Survey. A number of methods were discussed and discounted as being either unsuitable or not within the capabilities of the Regiment. Finally, with a plan formulated the task was scheduled to commence in late February 2016.

Method

The fieldwork was to be based on three phases. Firstly was a detailed reconnaissance to identify the maximum number of suitable sites to conduct terrestrial observations. This reconnaissance was also to include identifying suitable reference objects (ROs) and indivisible stations. Once the stations had been identified Global Navigation Satellite System (GNSS) static phase observations would be conducted to derive precise geodetic coordinates for the observation stations and ROs. The final phase was the observation of horizontal and vertical angles and distances to the navigation lights. In the case of the Forth Bridge this would be a fairly straightforward intersection problem, albeit with relatively poor station geometry (the targets are only visible from one side of the bridge). The road bridge would be more challenging. The road bridge would be more challenging. It has become standard practice to use instrument manufacturer published standard errors in the stochastic model for adjustment computations. Given the high levels of movement in the bridge and the fact we would be observing with 1" instruments this approach would not be suitable. Kinematic GNSS observations at the navigation lights would have been the optimum solution and is the standard industry practice for monitoring and measuring bridges and large structures. Unfortunately the location of the navigation lights on the underside of the bridge meant that GNSS observations would not be suitable. Instead the same approach of using angles and distances would be applied. Movement of the bridge would be accounted for by observing eight rounds of angle and distances, a total of sixteen measurements to each target from each observation station. Instead of applying global standard errors to the covariance matrix in the adjustment computations the standard deviations calculated from the observations would be used. This would ensure that the solution would provide a realistic measure of absolute accuracy whilst maintaining statistical significance with regards to the standard tests applied to network adjustments.

Execution

A congested calendar meant that a maximum of two weeks could be spent conducting field work. As anyone who has ever visited Scotland will tell you, the weather can't be relied upon. In the event of poor weather, particularly visibility, the plan would fall over instantly. It was with great surprise and pleasure that the team arrived in Rosyth with the sun shining and little or no wind. With the weather set fair for the next week these were perfect observing conditions. Given the weather it was decided to change the plan slightly.



Planning map for Forth Bridges survey task

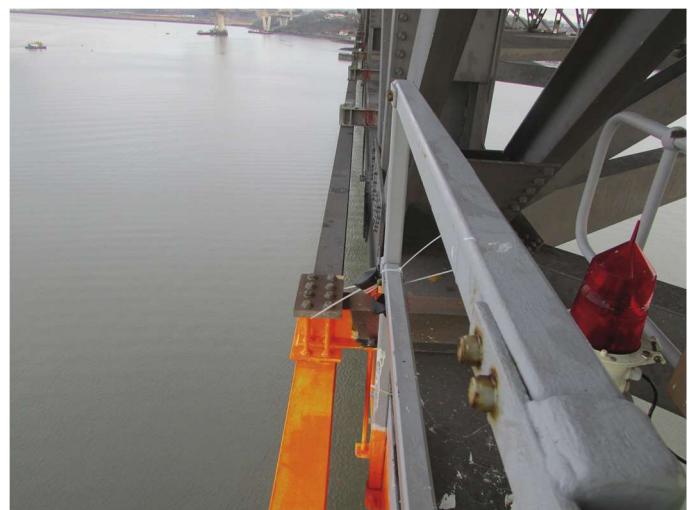
The reconnaissance would go ahead as planned but the terrestrial observations would commence immediately. Pre-analysis of the proposed solution had identified that distance measurements would be critical in determining the 3D coordinates of the navigation lights. This was caused by the poor observation geometry imposed on us. Luckily, for this task the height component was significantly less affected by a lack of distance measurements than the horizontal.

Some of the observations being made were nearly three kilometers in distance. Equipped with an Electronic Total Station capable of measuring up to one kilometer to any surface, the fixing of retro reflective targets to the structures, particularly the road bridge was critical. This meant that we would have to access the bridges. Efforts were made to contact the bridges authorities prior to our arrival. In the case of the Forth Bridge we were unsuccessful in gaining access to the bridge but Amey who manage the Forth Road Bridge were extremely accommodating. After being briefed on the health and safety implications of working on the bridge and in particular down in the gantries the senior bridge civil engineer gave us a fascinating talk on its construction and maintenance.

The bridge had recently been closed to traffic due to a stress fracture around the piers. This was high profile and made national news. We received a full explanation of what had happened, how it was identified and what remedial work had been done to rectify the problem. From there we were taken on a guided tour of the bridge. Clad in full visibility suits and hard hats we climbed down into the gantry and located the navigation lights. There, we attached our prisms as close to the navigation lights as possible. The sensation of being fifty plus metres above the water stood on a moving platform was quite unnerving and leaning out over the side to attach the prisms was not to the liking of all team members.



Sgt Scott Vickery and a member of HMS Gleaner on the Forth Bridge



Prism attached to Forth Bridge next to navigation light

Terrestrial Observations

Once the prisms were in place and the observation stations were suitably identified and marked, observations could begin. Terrestrial observations were conducted over a four day period where we were blessed with unseasonably good weather. The observations were conducted in two teams with members of HMS Gleaner spending one day in the field working in collaboration with us. A number of the stations being used for observations were located on piers that are only accessible at low tide. There were a number of occasions when observations were conducted with the water lapping at the team's feet. One incident saw Cpl Slade and LCpl Bryant making a mad dash to recover an RO before it was washed out into the North Sea. Despite these minor issues the observations were completed without a hitch. Even a number of successful distance observations were made in reflectorless mode onto the Forth Bridge



Observations onto the Forth Bridge



Observations from the high ground

GNSS Observations

After a day off in Edinburgh watching the Six Nations it was back to work on the middle Sunday. The GNSS observation phase hailed in a significant change for the worse in the weather. Over the next few days there was lots of sitting in the rain for hours on end. Static observations were conducted at two control stations located on secure MOD sites both north and south of the Firth of Forth. These stations along with the OSNet station in Edinburgh were subsequently used as control for positioning the observation stations located around the bridging sites.

Heighting HMS Queen Elizabeth

The final field observations conducted were heighting HMS Queen Elizabeth. The ship has an associated design height but as the plans have changed over time, problems with construction been encountered it was decided to measure the keel to mast height of the ship. This was done using an arbitrary control network adjacent to the ship. Horizontal and vertical angles and distances were then measured between the plimsoll lines around the waterline and the various masts and radars on top of the vessel. From these measurements and knowing the offset between the keel and the plimsoll lines a mast to keel height was determined. The ship is moored in a controlled harbour which shouldn't be affected by the tide. To ensure that this was the case the tide was monitored by the crew of HMS Gleaner throughout the observations and proved to have changed by a negligible amount.

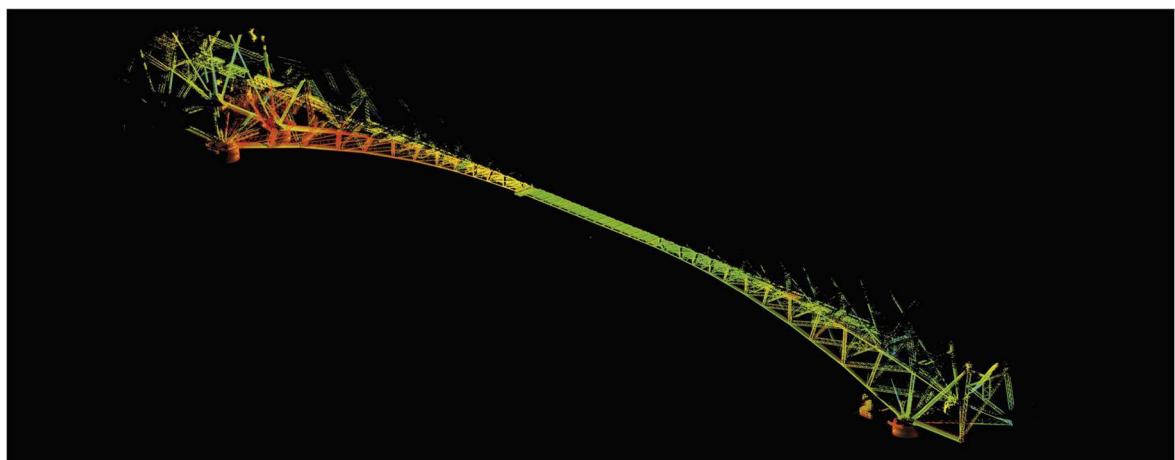
Computations

Having collected the observational data now came the time to crunch the numbers. To ensure the most precise results possible were achieved a transverse Mercator projection with its central meridian running through the centre of the two bridges was designed. This effectively allowed the computations to be conducted on a flat earth assumption and thus ignore the national grid scale factor. The most difficult aspect of the computations was ensuring the correct weighting was applied to observations. Particularly with the road bridge the types of quality statistics were exceeding those usually associated with precision survey. The temptation to exclude observations from the computations due to high residual values was high. Due to the high deflection and longitudinal movement of the bridge all observations had to be scrutinised.

Around the same time as we conducted our survey Historic Scotland had commissioned a laser scanning survey of the bridges for historical recording purposes. They were kind enough to provide a sample of the point cloud dataset for us to use as an independent check. The heights derived from the point cloud dataset compared favourably with the heights derived from our computations and thus gave confidence in our results.



Forth Road Bridge from Historic Scotland point cloud dataset



Forth Road Bridge from Historic Scotland point cloud dataset

Results

The burning question that everyone will now want to know is will the ships fit under the bridges? Well, unfortunately it's not as simple as that. The answer is yes they will, but only on certain tides. This all makes getting the ships out to sea a complicated business. Fortunately that is for the wet surveyors to answer.

(This article was first published in the 2016 Edition of *The Ranger*)

Hydrographic Instruction 1490 – Firth of Forth.

By Lieutenant Marc Taylor RN, Commanding Officer, HMSML GLEANER

2015 proved to be another busy year for Her Majesty's Survey Motor Launch GLEANER. The year began in Dover before HMSL Gleaner moved on to conduct surveys in Plymouth, Guernsey and Campbeltown. Following a transit through the Caledonian Canal she finished off the year on the Firth of Forth, where the Royal Navy's newest and largest Aircraft Carriers ever built, *HMS's Queen Elizabeth* and *Prince of Wales*, are currently being built.

For the nine personnel of *HMSL Gleaner* - at 16m the Royal Navy's smallest commissioned vessel - the survey tasking in the Firth of Forth incorporated everything and all in the name of Carrier Strike and the future departure of *HMS Queen Elizabeth* from Rosyth. Measurements in bathymetry, topography, tidal streams and bridge heights all had to be obtained whilst meeting the challenges of major defects, the Scottish winter weather and the demanding estuarine environment.

HMSL Gleaner was tasked with providing modern, accurate geospatial data to support the safe departure of *HMS Queen Elizabeth* from Rosyth and out into the deep water channel within the Firth of Forth. Bathymetric data gathering was split into three areas: the main channel passing under the iconic Forth Road and Rail Bridges; the Rosyth Channel (post dredging); and finally the main basin in Rosyth where *HMS Queen Elizabeth* is currently berthed. Assessing and analysing the complex tidal regime proved challenging, exacerbated by the fresh water outflow in the winter months. Of particular importance to the survey was collection and analysis of tidal stream data in the Forth as this had last been collected in the 1950s. This was on top of the requirement to calculate the clearances *HMS Queen Elizabeth* would have under the two bridges that currently span the estuary. The third bridge, the Queensferry Crossing, is the newest road bridge and construction was in its infancy when *HMSL Gleaner* arrived in the area. Thankfully, *HMSL Gleaner* was not on her own when it came to calculating bridge heights; a detachment from 42 Regiment Royal Engineers (Geographic) was on hand to support the topographic elements of the survey.

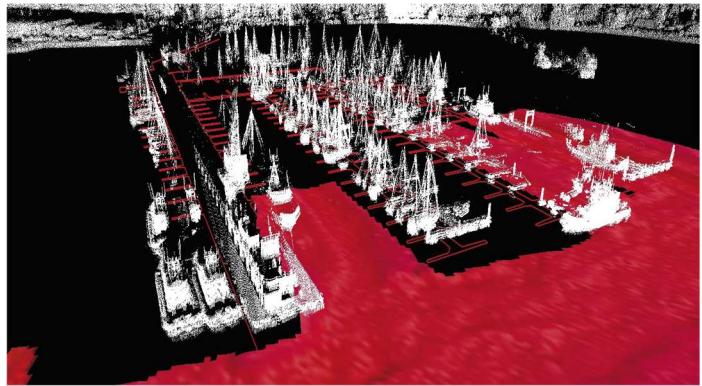
Collection of soundings began in early November 2015, following the establishment of tidal infrastructure. An existing tide pole and pressure gauges installed in Rosyth and in South Queensferry provided the main tidal data source. Validations were also conducted on the UKHO Vertical Offshore Reference Frame (VORF) model for future use. A number of geodetic control marks were established in the survey ground to support future topographic work and for VORF validation and verification purposes. November also saw the first deployment of four Acoustic Doppler Current Profilers (ADCPs) to gather data for the tidal stream analysis.

These ADCPs provided tidal flow data through the water column (seafloor, mid water and water surface). In addition to all the survey work, November was also busy with a Commanding Officer's supersession and a trial of two marine LiDAR systems. These systems were used to map the topography around the bridges across the Firth of Forth. Both systems had integrated IMU/GNSS navigation systems and were secured to the wheelhouse roof of *HMSL Gleaner*. Following installation and calibration, data collection was able to begin in short order and in a few hours the whole area around the two bridges was surveyed. These impressive results, shown in image 1, demonstrated how quickly and efficiently accurate topographic data can be acquired and used to support inshore survey work.

The data obtained provided spheroidal heights of the bridges and using the UKHO VORF model, reductions were made to Chart Datum. To aid further qualitative assessment of these systems, RTK mapping was conducted in Port Edgar Marina and overlapping data sets were fused together and showed excellent correlation. Image 2 shows bathymetric, topographic LiDAR and RTK data for Port Edgar Marina combined and displayed using Fledermaus software.



HMS Gleaner the Royal Navy's smallest commissioned vessel



2. The repeatability of all three systems: Multibeam bathymetry, RTK mapping of the pontoons & LiDAR imagery of Port Edgar Marina, South Queensferry

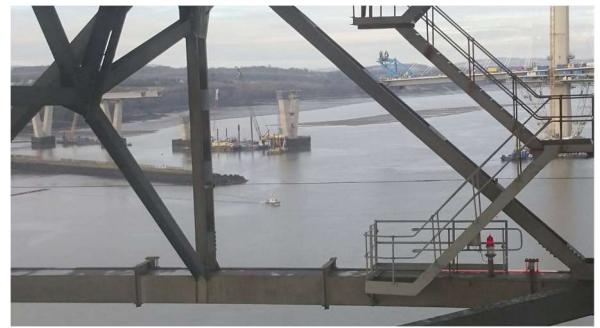
The initial bathymetric focus, using *HMSL Gleaner*'s Kongsberg EM2040 multibeam sonar, was in the main navigation channel in the Firth of Forth. Although the Scottish winter weather lived up to expectations, it provided enough of a window to allow for a significant area to the west of the bridges to be completed prior to Christmas leave. During this period, it became evident that the sound velocity (SV) regime in the area was particularly complex, resulting in unacceptable uncertainty in the outer most parts of the multibeam swath which required careful editing of the data to remove the erroneous soundings. The extremities of the swath are subject to the highest degree of uncertainty when the SV values have the greatest variation. This was clearly visible on *HMSL Gleaner*'s high resolution EM2040 system. Notwithstanding this, survey progress was good and *HMSL Gleaner* departed the survey area in December as scheduled to conduct her annual maintenance period in the northeast of England. However, a major defect threatened to prevent *HMSL Gleaner* from returning to finish the survey.

On craning the launch out of the water to commence the annual maintenance package, it became evident that the blister pod attachment had failed during the transit from the Firth of Forth to Sunderland; the sonar had detached from the hull and was no longer present! Whilst plans were made in earnest to rectify the situation, it became clear that a repair would not be in place for some time. To that end a contingency plan was swiftly developed to ensure the important survey could continue uncompromised. The Ship's Company of *HMSL Gleaner* was loaned the Fleet HM Unit's *Survey Motor Boat, Shackleton*, to use in the interim. *SMB Shackleton* is another highly capable survey platform, and although slightly smaller and less tolerant of Scottish winter weather, she is also equipped with a Kongsberg EM2040 multibeam system and supporting Applanix IMU and C-Nav GNSS receiver. This survey system set-up is consistent throughout the RN's Hydrographic capability.

On receipt of *SMB Shackleton* two days of calibrations and comparison between the multibeam data already gathered with *HMSL Gleaner* were conducted to ensure good repeatability. Bathymetric data gathering recommenced in earnest at the start of February. Once again the SV regime proved to be a challenge to manage, particularly during peak ebb and flood tides and after significant precipitation. The fact that some of the precipitation was snow meant fresh water run-off was often significantly delayed with the consequent effects often evident long after the precipitation. Where data required significant removal of erroneous soundings in the outer beams extra lines were run in order to meet the necessary data density requirements for object detection. Sounding continued throughout February with *SMB Shackleton*, and four ADCPs were re-deployed to gather improved tidal flow information around the bridge areas. During February, *HMSL Gleaner*'s team was also joined by several members from 42 Regiment Royal Engineers (Geographic). They were tasked with observing the heights of the bridges at each navigation mark on both the east and west sides of the bridges. Access to these navigation marks, through the normally restricted gantries leading down from the pedestrian walkway, was made available to allow occupation as shown in image 3. Image 4 shows the area of the navigation marks with *SMB Shackleton* departing Port Edgar Marina for a day's sounding.



4. The view from the navigation gantry under the Forth Road Bridge, in the background you can see SMB Shackleton who has just sailed from Port Edgar Marina.



3. The prism reflector installation by 42 Regt RE around port (west) navigation mark on the Forth Road Bridge.

To calculate clearance we also needed to know the masthead heights of *HMS Queen Elizabeth*. As-built heights were taken from technical drawings and provided by the ship's Navigating Officer. An independent check of these height calculations was then undertaken using the same principles as that used to height the bridges. Using 42 Regt's Leica Total Station, which unlike GLEANER's, had a reflectorless Electronic Distance Measurement (EDM) function, angles and distances were taken without the need for personnel to occupy *HMS Queen Elizabeth*'s masts. All data from these observations, together with that from the bridges, was fed back to her Navigating Officer to allow the accurate calculation of bridge clearances for the departure of the Royal Navy's future flagship. Reassuringly, the results of all measurement techniques used (both LiDAR and Total Station) to height the two bridges closely aligned, providing the reassurance that *HMS Queen Elizabeth* should pass safely under the bridges at low tide. The bridge height tasking was a great opportunity for Royal Navy surveyors to work alongside their Army counterparts. The different equipment and observation procedures prompted interesting discussion and analysis on how to get the very best out of our equipment and further interoperability between the Hydrographic Meteorology (HM) branch of the Royal Navy and 42 Regiment Royal Engineers in the future.

Before returning *SMB Shackleton* to its parent unit, all four ADCPs were recovered from their second deployment and the data analysed. Although this data has not yet been verified by the UKHO, early indications show that the tidal streams are significantly stronger than predicted. This is hardly surprising given that the existing road bridge was not in place when the last set of observations were conducted and now a second road bridge is nearing completion. As the water funnels between the bridge supports, it was no surprise to see a greater tidal flow than the predicted tidal stream. Given that the ADCP can measure tidal flow (amongst other variables) in the upper, middle and lower water column, it showed an inflow of a large volume of saline water at depth, together with the outflow at a greater speed at the surface. This further highlighted just how dynamic the whole area is and why accurate SV modelling and measurement was proving challenging, resulting in uncertainties in the bathymetric data.

SMB Shackleton was returned with gratitude to Fleet HM Unit in early March, and following her prolonged and unplanned stay in the northeast of England, a repaired and fully operational *HMSL Gleaner* returned to Scotland. Following dredging work, the survey of the Rosyth Channel was undertaken and wreck investigations completed.

Nearing the completion of the survey, *HMSL Gleaner* locked in to the Rosyth Main Basin to gather bathymetric data in the immediate vicinity of *HMS Queen Elizabeth*. This provided a fresh challenge to the team as the basin is impounded water and cannot be related directly to Chart Datum. To rectify this, a tide gauge was installed within the basin and a gauge-to-gauge comparison conducted between it and existing tidal infrastructure during a brief period when the lock gates were open, allowing a free flow of water into the basin. Joining *HMSL Gleaner* to finish off the survey was *HMS Queen Elizabeth*'s new Commanding Officer, Captain Jerry Kyd Royal Navy who drove a few survey lines himself before inspecting his latest Command up close from the seaward side.

There was always time for a photo opportunity and luckily the Scottish spring weather was kind, providing a well-lit backdrop to show the smallest and largest Royal Navy vessels together, as seen in images 6 and 7. It was pleasing to hear from Captain Kyd how the work from a small team of surveyors from *HMSL Gleaner* and 42 Regt plays such a pivotal role supporting the strategic Carrier Strike capability.

You can see that the imagery was produced in late 2015 owing to the very little that existed of the new road bridge in the background.



HMSL Gleaner conducts survey operations inside the main basin in the Scottish spring sunshine. the background.



The Navy's biggest and smallest vessels basking in Rosyth with HMS Queen Elizabeth firmly in the background.

(This article was first published in the 2016 Edition of *The Ranger*)



Branch members enjoying the hospitality of Lieutenant Commander Marc Taylor RN on board HMSL Gleaner in March 2017

13 Corps Field Survey Company RE – Evacuation from France in May 1940

War Diary of 13 Corps Field Survey Company RE OC Major H C O'Hara Moore RE

Location – De Groote Kwinte Farm, Furnes-Coxyde France

25th May 1940

Also a quiet day. Nothing to report. Ordered about 1900 to pack up and move to area FURNES-COXYDE and in any case north of canal. All packed up and ready to move by 2100 hrs. Lt Belfield sent ahead to reconnoiter. Travelled in darkness and arrived at destination without accident at 00.30 hrs. One party became slightly lost and did not arrive until 03.30

26th May 1940

Some emergency printing done. Helios exposed to sun and developed in a stream produced quite good results. Col Fryer arrived about 1300 hrs. and took back with him copies of sheet 30 all sheets. Remainder of day quiet

27th May 1940

Quiet day except for printing of copies of composite sheet 40. Recovery section in farm opposite moved out after setting all their vehicles and stores on fire. Afternoon had certain amount of aerial activity. One 'Hurricane' pilot who had to make a forced landing was brought back to the farm and entertained. Sent on his way with a 'Gunner Major' who said he would get him back to England

28th May 1940

0200 hrs. Col Fryer and Capt. Wilson arrived with batman etc., and order to report to Q.M.G at La Panne. OC and Col Fryer went to La Panne and the Coy was given orders to defend FURNES. After short rest OC, Lt Belfield and 2/Lt Halliday went to see FURNESS and the approaches to it from the South and East, leaving 2/Lt Sykes in charge of the unit with orders to destroy all material valuable to the enemy but not to destroy any M.T.

Recce showed that all bridges were prepared for demolition but though there were isolated Belgium Troops about there appeared to be no one with any authority and cooperation with them was quite impossible. Returned to unit after Recce to give orders etc.

0900 hrs. Orders issued verbally. 0930 approx Col Fryer and OC went to have a final look round for location of HQ etc. Met a Belgium Officer who protested that the Belgium's were themselves defending FURNESS and though this looked absurd it was agreed to go and interview the Belgium General at his HQ in FURNESS. He also protested that he was defending the Town and that he did not want any more help! In view of this Col Fryer returned to La Panne for further instruction from Q.M.G. He returned about 11.30 with the news that the unit was to go to NIEUPORT to assist in the defence of the left flank. Some transport and drivers were to remain at FURNESS available for the use of those troops who were to defend the town.

Unit arrived at outskirts of NIEUPORT. Col Fryer and OC went forward to recce. Discovered that the bridge carrying the main road into the town from the West had been blown but recce to either side showed other bridges intact. OC found the railway bridge prepared for demolition and with electric lead stretching to the East! Followed this lead and having found its end brought it and an exploder back to the western bank; had to leave them there for the moment.

On completion of all the recce it was discovered that nearly all the bridges over the canal had been prepared for demolition and were connected for Electrical firing so 2/Lt Halliday was sent in a truck together with 1865280 Sgt Clarke L and 1869190 Cpl Fugler F G to blow up as many of these bridges as possible. Most were overcharged and all went up.

Meanwhile unit took up defensive position as allotted in the centre of the line (right boundary the NIEUPORT – LA PANNE road inclusive and left boundary a track running parallel to the road and about 150 x away exclusive).

Positions dug in by 1700 hrs. Held with two posts forward under Lt Belfield and 2/Lt Halliday and one in support. Some desultory firing from a position about $\frac{1}{2}$ mile in front so 2/Lt Halliday was sent out to reconnoiter and find what it was it was. The unit had been told that there was no one in front. Discovered that some parties of R.A. and two or three armoured cars were holding the canal and the two bridges to the east of the town that had not been blown.

On taking this information back to HQ orders were given to the OC to advance his posts to the eastern edge of the town so as to hold the eastern branch of the canal. OC accordingly went forward to recce but found that the Germans were already crossing the two bridges and that the scheme was no longer possible. Meanwhile 2/Lt Halliday having volunteered to try to blow these bridges went forward again with two RASC bombers but found the enemy already over the bridges and was unable to get near enough to the bridge. Remainder of night quiet.

Location – Nieuport

29th May 1940

Quiet night. All posts ‘stood to’ at dawn but no visible activity. During the morning skirmishing action developed on our left front together with a little mortar fire. Otherwise quiet. About 1403 hrs an attack developed on our right front and troops on our right began to retire without orders and for no reason at all! This retirement was stopped. No further attack developed and the only firing done by the unit was with one of its Bren Guns.

About 1700 orders were given that we would be relieved by the Royal Fusiliers of the (?) 11th Inf Bde who were staging a counter attack. This attack started about 21.45 and appeared quite successful.

30th May 1940

About 00.30 hrs unit started withdrawing according to orders. This was successful and unit made contact with its M.T. Vehicles at a rendezvous about a mile to the rear of operation HQ.

Location – La Panne

About 04.00 hrs arrived at La PANNE and were ordered to wait in the reception camp until such time as boats were available. Quiet time under the trees until about 22.30 hrs. When orders were given for the unit to embark. Reached the beach about 23.00 hrs and had to wait there until about 04.00 hrs, 31st. Quite uneventful.

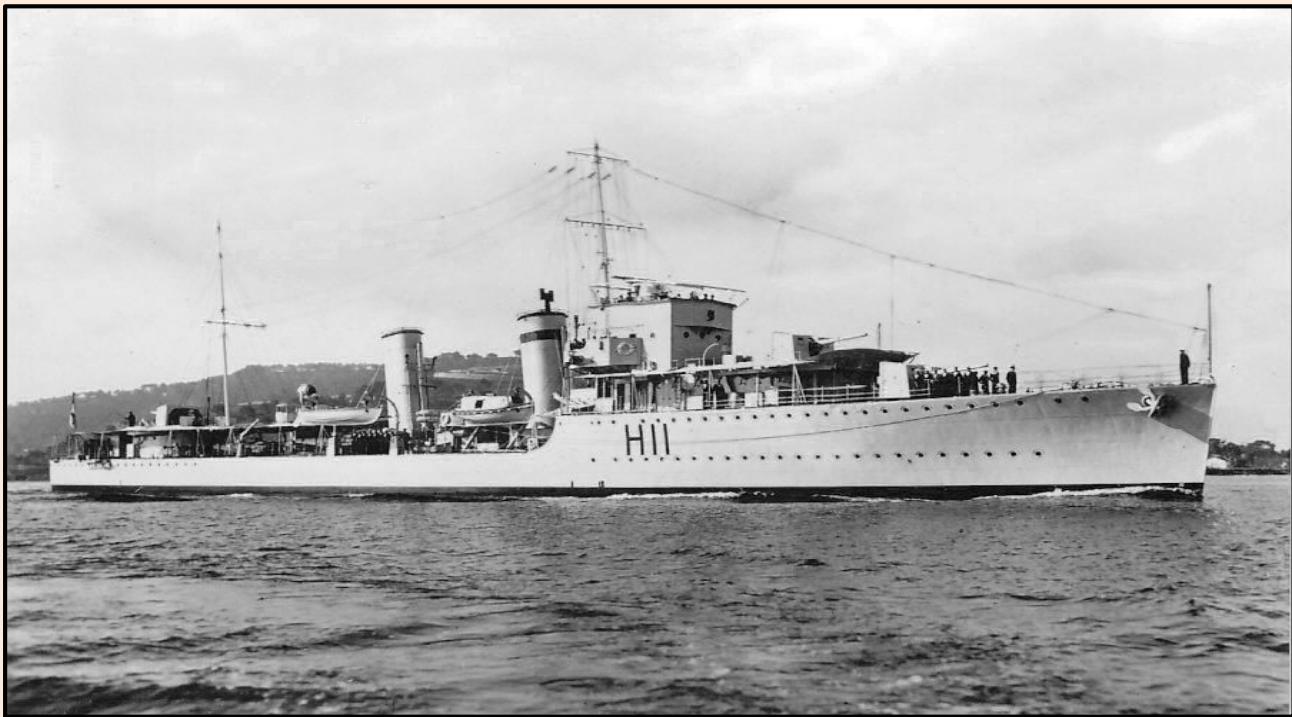
31st May 1940

04.00 Embarked in *HMS Basilisk*

06.30 Left for Dover arriving there about 09.30 and then sent by train to various reception camps. Some went to Reading some to Shrivenham some to Bristol etc.

Casualties were 1 man died of wounds
8 men wounded

H C O’Hara Moore Major RE



HMS Basilisk

HMS Basilisk was a B-class destroyer built for the Royal Navy around 1930. Initially assigned to the Mediterranean Fleet, she was transferred to the Home Fleet in 1936. The ship escorted convoys and conducted anti-submarine patrols early in World War II before participating in the Norwegian Campaign. *Basilisk* was sunk by German aircraft during the Dunkirk evacuation in 1940.

Basilisk displaced 1,360 long tons (1,380 t) at standard load and 1,790 long tons (1,820 t) at deep load. The ship had an overall length of 323 feet (98.5 m), a beam of 32 feet 3 inches (9.8 m) and a draught of 12 feet 3 inches (3.7 m). She was powered by Brown-Curtis geared steam turbines, driving two shafts, which developed a total of 34,000 shaft horsepower (25,000 kW) and gave a maximum speed of 35 knots (65 km/h; 40 mph). Steam for the turbines was provided by three Admiralty 3-drum boilers. *Basilisk* carried a maximum of 390 long tons (400 t) of fuel oil that gave her a range of 4,800 nautical miles (8,900 km; 5,500 mi) at 15 knots (28 km/h; 17 mph). The ship's complement was 134 officers and enlisted men, although it increased to 142 during wartime.

The ship mounted four 45-calibre QF 4.7-inch Mk IX guns in single mounts. For anti-aircraft (AA) defence, *Basilisk* had two 40-millimetre (1.6 in) QF 2-pounder Mk II AA guns mounted on a platform between her funnels. She was fitted with two above-water quadruple torpedo tube mounts for 21-inch (533 mm) torpedoes. One depth charge rail and two throwers were fitted; 20 depth charges were originally carried, but this increased to 35 shortly after the war began. The ship was fitted with a Type 119 ASDIC set to detect submarines by reflections from sound waves beamed into the water.

The ship was transferred from the Western Approaches Command on 30 May to support the evacuation from Dunkirk. She made two trips to Dover during the following day and evacuated a total of 695 men (including 13 Field Svy Coy). *Basilisk* returned to La Panne to load more troops on the morning of 1 June and was attacked three times by German bombers. One bomb from the first wave detonated inside the No. 3 boiler room, killed all of her boiler and engine room personnel, fractured her steam lines and knocked out all her machinery. Near misses from the same attack buckled the sides of her hull and her upper deck. The ship's torpedoes and depth charges were jettisoned to reduce top weight and the French fishing trawler *Jolie Mascotte* attempted to tow *Basilisk*. A second attack caused no further damage, but caused the French ship to drop the tow. The third attack around noon sank *Basilisk* in shallow water at 51°08'16"N 02°35'06"E. *Jolie Mascotte* and the destroyer *Whitehall* rescued eight officers and 123 crewmen from the ship. *Whitehall* then destroyed the wreck with gunfire and torpedoes. (Wikipedia)

Recommendation for Award – 2/Lt A J D Halliday RE

Wt. 42853/120. 800m. 2/40. W.S. Ltd. 61-6138. Forms/W.3121/6.			Army Form W.3121.		
1st Corps Troops			Date recommendation passed forward 447		
Brigade	Division	Corps	Received	Passed	
Schedule No. (to be left blank)	Unit 13 Fd Survey Coy, R.E.				
Army No. and Rank Second-Lieutenant			Brigade		
Name A. J. D. HALLIDAY (Christian names must be stated)			Division		
Action for which commended (Date and place of action must be stated)	Recommended by	Honour or Reward	(To be left blank)		
<p>For conspicuous gallantry on the afternoon and night of 28/29 May at NIEUPORT in connection with the blowing up of the bridges which had been left undone by the Belgians after their surrender in the early morning of 28th May.</p> <p>Lieut. Halliday successfully blew up three important bridges on the afternoon of 28th May, and in the evening he reconnoitred two other large bridges to the East of NIEUPORT to see if it were still possible to blow them up. He found the enemy crawling over one of these bridges and engaged them with Mills bombs, and suffered some casualties in the party who were with him. Lieut. Halliday also tried to blow up another bridge further North, but found this under enemy rifle fire which made it impossible to get at the electric leads which the Belgians had left on the far bank.</p> <p>Lieut. Halliday set a magnificent example of courage to a scratch body of men hastily collected to defend the</p>	Commander 1 Corps.	M.C.			
P.T.O.					

1st W. 167/909 (11A)			B/N 12 W. 167/909 (11A)		
111			111		
exposed left flank of the B.E.F. There is no doubt that the successful demolition of these bridges delayed the advance of the Germans at NIEUPORT.			P.T.O.		

Source: War Diaries for 13 Field Survey Company RE - TNA file WO 167/909
2/Lt Halliday - Recommendation - TNA file WO 373/15/387

Composition of I Corps in the Battle of France 1940

GOC: Lieutenant General M.G.H. Barker

1st Infantry Division

2nd Infantry Division

48th (South Midland) Infantry Division

Royal Artillery

27th Army Field Regiment (21/24 & 37/47 Batteries)

140th (5th London) Army Field Regiment (366 (10th London) & 367 (11th London) Batteries)

3rd Medium Regiment (2/11 & 6/10 Batteries)

5th Medium Regiment (15/17 & 20/21 Batteries)

52nd (East Lancashire) Light Anti-Aircraft Regiment (154, 155 & 156 Batteries)

2nd Light Anti-Aircraft Battery

1st Survey Regiment

Royal Engineers

102nd, 107th, 221st Army Field Companies

105th Corps Field Park Company

13th Corps Field Survey Company

Infantry - Machine Gun

2nd Battalion, Cheshire Regiment

4th Battalion, Cheshire Regiment

2nd Battalion, Manchester Regiment

(During the Second World War, I Corps' first assignment was to the British Expeditionary Force (BEF) where it was commanded by General Sir John Dill, and then Lieutenant General Michael Barker from April 1940. After the Germans broke through Allied lines in the Battle of France in May 1940, the BEF was forced to retreat to Dunkirk for evacuation to England. The Commander-in-Chief (C-in-C) of the BEF, General Lord Gort, ordered Barker to form the rearguard with I Corps to cover the evacuation, and surrender to the Germans as a last resort. However, the acting commander of II Corps, Major General Bernard Montgomery, advised Gort that Barker was in an unfit state to be left in final command, and recommended that Major General Harold Alexander of the 1st Division should be put in charge. Gort did as Montgomery advised, and in the event the bulk of I Corps was successfully evacuated. As Montgomery recalled: "Alex" got everyone away in his own calm and confident manner') (Wikipedia)

Noel Grimmett

19th Field Survey Company RE – Reykjavik Iceland 1940

Part I Orders No 93

5 November 1940

Issued by Major R H Denniss R E
Commanding 19th Field Survey Coy RE

3. Field General Courts Martial

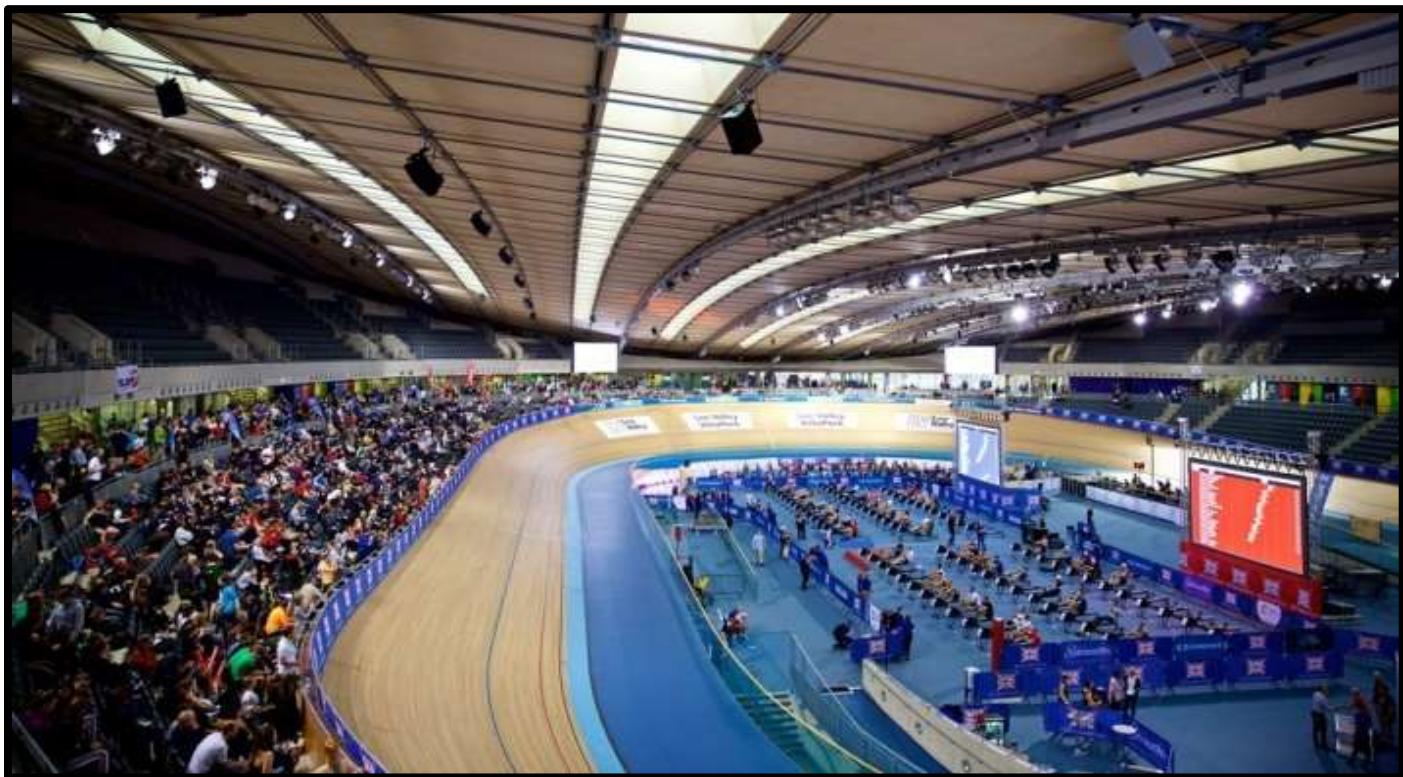
The following sentences were awarded by F.G.C.M. during the week ending 2.11.1940.

- A C.Q.M.S and a L/Sergt both convicted of stealing rations – Reduced to the ranks and 56 and 28 days' detention respectively.
- A private soldier convicted of striking an officer and other less serious charges – two years' imprisonment with hard labour.
- A private soldier convicted of threatening an officer and other less serious charges – one year's detention.

(Please Note: Those sentenced were not members of 19 Field Survey Company RE)

The Royal School of Military Survey

British Rowing Indoor Championships (BRIC)



On the 10th December 2016 The Royal School of Military Survey (RSMS) submitted two teams into the British Rowing Indoor Championships (BRIC) where they would compete against the best rowers the UK had to offer including the Olympic GB team. The event was held in the Velodrome at the Queen Elizabeth Olympic Park London.

The BRIC is made up of many rowing events with the key ones being the 2Km individual row and the 4Km team relay. RSMS entered 2 teams for the main 4km event as well as 2 positions in the individual 2km race. We had only 2 months experience and much of our competition had years on us. However, we had a solid regime set in place by WO2 (SSM) Tim Lewis which helped prepare us along the way, reducing our times each week significantly. We were definitely going to give the competition a run for their money.

Relay Team A consisted of Cpl Paul Frankham, LCpl Shane Hart, Spr Ryan Slater and Spr Dan Thoburn. Team B comprised LCpl Paul Williamson-Green, LCpl Shaun Dempsey, LCpl Adam Munkovics, and Spr Ioan Evans. After an early start from Hermitage we arrived in plenty of time before the first individual event in which LCpl Shane Hart and LCpl Shaun Dempsey both got personal bests over 2km. LCpl Dempsey recorded a very creditable time of 6:54.6. There were a few hours rest before the Men's 4km relay, which was for us the main event of the competition. During this down time a few of us got the chance to meet and speak with some of the athletes that went to the Olympics in Rio 2016 that we were soon to race against.

As the main event came round and after an inspirational speech from our SSM, we gathered in the entrance to the velodrome floor. We stood directly behind team GB to whom we boasted jokingly on how we were going to beat them. Team A finished with a time of 11:52.8, with the B team finishing less than a minute behind.



The best rowers in the country had a time of 10:36.0, showing that every second counts in events like these. The whole day was only made possible thanks to the West Berkshire Royal Engineer Association (REA), who funded our team covering our entry and transport fees and enabling us to compete at the event. Considering many of us had never rowed before this, we all had a fantastic time and many of us will definitely be carrying on with the sport into the future.

Sapper Ryan Slater.

Regimental Sporting achievements:

- Spr Bjadshori – Chosen to represent the Regiment at the Elite athlete programme in powerlifting, currently working from Loughborough University.
- Capt Wyatt – Chosen to represent Great Britain at Skeleton at the Winter Championships.
- Cpl Asquith – Won the RE Cross Country Championships
- Both Rugby and Football continue to play their league/cup matches each week.
- 2 boxers competed at Station Boxing Show last week – Thu 2 Mar 17. One win One loss (JNCO won)

Lieutenant Colonel Julian S Coulson RE

10 May 1926 – 2 February 2017



Lieutenant Julian Coulson R E with 7 Field Company Bengal Sappers and Miners in Burma 1947

Julian (Jay) was born in Putney London and educated at Kings College Wimbledon. He applied to join the army in 1943 and was accepted and sent to Cambridge on an engineering course. Following RE training at Catterick he was commissioned into the Royal Engineers and sent to India and joined the Bengal Sappers and Miners.

With the cessation of hostilities Julian found himself in Rangoon Burma with 7 Field Company as a platoon commander. On 19 July 1947 several of Burma's independence leaders were gunned down by a group of armed men while they were holding a cabinet meeting at the Secretariat in Rangoon. General Aung San (Prime Minister Designate and father of Aung San Suu Kyi) was one of those assassinated by a rival political group. Julian and his Sappers were tasked with dredging a lake in order to find evidence of the conspiracy; a vehicle number plate and magazine were duly found. The perpetrators were tried and found guilty with Julian giving evidence for the prosecution. All those sentenced to death and were hung in Rangoon's Insein jail on 8 May 1948. (See ***Murder Involved*** below)

On his return to the UK he married Joan in 1948 and undertook a 2 year posting to Nigeria. He then applied and was accepted on No 11 Long Survey Course – April 1953 to May 1954. Jay spent time in Scotland and the North of England working for the OS as superintendent of surveying, with a *Hillman Minx* as his company car.

He attended the Long Print Course at the London School of Printing in Stamford Street Lambeth. The course which lasted for an academic year covered all aspects of photo-lithographic printing and included general instruction on the other printing processes. Following the printing course he was appointed an instructor at the SMS. His first senior appointment was as OC Air Survey Liaison Staff (UK) at RAF Wyton from October 1960 until December 1962. Following that to the Far East in January 1963 as OC of 84 Survey Squadron Singapore and leaving there in October 1965. He was appointed Chief Instructor at SMS from 1967 to 1969 and soon after Commandant from 1973 to 1976. In November 1976, on vacating the appointment of Commandant, where he had been heavily committed with the rebuilding of the School, Lieutenant Colonel Coulson became the Project Liaison Officer and was able to see the work through to completion.

On retiring in January 1980 Julian continued with his main interest of renovating old houses in and around the Hungerford and Marlborough areas. He then moved to Suffolk and in 1995 established with his son Richard - *Coulson's Bridges*. Using their engineering and building skills they designed and built bridges to span a variety of water features. They offer a variety of styles i.e. *Monet, Chinese, Japanese, Edinburgh and Nikko* ranging from 12 – 40 feet. They have sold their bridges far afield into North America and to many European countries. Their total output is approaching 700 bridges and Julian was working on their latest project within a few months of his death.

Julian had a reputation recognised in his family that whenever he left the country of an overseas posting the country in question gained its independence? Many colleagues from all ranks have paid their tributes saying that he was a very fair and helpful commanding officer and was well respected within the Survey community and beyond.

Joan his wife survives him with their three children Sally, Richard and Guy, ten grandchildren and ten great grandchildren.

The Funeral took place at The Church of St Mary, Stoke by Nayland Nr Colchester Suffolk on Thursday 16th February 2017 at 12:00 noon. The Address was given by the Revd. John Fowler

Murder Involved

This article is based on notes supplied by Major Tom Spring-Smyth and Lieutenant (later Lieutenant Colonel) Jay Coulson, two of the Sapper Officers involved. They refer to events that took place over 50 years ago when U Aung San, the Prime Minister Designate of Burma, was assassinated. The story is not just of historical interest – after all, it is not every day that a Sapper Officer is involved in murder – and its relevance to today's world is that the Prime Minister's daughter, at the time only a small child, is Aung San Suu Kyi, currently under house arrest in Rangoon.

The Chief of Police came into the Company office and addressing Jay Coulson said: "Mr Coulson, I really think you should have a police 24 hour armed guard" "Why on earth should I need that?" replied Jay. "I'm perfectly safe in the Company Lines". "I need to keep you safe until the trial. After all, you are a prime witness". "But the men in the Company are all Sikhs and it would be a brave man who tried to get in here and nobble a witness" intervened Major Tom Spring-Smyth, OC 7 Field Company. "Major, I don't think you realise the seriousness of the situation. This is a murder trial and the victim was the Prime Minister Designate. His assassins won't be put off by a few soldiers, even if they are from the Bengal Sappers!" Reluctantly, the OC gave way.....

How on earth did this situation arise? For this, we have to go back to early 1947 when Great Britain was in the process of handing over power to an Independent Burma. Though the war had ended in the Far East in August 1945, there was still a lot of reconstruction work going on throughout the country, the Sapper units being assisted by formed bodies of Japanese POW's. There was also considerable unrest from small groups of dacoits and communists under the banners of Red Flag and White Flag who were in open rebellion. Up to nine battalions of infantry were involved in Central Burma under Brigadier Jerrard, commanding 98 Indian Infantry Brigade, with Major (later Major General) Logan Scott-Bowden, a much-decorated Sapper officer, as his Brigade Major.

“Scotty”, as he was universally known, had a fierce reputation and ate subalterns for breakfast. One morning in Spring 1947, Jake Trantam, a platoon commander in 7 Field Company was ordered to report to HQ 98 Brigade to be briefed for an operation involving a search for buried weapons. He entered the BM’s office, saluted and waited while the BM finished writing. Scotty looked up saw a subaltern in front of him and immediately barked “Don’t you usually salute when you come into someone’s office?” Jake, not having the faintest idea who this fiercely moustached officer was, replied, though rather less forcefully, “I do, and I did, Sir”. In the subsequent operation, he was attached to Flash Force, part of the Brigade, and they arrested some 400 hostile Burmese attending a meeting in a large cinema built of grass on bamboo frames. The occupants were defiant and would not come out. The platoon surrounded the building and threatened to set it alight unless they came out with their hands up. They came out.

7 Field Company was one of the units, the others being 19 Field Company (Bombay) and 54 Field Company (Madras) selected to form part of a proposed garrison of Burma. They had landed in Rangoon at the beginning of March 1947, having been re-formed under Tom Spring-Smyth as an all-Sikh Company the previous autumn, not without gloomy forecasts from senior officers that it would not work out, “Sikhs being Sikhs” etc. There had been three murders in the Sikh platoon while in the Middle East!

Luckily a superb Subedar was posted in. Ujagar Singh MBE. He came from Hoshiarpur District of the Punjab and was a very independent spirited soldier. The OC reported that “We had a very frank exchange of views about the task ahead – weak points and plus points. We spoke with complete openness. He was the guru. We agreed that to keep the jawans (soldiers) out of mischief, training, work and recreation had to be most rigorous, demanding and so tough that the soldiers would go to bed absolutely exhausted. This worked. At an early conference with my VCOs (Viceroy’s Commissioned Officers), I told them that in the event of serious trouble I would be sacked and I would ensure that they would go as well. We could not allow the first all-Sikh Field Company to fail. It was a matter of honour”.

The post-war rundown of the Indian Army had begun and no one wanted to leave so the best tradesmen could be selected, nobody under 6ft tall was accepted and only those men with the best education and best reports were taken. Captain Rizwanullah Khan, a very smart, keen and efficient officer became 2IC, and Jay Coulson and Bob Minder were platoon commanders, joined shortly afterwards by Peter Park, an excellent hockey player, just what was needed in a Sikh unit, who was sadly killed a few years later in Korea. On arrival in Burma, the Company began a dreary round of building store houses and Romney huts for the post-war Burma Army, as well as involvement in Internal Security under Jake Trantam. They also proceeded to beat the Infantry battalions at hockey, and even soccer where they dominated the touch lines with vehicle horns and gas rattles, perhaps the birth of football hooliganism?!

Meanwhile on the political front, things were not going well. British and Indian forces were gradually withdrawn to UK and India, leaving a serious law and order problem, while rival politicians juggled for power. Major General U Aung San, commander of the Burmese Army, who had come over to the winning side in the nick of time before the war ended, had entered the fray and become leader of the Executive Council, and thus Prime Minister (Designate). In mid-July 1947, 200 Bren Guns destined for the police had been issued by the Ordnance Depot on signature to a police party sent to collect the weapons. On the evening of the same day the Brigadier A/Q thanked the Commissioner of Police over a drink at the Pegu Club Rangoon for sending his men to collect the arms that morning. The Commissioner was aghast as he was sending the real collection party the next day!

Tension in Rangoon was high and it was only too evident that conspirators were at work. What was really alarming was the knowledge that they now had more weapons than the army. Rumours abounded and on 19th July, just as he was going to lunch, Brigadier “Bulger” Duke, the Brigadier General Staff (BGS) at 12th Army Headquarters (a Sapper officer) was handed a message containing what he thought was yet another rumour. He thought no more about it and stuffed it in his pocket. Sadly it was no rumour but a warning of an imminent coup. That same day, a gang of youths burst into a cabinet meeting and firing Tommie guns, killed most of the Ministers present including U Aung San. He was the father of Aung San Suu Kyi, then a baby but destined to make her own mark in Burma’s history.

That night OC 7 Field Company was summoned to Army HQ at about 2300 hrs to an 'O' Group at which only the GOC, General Sir Harold Briggs, and the BGS were present. He was asked if he could put up a very strong barbed wire fence that night, right round the central block in Rangoon which contained the city lock-up. Tom Spring-Smyth answered "Yes, provided the Ordnance Depot can be opened at once and I have the authority to draw whatever stores I need. I alerted the Company from Army HQ and they were on parade by my return to camp. We completed the task by about first light with a Double Apron fence, dannert wire and a massive gateway using 10in by 10in teak gateposts. The Sikh sappers all over 6 ft tall drove the angle-iron pickets straight through the tarmac. By this time the main suspects, who included Ba Maw, a pre-war Prime Minister who joined the Japanese, and U Saw, another pre-war premier and again a Japanese ally, had been arrested and were in the lock-up. They were known to have no love for Aung San."

With the loss of arms and the murders, there was quite a flap. Together with 64 (Madras) Company and 19 (Bombay) Company, 7 Field Company put up a barbed-wire obstacle right round Burma Army HQ and its attendant camp, one and a half miles in total. Sappers were trained to man Bofors guns and drive armoured vehicles, such was the unbalanced state of our own forces, many units having already been withdrawn from the country.

A breakthrough in the investigation came when part of Victoria Lake near U Saw's house was searched and the missing Bren guns were found, stripped to their component parts and loaded into 44 gal steel drums, topped up with oil and sealed lids (with sealing washers bolted down). It was important to find further evidence and on 4th August Brigadier Nash, commanding South Burma Area, called a meeting at short notice attended by OC 7 Field Company, the Brigade major (Major L Scott-Bowden DSO MC RE) and a Burmese Naval Officer. He told them that, before the case for the prosecution could be completed, it was vital to find the number-plate used by the assassins' jeep on the journey to and from the Rangoon Secretariat, and a Tommy gun magazine which was missing from one of the weapons used for the murders. There was strong evidence that they had been thrown into the lake. When it is realised that Victoria Lake is large enough to accommodate a sailing club, the task seemed formidable, although it was assumed that the missing articles would be somewhere in the vicinity of the house. Nevertheless, 12,000 yards of lake some 10 feet deep would need to be searched.

After discussing the problem for some time and considering various plans from damming part of the lake and draining it, to flying in drag nets from Calcutta, nothing seemed satisfactory until Scotty (Scott-Bowden) suggested using plumb lines, of which we had some experience when making reconnaissance of the Normandy coast before D-Day. Whereas this was all right for telling whether the bottom was rocky or sandy, the real problem was having to deal with sediment. However, it did suggest prodding by poles, similar to prodding for mines, might provide the best solution. Only when something solid was struck would someone have to dive down and investigate.

The list of stores required included two tripartite Bailey piers. Folding Boats, rope, buoys, anchors etc and 400 one inch bamboos of minimum length 16ft and as much one inch water piping as possible. These all arrived on site the following morning, 5th August. A platoon of 7 Field Company was detailed for the job and Major Rhodes OC 19 Field Company arranged for eight good Mahratta swimmers who volunteered to dive into the murky waters.

Part of the lake was at once marked out in strips 60 ft wide, using ropes and buoys, passing over bow pontoons. Sappers were then ordered to sit on both gunwales, shoulder to shoulder and each was given a bamboo or a length of piping. With a man at each end of the pontoon pulling on the ropes the pier went slowly sideways down the lane with the Sappers prodding carefully at the lake bed. The men with the pipes soon got tired and after a bit bamboo's only were used.

All sorts of objects were struck by the bamboos and duly retrieved by the Mahrattas whose officer, Lieutenant Young, was also diving. These objects were very unexciting; the lake must have been a convenient dumping place for junk for years and a huge pile of bits and pieces, ranging from Jap helmets, car tyres and cans to broken flower pots, grew on the bank. If any object was missed by the first line of prodders it was hoped the second line would find it. The speed across the water had to be slow enough for the prodders to be thorough. The instant anything was struck the pontoon was stopped and a Mahratta diver would go down using the strikers bamboo as a guide.

The dawn to dusk search went on until 1345 hrs on Tuesday 12th August 1947, Sapper Jit Singh located an object which was brought up by one of the Mahratta divers. It was the missing number plate, RC1814 on one side and RB4140 on the reverse. This was immediately handed over by the platoon commander, Lieutenant J S Coulson, to a Rangoon Police officer. The search continued and next morning a Sapper from 19 Field Company brought up a Tommy gun magazine containing two live rounds from below a Pagoda House Shrine built on piles a few yards from the water's edge by U Saw's house. The evidence was crucial and the men received a well-earned "Shabush" from the GOC, as well as an expression of thanks from U Aung Chein, Commissioner of Police.

7 Field Company left Burma the following month, leaving Jay Coulson and Jit Singh behind as material witnesses. They managed to avoid having an armed police guard but had to live in an old REME workshop where they played with the lathes and other tools for the next month. Jay lived in the Burmese Officers' Mess where he soon acquired a taste for sliced green chillis!

No time was wasted in bringing the suspects to trial and a special Tribunal was set up in October 1947 to try former Premier U Saw and eight Myochit Party members. The trial took place in the main Court House in Rangoon and was conducted with great formality. Jay Coulson and Jit Singh provided vital evidence and at the end of the trial U Saw was condemned to death.

Could the assassination of U Aung have been prevented? Attempts were made to blame the BGS for not taking immediate action when he was given the tip-off but with the political ferment at the time, and endless rumours and uncertainties, he did not place much credence on this particular piece of information. And anyway, could he really have prevented it? Certainly once the dreadful deed was done, the whole show could have gone up in flames. That it did not must be due entirely to the prompt and very resolute action by General Sir Harold Briggs and Brigadier "Bulger" Duke, his BGS.

Now, in 2004, the wheel has come full circle. Aung San Suu Kyi, General Aung San's daughter, who has been in and out of house arrest since 1988, is leader of the national League for Democracy (NLD). Her Party won more than 80 per cent of the vote in the last election, held in 1990, but the military junta ruling Burma (now Myanmar) imposed direct rule and abolished the post of President. They continue to run the country but the regime is showing growing flexibility and there are signs of a thaw. Suu Kyi was awarded the 1991 Nobel Peace Prize and may yet become leader of her country, nearly sixty years after her father was so cruelly deprived of his rightful place in history.

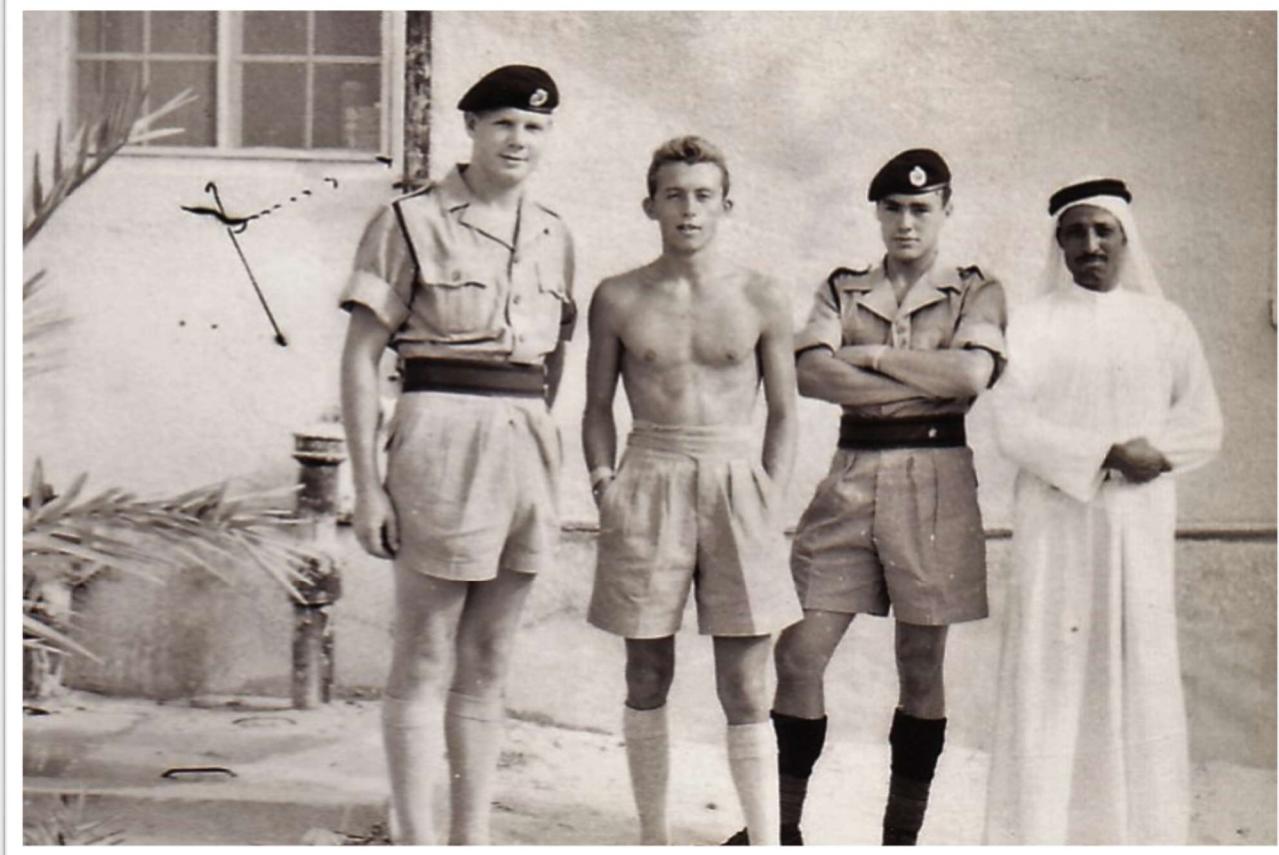
(This article was first published in the Royal Engineers Journal in 2004, and transcribed by the Editor from a copy provided by Richard Coulson)

Robin (Rob) Barrett

1941 to 2017

Robin was born and brought up in Four Marks Nr Alton Hampshire, with his two brothers and sister. He joined the Army as an apprentice age 15 and was trained as a Topographic Surveyor at the Army Apprentice College Harrogate. Robin (aka Fuff) served in the Middle East with 2 Troop 19 Topo Sqn (Oman).

Robin left the Army having completing 12 years' service and after various jobs arrived in Dorchester in 1975 taking a job with the West Dorset District Council as a Planning Officer. It was in Dorchester that his three children David, Stephen and Heidi were brought up. In 1979 he met and married Margaret and they have been together for 37 years living first in Broadway and then in Dorchester before moving to 'Rosemarie' in West Stafford a village to the east of Dorchester. Robin was a keen gardener and his diary records that in his early teens he was out digging weeds on '1st January - what a dedicated gardener'. He was an active member of the Bockhampton and District Horticultural Association and took part in their shows in West Stafford Village Hall although he didn't take it too seriously and he readily brought a touch of humour to rather staid village meetings.



Robin Barrett on the left with Bev Hill standing next to him taken outside the 19 Topo Sqn offices in Bahrain - between July 1960 and March 1961. (Photo used with kind permission of Bev Hill)

Alan Gordon recalls: "I first met him in 47 Sqn when I went there after the Tech 2 in 1966 and air survey was doing shift work on the south Arabia series K669 – Fuff was a shift Cpl on multiplex. On the evening shift (in civvies) he would bring in his spaniel and after doing the handover and seeing us all plotting he would take the dog for a long walk, rain or shine, around the camp but always be back in time to join us for the evening break at 9 o'clock, which we usually took down the road in the George – several pints later (plus the snacks that the landlords – Alan and Joan – made for us in advance (orders given the previous evening)) we would return to plot contours around jebels. On wet nights Fuff's spaniel would lean on the electric fire bars and stink out the multiplex booths."

Al Roberts recalls: "Very fond memories of Fuff. I had the pleasure of working with him during the Radfan campaign in Aden 1964. I remember he spent quite a while on the top of Jebel Huriyah (abt. 5000ft) while we did a Tellurometer connection down to the coast. I spent a couple of nights with him in the Sanger (rock wall to protect from gunfire) they had built, inside which was a fantastic oven he had built from old ammunition cases and mud. His meat and fruit pies that he baked, were to die for! He was an efficient, resourceful and very amusing companion."

Robin had been a Survey Branch Member for many years and was also a member of the Weymouth Branch of the REA, based at the Wyke Regis Bridging Camp. He was also a member of the Casterbridge Male voice choir and at one time had membership of Rotary and Probus, and also enjoyed being part of the Lunch Club with colleagues. He was a member of the Order of Foresters Branch in Weymouth and was Chief Ranger 2 years ago.

A Memorial Service for Robin was held in St Peter's Church Dorchester on Tuesday 14th February 2017 at 1.30 p.m. in front of a full church, followed by a reception at The Junction Hotel, Great Western Road, Dorchester.
(A tribute was given by David Barrett and the address by the Reverend Jane Culliford Vicar of St Peter's Church Dorchester)

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Will members please inform the Secretary of any changes to their contact details and in particular their e-mail address! Thank you

Visit www.militarysurvey.org.uk

Members Please Note: The ‘SMS Course and Historical Photographs’ have now been uploaded to the website and are available to view - click the link ‘Historic Archive’.

Note: The Carto Norge album put together for the Regiment's bid for the E-in-C award in 1976 is now online under the Country - Norway tab.

Facebook: Members may be interested to know that there are two Survey RE Groups on Facebook. They are “*42 Engr Regt (Geo) Past and Present*” and “*Military Survey*”. Please note these are Closed Groups so on application the administrators will need to establish your credentials before confirming your acceptance to the Group in question.