

NOTE

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FIXED COAST ARTILLERY DEFENCES ON THE PACIFIC COAST

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FIXED COAST ARTILLERY DEFENCES ON THE PACIFIC COAST

STATE OF FIXED DEFENCES AFTER FIRST WORLD WAR.

1. At the close of the War of 1914-1918 the only fixed defences on the West Coast were at ESQUIMALT, protecting the Naval Dockyard and enabling the harbour to be classed as a "fortified coaling station"(1). During the years between the wars these defences became largely obsolescent, so much so that in the late thirties it was considered inadvisable to fire annual practices on such old guns, as their life expectancy was limited to only a few more rounds (2).

2. The fortifications, which were designed to meet the attack of one or two light cruisers or a flotilla of torpedo craft, consisted of three batteries of 6-inch BL guns, a battery of 9.2-inch guns, and three batteries of 12 pdr QFs (3). They covered the entrance to ESQUIMALT HARBOUR, their positions extending from MACAULAY POINT to OGDEN POINT.

FIRST STEPS IN PLANNING

3. In 1928 a Joint Service Committee under the chairmanship of the DOC, MD No 11, recommended extensive alterations and improvements in the armament at the port, but it was not until 1936 that funds were made available to initiate such a project (4). In that year, when the international situation was rapidly deteriorating (5), at the request of the Department of National Defence the War Office made available the services of an expert in coast defence matters, Major BD C. Treatt MC RA, who visited both coasts, accompanied by qualified Canadian officers, and submitted comprehensive reports on the measures considered necessary in respect of fixed defences, to ensure the security of the principal harbours and other potential enemy targets.

4. In 1937 the Government for the first time announced its defence policy, in which primary emphasis was placed on the direct defence of Canadian coasts, seaports and railway terminals. Based upon a study of the TREATT Report by the Chiefs of Staff Committee a plan for the fixed defences of the coasts was drawn up and approved by the Minister of National Defence, (Hon Ian MACKENZIE)(6).

THE "ULTIMATE PLAN"

5. This plan, known then as the "Ultimate Plan" of Coast Defence, was based on the forms and scales of attack to which it was considered the ports on both coasts might be subjected in various

hypothetical contingencies. On the Pacific Coast anticipated attacks were limited to bombardment by one or two enemy cruisers armed with 8-inch guns; or by armed merchantmen carrying 6-inch guns; attack by motor torpedo boats, minelayers or submarines mounting 4.7-inch guns; and certain forms of attack by air or by landing-parties which did not influence fixed defences.

6. Revised from time to time in the light of subsequent developments, the plan as far as it affected the West Coast called for the installation of suitable batteries, both for counter-bombardment and close defence, at ESQUIMALT, VANCOUVER and PRINCE RUPERT, as well as for a small battery at YORKE ISLAND in JOHNSTONE STRAITS, to defend the Inside Passage to VANCOUVER (7). It also envisaged the installation of a proper complement of Defence Electric Lights for defence by night, and the construction of a modern system of range finding and fire control, and a system of inter-communication at each defended port.

7. It soon became apparent that a long time must elapse before the Ultimate Plan could be completed. At first it was a question of finance. Although Parliament had increased its vote to the Militia by over a million dollars in each of 1936 and 1937, such grants were sufficient to permit only a gradual implementation of the recommendations of the TREATT Report. The 1938 Militia vote however was \$18,690,928, a rise of 50% over that of the previous year, and the Department of National Defence was enabled to place orders for all of the armament required to complete the ultimate plan of coast defence. But there now became apparent the impossibility of getting delivery of the guns and equipment involved. GREAT BRITAIN, with whom the Canadian orders had been placed, was busily engaged in providing for her own defence needs and for those of other threatened parts of the Empire. In August 1939 the Canadian Chief of the General Staff was to report to the Minister,

"Three 9.2" mountings and six 6" equipments ordered in 1936 and 1937 respectively will not be received before next year, while the armament ordered this year will not be available for two or perhaps three years." (8).

THE "INTERIM PLAN"

8. Accordingly, early in 1938 an "Interim Plan" of coast defence was drawn up, under which all available armament in Canada was to be redistributed and installed so as to provide the greatest possible measure of defence at each port. The plan envisaged the use of this armament in permanent emplacements in such a way as to facilitate transition to the ultimate plan with a minimum of expense whenever such new equipment should become available. To this end the permanent works were designed to accommodate the

ultimate armament, and then modified as required to enable temporary installation of the guns on hand to be made (9).

9. The distribution of the existing obsolescent armament under the "Interim" scheme brought a measure of protection to ports previously without any means of defence. On the Pacific Coast VANCOUVER and PRINCE RUPERT now joined ESQUIMALT as defended areas (10). It was recognized however by the General Staff that the ports in question were not being supplied with a very effective means of defence by the Interim Scheme. The armament was old and generally deficient in range and shell power. At the same time it was pointed out that institution of the plan "would not lack a certain measure of deterrent effect, nor would it be without beneficial psychological effect on the inhabitants of these localities" (11).

10. Substantial progress was made in the erection of the interim defences on the Pacific Coast, and by the late summer of 1939, with one exception, all permanent battery emplacements for which interim armament was available had either been completed or were nearing completion (12). The situation was less favorable on the Atlantic Coast, where no fixed defences of any description had yet been installed at SYDNEY, STRAIT OF CANSO or SAINT JOHN.

TEMPORARY COMPLETION OF THE INTERIM PLAN

11. To meet the emergency created by the imminent threat of War in August it was decided to adopt a third plan, which was the completion of the "Interim" plan on a temporary basis. Where permanent fortifications had not been constructed, guns on hand were to be emplaced on open concrete platforms, the necessary work requiring only a few weeks (13). The plan was rushed into effect, and by September temporary gun emplacements were supplementing permanent works in accommodating the armament available to meet hostile action on the Pacific Coast (14).

ROLE OF THE FIXED COAST ARTILLERY DEFENCES

12. In planning the allocation and siting of coast defence batteries, consideration was had for anticipated forms and scales of attack (based upon the target value to the enemy of vulnerable ports as seen in the light of his strengths and dispositions), the geographical accessibility of such potential targets to an attacking force, and the selection of strategic positions for installation of coast artillery of sufficient calibre and range to stop the enemy before he reached his objective.

13. The threat of attack by 8-inch gun cruisers or merchantmen armed with 6-inch guns had to be met by the installation of counter-bombardment batteries of

6-inch calibre or larger, sited on commanding topographical features far enough in advance of the port they were defending to engage the enemy before his guns could come into shelling range of their target. Within this outer perimeter of main defences were close-defence batteries of 6-inch guns intended to engage at comparatively short range hostile vessels evading or surviving earlier attack, a role that might also be designated as a secondary function of the counter-bombardment batteries. Should such smaller craft as motor-torpedo-boats, minelayers or surfacing submarines elude these two lines of defences by reason of their speed or under cover of fog, snow or darkness they must be halted by batteries of quick firing guns (4.7-inch or 12 pounders), strategically placed around the entrance to the harbour, ready to blast the enemy at point-blank range, and fighting at night with the aid of powerful dispersed-beam searchlights capable of turning the entire danger zone into an illuminated area.

VICTORIA - ESQUIMALT

14. Of the vulnerable areas to be defended from seaborne attack on the Pacific Coast VICTORIA-ESQUIMALT had always claimed priority. Here was Canada's main west coast naval base, flanked by a city of 40,000 population wherein were located the seat of the provincial legislature and the Headquarters of Military District No. 11 and of Western Air Command. The open waters of JUAN de FUCA STRAIT formed a channel fifteen miles wide leading directly up to the twin harbours of ESQUIMALT and VICTORIA. With a neutral United States offering no resistance from coastal batteries, the road lay open to hostile warships to move up the Strait to within bombardment range of the threatened area.

15. Under the Ultimate Plan of coast defence ESQUIMALT would be protected by counter-bombardment batteries at ALBERT HEAD and MARY HILL, respectively three miles and eight miles down the Strait. The ALBERT HEAD battery was to consist of three 9.2-inch Mk. X guns on Mk. VII 35 degree mountings, while to MARY HILL were allotted three 6-inch Mk. VII guns on Mk. V 45 degree mountings (15). Guns of this calibre on the high-angle mountings planned for them would have sufficient range to cover effectively the JUAN de FUCA STRAIT across to the American shore opposite RACE ROCKS, and westwards to beyond SOOKE HARBOUR. To meet the possible though remote danger of an enemy vessel coming into HARO STRAIT for the purpose of bombarding VICTORIA from the "blind" side a 7.5-inch battery was planned for TRIAL ISLAND, four miles east of the harbour entrance (16).

16. As has been noted above, implementation of the long term plan was to meet with considerable delay. The outbreak of war in September 1939 found two 9.2-inch guns at ALBERT HEAD, brought forward from SIGNAL HILL (16 a), and three 6-inch guns at

MARY HILL, advanced from their former sites at RODD HILL. All of these guns were on the old 15 degree mountings (the new high angle equipments having been diverted to the Atlantic Coast)(17), and the resulting restriction in effective range modified the counter bombardment role to one of close defence. A 6-inch battery of two Mk VII guns on Mk II (15 degree) mountings installed in 1936 between the two harbours at MACAULAY POINT and forming part of the ultimate plan completed the outer and secondary defences of the area.

17. Five batteries filled the anti-motor-torpedo-boat defence role at the immediate entrances to the two harbours. On the west side of ESQUIMALT HARBOUR a battery of two 12-pdr. QF guns worked in conjunction with similar batteries at DUNTZE HEAD and BLACK ROCK on the east side (18). The entrance to VICTORIA HARBOUR was guarded to the west by a battery of two 12-pdrs. on GOLF HILL, and to the east by a single 12-pdr., originally placed on the Breakwater, and later moved to OGDEN PIER. The ultimate Plan called for the batteries at BELMONT, DUNTZE HEAD, and OGDEN PIER to be replaced by one 6-pdr duplex gun at each place, but high priority demands for the East Coast Defences resulted in a diversion to the Atlantic Command of all but the twin equipment intended for DUNTZE HEAD (19).

EXAMINATION ROLE

18. In support of naval examination vessels anchored off WILLIAM HEAD and BROTHIE LEDGE the batteries at MARY HILL and BELMONT were given an examination role, ready to fire stopping shots when called upon by the naval examination officer aboard the "Ex-Vic." From the War Diary of the 17 Searchlight Battery comes the following:-

"Orders having been issued to the Examination Battery at RODD HILL (BELMONT) to fire on boats not carrying proper signals, Gun No. C-1 was ordered to put a shot across the bow of the gas-boat "VALIANT" at 1450 hours 30 Sep 1939. This was the first shot fired by Canada in the ESQUIMALT area since the outbreak of war."(20).

In May 1940 an examination role was given to MACAULAY Battery to cover boats coming in at the east end of the examination line (21), and BELMONT's role in the examination service became that of a supporting battery to MACAULAY (22).

SUBSEQUENT CHANGES IN ARMAMENT

19. Early in 1940 the Chief of the General Staff, in reviewing for the Minister the status of defences on the Pacific Coast drew attention to the serious absence of long-range armament at ESQUIMALT and PRINCE RUPERT. He pointed out that the guns mounted at these

ports were far outranged by modern naval weapons. Installation of high-angle mountings to increase the range of the 6-inch and 9.2-inch guns could not be counted on for some time (23). Actually three years were to elapse before any such equipment was forthcoming. In the absence of long range guns the only thing to be done was to push armament further forward along the JUAN de FUCA STRAIT.

CHRISTOPHER POINT

20. American interest in the defence of the Strait became increasingly apparent, and a Joint Conference of Commanders held at VICTORIA on 21, 22 Oct 40 to discuss International Joint Defence, and attended by high ranking coast artillery officers from both sides of the border (24), reached the conclusion that the Strait of JUAN de FUCA and the entrance to the Strait of GEORGIA must be closed to hostile ships. Among their recommendations was one to the Canadian Government to instal at CHURCH POINT on JUAN de FUCA STRAIT (3 miles south west of MARY HILL FORT) two 8-inch howitzers then in VICTORIA (25). At the 14th Meeting of the Permanent Joint Board of Defence held in January, 1941 the Senior U S Army Member reported that the United States was prepared to loan to CANADA either four 8-inch railway guns or eight 155mm guns (26), and a supplementary Report on International Joint Defence submitted in February to NDHQ through the GOC-in-C, Pacific Command, recommended that a battery of two 8-inch US railway guns each should be installed without delay both at CHRISTOPHER POINT (one east of CHURCH HILL) and on TRIAL ISLAND (27).

21. West Coast demands continued to press for extensive installation of defences along the full length of the JUAN de FUCA STRAIT. To parallel the proposal of the United States General Commanding 4th Army to site three 16-inch batteries and two 6-inch batteries in the CAPE FLATTERY Area, the GOC-in-C, Pacific Command suggested that the proposed 8-inch battery at CHRISTOPHER POINT be reallocated to SAN JUAN POINT at the far end of the Strait (28). But the Canadian General Staff remained firm. The purpose of coast defences on VANCOUVER ISLAND was considered primarily to protect the ports of ESQUIMALT and VICTORIA from bombardment. The completion of the ultimate defences at ALBERT HEAD and MARY HILL would fulfill this role. Until then the temporary installation of a two gun 8-inch battery at CHRISTOPHER POINT as an emergency measure only was necessary (29). Authorization was granted, and the two guns went into position at CHRISTOPHER POINT, installation being completed three days before PEARL HARBOUR (30). With their extreme range of 23,000 yards these 8" guns effectively reached across the JUAN de FUCA STRAIT to PORT ANGELES on the American side.

ALBERT HEAD AND MARY HILL

22. When it became apparent that Great Britain would not be able to supply the necessary high-angle equipments required to bring the counter bombardment batteries to completion in accordance with the Ultimate Plan, and United States sources proving equally unavailing, an experimental 30 degree (Mk VII) mounting, adapted from the 15 degree (Mk V) mounting, was designed in Canada and brought into production (31). In March 1943 a third 9.2-inch gun at ALBERT HEAD was mounted on this new equipment, and by the end of the year one of the original guns was replaced on the new experimental mounting. Arrangements were in hand for similarly exchanging the mountings of the remaining 9.2-inch during 1944. At MARY HILL the new Mk VI mounting was used to remount the three 6-inch guns, the change-over taking place between August and November, 1943.

DUNTZE HEAD

23. Only one improvement in armament was made in the inner harbour defences of ESQUIMALT and VICTORIA. From September 1939 to the late summer of 1942 the anti-motor-torpedo-boat role on the east side of ESQUIMALT HARBOUR had been filled by a two 12-pdr battery which alternated between DUNTZE HEAD and BLACK ROCK (32). When construction work started on the emplacement for the 6-pdr Duplex, ultimate armament at DUNTZE HEAD, the two 12-pdr guns were moved from that fort to their ultimate position at BLACK ROCK. To provide temporary armament at DUNTZE HEAD while the new 6-pdr equipment was being installed, a 75-mm gun was mounted alongside the new emplacement, its role to cover the Boom Gate at the entrance to the harbour (33). It remained in position until June 1943 when installation was completed on the new weapon, a 6-pdr 10-cwt Mk I Twin.

SEARCHLIGHTS

24. Defence electric lights on the Pacific Coast at the outbreak of war were quite inadequate for the role they had to fill. Three 90-cm dispersed beam lights of obsolete (1924) pattern were in position around the entrance to ESQUIMALT HARBOUR, (two at BELMONT and one at BLACK ROCK) and one old 90-cm concentrated beam light was used as a search beam to illuminate ships halted by the naval examination vessel. To supplement these a number of small 18-inch commercial lights had been acquired during the crisis of 1938, and six-unit batteries of these additions were installed on the Breakwater and at McLAUGHLIN POINT to illuminate the entrance to VICTORIA HARBOUR (34).

25. An order for 80 modern defence electric lights was placed with a Canadian manufacturer in 1939, with priority in delivery allotted to the Atlantic Coast (35), and in the fall of 1940 the powerful new 60-inch, 800 million candlepower lights began to arrive at ESQUIMALT (36). Modern Gardner 45 H.P. Diesel engines to operate each of the new lights replaced the old steam power plants, and by the end of 1940 nine

fighting lights (movable 3 degree concentrated beam) and eight illuminated area searchlights (fixed 15 degree dispersed beam) were being operated by detachments of the 17 S/L Battery (CD) RCA at the various forts in the VICTORIA-ESQUIMALT area (37).

FORTRESS CONTROL

26. Under the long term defensive scheme planned for ESQUIMALT in 1938 all coastal batteries in the area with the exception of CHRISTOPHER POINT were designed to operate under a fortress system of control. (The 8-inch battery at CHRISTOPHER POINT, which was not envisaged before 1940, employed an independent United States system of range finding, using its own Battery Plotting Room with Base-End Stations at CHURCH HILL and BEECHEY HEAD.) The outbreak of hostilities saw the completion of Battery Observation Posts from which each battery could be fought at close or harbour defence, under direction from the Fire Command Post, located with HQ 5 (BC) Coast Regiment RCA at FORT MARY HILL. A Fortress Plotting Room to carry out range finding for the fortress system was completed before the war at BELMONT.

27. In preparation for the time when installation of long range armament should make possible the assumption of a counter-bombardment role, construction proceeded on four Fortress Observation Posts at CHURCH HILL, FORT MARY HILL, GONZALES and MOUNT TOLMIE, the last of which was completed in January, 1944 (38). In June 1942 the Fire Command Post was moved to a strategic site on TRIANGULAR MOUNTAIN, 700 feet above sea level, and directly behind FORT ALBERT HEAD, for whose battery it provided long range BOP (39). From this post tactical control of all illuminated area searchlights was exercised, the Fire Commander issuing his orders through the OCSL. Fighting lights were operated under the control of the battery commander to whom they were allotted (40).

28. An extensive network of submarine and underground telephone cables linked together all forts and installations within the fortress area. Land cables buried eight feet in the ground ensured the maintenance of communications in the face of enemy shelling. The work of No 11 Fortress Signal Coy, later No 11 Area Signal Coy, three complete systems were established within the fortress. In addition to an 80-line Administrative exchange which connected all establishments and provided for administration in that area there were the Fire Commander's Exchange. Each consisted of a 50-line magnete exchange installed in the Fortress Plotting Room at BELMONT. The former provided fighting circuits to the forts and batteries over which the Fire Commander would control an action from the Fire Command Post at TRIANGULAR MOUNTAIN. Fortress Observation Posts and Battery OP's were connected through the latter exchange to the Fortress Plotting Room and the FCP to pass and receive range-finding information (41).

VANCOUVER

29. The comparatively sheltered geographical position of VANCOUVER made that city considerably less vulnerable to naval attack from a non-American power than the more exposed VICTORIA-ESQUIMALT area. Protection of an area that contained the termini of two transcontinental railways, that in peace time carried almost the whole of Canada's trade with the far East, and that was destined to become the centre of Wartime Industry on the West Coast, was effected in three major concentric zones of defences that covered all water approaches to the STRAIT OF GEORGIA. On the outer perimeter R C N patrol vessels and R C A F Seaplane Patrols formed the extreme westerly defences of British Columbia. Secondary defences to VANCOUVER consisted of the VICTORIA-ESQUIMALT Fortress (supplemented after 1940 by United States fortress on the south side of JUAN de FUCA STRAIT), and fortified YORKE ISLAND, barring the way from the North through JOHNSTONE STRAIT. But fog or darkness might allow a determined enemy to slip past VICTORIA, and the limited range of the YORKE ISLAND battery might enable hostile craft to force their way south into GEORGIA STRAIT. The role of the third defence zone, - that of repelling any hostile vessel approaching the Port, was supplied by the VANCOUVER forts.

30. VANCOUVER inherited no defence armament from the first World War (42). When the Ultimate Plan of Coast Defence was drawn up in 1937, the anticipated scale of attack in respect to VANCOUVER envisaged nothing larger than a single armed merchantman carrying 6-inch guns, - a threat which would place the bombardment area at an estimated 21,750 yards from the enemy objectives of docks, wharfs and railway yards in VANCOUVER HARBOUR. The TREATT report recommended the installation of a CB battery of three 6-inch guns on 15 degree mountings on POINT GREY, 10,000 yards forward from the vulnerable heart of the port. From this location the 14,000-yard range of such a battery would reach out beyond the bombardment area, and would effectively cover the four-mile wide entrance of BURRARD INLET across to POINT ATKINSON. This recommendation was adopted, as well as that which provided for a close-defence battery of two similar guns at STANLEY PARK, and an A/MTB battery on either side of the First Narrows, to consist of two 12-pdr QF guns at Narrows North, and one 6-pdr duplex at Narrows South (43). The inner battery at STANLEY PARK was intended to reinforce POINT GREY in closing BURRARD INLET, and to control shipping in the Examination Anchorage in ENGLISH BAY.

31. The close defence battery at FERGUSON POINT, on the seaward side of STANLEY PARK, was designed to guard ENGLISH BAY and the FIRST NARROWS, and to support POINT GREY's examination role by covering that part of the examination anchorage inaccessible to the outer battery's arc of fire. The NARROWS battery closed the entrance to the inner harbour of BURRARD INLET.

32. Construction of VANCOUVER's defences commenced in 1937, and the STANLEY PARK guns were mounted on permanent emplacements in 1938. The outbreak of war found gun positions being hurried to completion at POINT GREY and NARROWS NORTH. The Interim Plan of defences had limited the armament at the FIRST NARROWS to a two 12 pdr battery on the north shore, (NARROWS NORTH), and had temporarily reduced to two guns the size of the 6-inch battery at POINT GREY (45). Equipments at these two forts were mounted on temporary platforms at the end of August 1939. Permanent emplacements were completed at NARROWS NORTH in October, and at POINT GREY in the following September (46).

33. The third 6-inch gun ultimately planned for POINT GREY was mounted in April 1941. An old ordnance (cast in 1902), a faulty bore restricted its potential value. It was under orders not to be fired with a half or full charge "except in action." In 1942 the Inspector General, (Maj-Gen the Hon W A GRIESBACH) reported that it was regarded as unsafe by personnel of the manning detachment, but "any gun is considered better than no gun", and proof rounds were successfully fired (47). Manning of No 3 gun ceased when reduction in Coast Artillery defences went into effect at the end of 1943 (48).

STEVESTON

34. In considering the claims of NEW WESTMINSTER to defence armament Maj TREATT had suggested that this port's distance from the sea made it safe from attack by an enemy ship that did not actually enter the narrow waters of the FRASER RIVER. If the city were to become subject to attack, traffic intended for NEW WESTMINSTER could be diverted to VANCOUVER. For these reasons no provision was made on the Ultimate Plan for any defences for the FRASER RIVER port (49). On the outbreak of war, however, a decision was reached to institute an Examination Service at the mouth of the river, the Navy proposing to use an armed vessel, owing to the difficulty of siting a shore battery (50).

35. The delta of the FRASER RIVER is badly clogged with sandbanks and mud flats, and as an aid to navigation in the South Arm of the river a dredged channel protected by a breakwater (STEVESTON JETTY) reaches to the outer limits of STURGEON and ROBERTS BANKS, 10,000 yards from the mainland. The danger of this channel being blocked by an hostile vessel sunk by land-based guns had prompted the Naval recommendation to substitute an armed vessel for an examination battery on shore. Two alternative suggestions from OTTAWA, to place a section of 18-pdrs on the outer end of STEVESTON JETTY, and to site a battery on WOODWARD ISLAND in the widest part of the channel, were both deprecated by the District Officer Commanding MD No 11, - the first because it would have been necessary to supplement the jetty with a pile-driven stage or float (51), and the second because WOODWARD ISLAND was nothing but a mud flat (52). A shore site

was selected on the West Coast of LULU ISLAND, about a mile north of STEVESTON, and on 13 Oct 39 a detachment of the 58 Bty from POINT GREY set up two 18-pdr QF guns there with instructions to stop unauthorized ships proceeding to NEW WESTMINSTER (53).

36. The 18-pdrs remained manned until the spring of 1943, when the VCGS concurred in a recommendation of the GOC-in-C Pacific Command to replace one gun by two 25-pdrs with Field Artillery tractors. The change was designed to extend the battery's role to a mobile one, which would help strengthen the defence of SEA ISLAND and BOUNDARY BAY airfields in case of an emergency (54). The general reduction in coast artillery defences in the fall of 1943 resulted in one of the 25-pdrs being withdrawn (1 Oct 43), and at the end of the year both remaining guns were placed in maintenance (55).

POINT ATKINSON

37. Occasional poor visibility along the four-mile examination line from POINT GREY to POINT ATKINSON due to fog made it advisable to supplement the examination battery at the southern point with an auxiliary battery on the other side of BURRARD INLET. Accordingly, in October 1941 an 18-pdr QF gun on a Mk II mounting was installed at POINT ATKINSON, and manned by a detachment of the 31 Coast Battery of the 15 (Van) Coast Brigade (56). The gun continued to be manned in a "bring-to" role, working in conjunction with the Naval Examination Vessel, and with the examination battery at POINT GREY. Recommendations by the Joint Services Committee proposing the discontinuance of the examination service for VANCOUVER HARBOUR, forecast the removal of the "bring-to" gun at POINT ATKINSON (57). At the beginning of 1944 construction was halted on the emplacement for a 4-inch twin Naval Gun at POINT ATKINSON, with a range of 19,400 yards, one of four such guns tentatively approved for the Pacific Coast early in 1943 (58).

STANLEY PARK

38. In April 1942 a decision was reached to strengthen the YORKE ISLAND defences by replacing the two 4.7-inch guns there by a battery of 6-inch guns (see para 41 below). Of the various sources in Canada from which these guns might be drawn, the defences at STANLEY PARK appeared to be the most satisfactory. (The two 6-inch Mk VII guns on Mk II 15 degree mountings had been installed at STANLEY PARK in 1938). While protests from local authorities and citizens of VANCOUVER were anticipated, it was considered that the importance of having adequate armour at YORKE ISLAND, outpost of VANCOUVER's defences, outweighed the possible disadvantage of replacing the STANLEY PARK armament with guns of smaller calibre (59). It was found possible to utilize existing emplacements in both forts, and the exchange of guns between the two posts was effected smoothly and expeditiously during the first week of May 1942 (60). The 4.7-inch

guns remained in action at FERGUSON POINT, STANLEY PARK, until the fall of the following year, when with other coast armament they were placed in maintenance(61).

YORKE ISLAND

39. The NORTHERN PASSAGE leading from QUEEN CHARLOTTE SOUND down through JOHNSTONE STRAIT and the STRAIT OF GEORGIA afforded a means of approach to VANCOUVER that must be closed to hostile warships. Defence measures in the early days of the First World War consisted of: - a minefield in BROUGHTON STRAIT between PULTENEY PT and VANCOUVER ISLAND, motor boats equipped with torpedoes in ALBERT BAY, and a battery of two 4-inch guns with defence electric lights on the East side of SEYMOUR NARROWS (62). Following a survey of the NORTHERN PASSAGES in October 1936, Major TREATT recommended the selection of YORKE ISLAND as the site for battery of Coast Artillery. YORKE ISLAND, strategically situated off the northern tip of HARDWICKE ISLAND occupied a commanding position in the middle of JOHNSTONE STRAIT at its fork with SUNDERLAND CHANNEL. Every water-borne vessel moving south between VANCOUVER ISLAND and the mainland must pass within 4,000 yards of YORKE ISLAND.

40. The TREATT Report suggested that no counter-bombardment battery at YORKE ISLAND was necessary (62), considering rather that the role of any fort on the island should be to provide an examination battery that would be able to supply information about the presence of hostile vessels in the NORTHERN PASSAGE. To fill this role two 4.7-inch QF guns were installed on YORKE ISLAND early in 1938, and the fort was manned by personnel of the 85 Coast Bty on 29 August 1939 (63).

41. A suggestion of the need for increasing YORKE ISLAND's defences was first put forward in April 1941 when the Permanent Joint Defence Committee on the West Coast recommended to NDHQ that "four 155-mm GPF's should be despatched to CANADA for installation in JOHNSTONE STRAIT, to reinforce the two 4.7-inch guns installed at YORKE ISLAND." It was considered by the Committee that the problem of the defence of the NORTHERN PASSAGES to the STRAIT OF GEORGIA was no longer one of INFORMATION, and that it was much cheaper to close JOHNSTONE STRAIT to the enemy than to have to maintain a striking force in the STRAIT OF GEORGIA or PUGET SOUND (64). In April 1942 the Joint Services Committee, PACIFIC Coast, taking into consideration the unfavourable situation in the PACIFIC, recommended that the 4.7-inch QF guns should be replaced by two 6-inch guns (65). Of the 6-inch equipments available in various parts of CANADA, the guns at STANLEY PARK were considered the most suitable, both from a technical and a strategic viewpoint, and an exchange of armament was effected between the two forts, - the original gun emplacements remaining "in situ" in each case (see para 38 above)(66).

SEARCHLIGHTS, VANCOUVER AREA

42. VANCOUVER's only Defence Electric Lights at the beginning of the war consisted of a battery of 8 CGE 18-inch concentrated-beam lights. These were mounted on 27 August on a platform at north end of the LIONS' GATE BRIDGE, and personnel of the 1st Searchlight Regiment RCA kept them continuously searching right and left across the waters of the FIRST NARROWS (67).

43. Priority was given to the needs of VICTORIA and ESQUIMALT in the delivery of the new searchlight equipment ordered for the PACIFIC Coast (68), and it was not until the end of January 1941 that the first modern 60-inch light was temporarily installed at POINT GREY (69). During the year the remaining lights planned for VANCOUVER's defences were installed around BURRARD INLET. By December installations were complete and 800 million CP Searchlights powered by 45 HP Gardner Diesel engines were in operation as follows: POINT GREY (2 CB), STANLEY PARK (3 CB), POINT ATKINSON (2 CB), and NARROWS NORTH (3 DB). At YORKE ISLAND three CB fighting lights and four Gardner engines were in operation by 10 March (70).

COMMUNICATIONS, VANCOUVER

44. No "fortress" system of range-finding and fire control was originally contemplated for VANCOUVER. Batteries would be controlled independently through their own BOPs (71). In January of 1942, however, construction of a Fire Command Post to control all forts in the area was approved (72) and a site was acquired in WEST VANCOUVER (73). A closed Command Line carried over the BC Telephone Lines connected the Fire Commander with all forts, while a similar CASL Circuit through the FCP kept the OCSL in control of all lights. An administrative line, connecting all units and sub-units of VANCOUVER Defences through the RC Sigs switchboard at VANCOUVER Barracks, was available to replace the command line in emergency. The laying of a submarine cable connecting the examination batteries of POINT GREY and POINT ATKINSON, as well as installation of all local communications within the forts, including maglip cables and searchlight remote controls, was the work of the 10 Area Signals Coy RC Sigs (74).

45. Upon the reduction of Coast Artillery defences in late 1943, which resulted in leaving POINT GREY the only medium gun battery in the VANCOUVER Area, the need for a fire command post apart from the POINT GREY fort ceased. POINT GREY was to be the site of the only CD Radar for VANCOUVER, and it was considered that should STANLEY PARK, still included in the Ultimate Plan of defence, be brought back into action, its battery could be fought from POINT GREY (75). The FCP in WEST VANCOUVER was closed down, and steps taken to dispose of the property.

PRINCE RUPERT FORTS

46. The development of PRINCE RUPERT as BRITISH COLUMBIA's ~~east~~ northern railway terminus and sea port had made of that city an important enemy objective. Should VANCOUVER be out of action, PRINCE RUPERT would become CANADA's only PACIFIC port, both for war supply and commercial traffic. Its potentialities as a naval and air base were foreseen long before the present war. There are two entrances to PRINCE RUPERT Harbour: VENN PASSAGE from the West, and the channel between DIGBY and KAIEN Islands from the South. The closing of VENN PASSAGE to marine traffic (by a log boom and submarine net) would force all shipping in and out of PRINCE RUPERT Harbour to use the Southern passage.

47. In making the recommendations from which the Ultimate Plan for Coast Defence was framed, Major TREATT based his estimates upon a scale of attack similar to that anticipated for VANCOUVER (see para 30 above). The radius of the bombardment area was considered to be 21,750 yards, centered about the vulnerable docks and railway installations of KAIEN ISLAND (PRINCE RUPERT), and to meet the threat the usual plan of having forward counter-bombardment and inner close defence batteries was followed (76).

48. PRINCE RUPERT's sheltered geographical position behind DIGBY ISLAND and the TSIMPSEAN PENINSULA made the tactical problem of selecting defence sites a comparatively simple one. But the engineering difficulties were very great. Heavy bush and deep muskeg predominated over the entire area, and where these were absent, landslide potentialities from loose shale were likely to be encountered. Facing these difficulties the TREATT Report recommended the siting of a counter-bombardment battery of three 6-inch guns on Mk V (45 degree) mountings either at CASEY POINT on the east side of KAIEN ISLAND, or above FREDERICK POINT at the south east tip of DIGBY ISLAND. Such a battery, pointing south and west, would overlap the anticipated bombardment area by some 5,000 yards. For close defence the Report recommended that the counter-bombardment battery should assume a close defence role, and that two "improved" 12-pdrs should be sited at FREDERICK POINT, to act as an examination battery. If it were decided to keep VENN PASSAGE, north of DIGBY ISLAND, open for traffic, it would be necessary to place the two 12-pdrs at DUNDAS POINT (77).

FREDERICK AND BARRETT

49. The Ultimate Plan for PRINCE RUPERT adopted the TREATT Report in principle, confirming the choice of FREDERICK POINT and DUNDAS POINT for the 12-pdrs, but, on the recommendation of the newly appointed Coast Defence Construction Committee, changing the site of the counter-bombardment battery to BARRETT POINT, at the south end of KAIEN ISLAND (78). The difficult task of clearing the sites and constructing the gun emplacements was begun at FREDERICK and BARRETT in

June 1938 (79). Under the Interim Plan three 6-inch Mk XII Naval guns on 15 degree mountings were substituted for the unobtainable high-angle equipments proposed for BARRETT battery. On the outbreak of the war guns at both sides were mounted on temporary emplacements, and manned by the 102 (NBC) Coast Bty, permanent installations being completed in 1940 (80). FORT BARRETT became the examination battery for the southern entrance to the harbour, using a 6-pdr stopping gun, with the battery at FREDERICK POINT supporting in a detaining role. In the fall of 1943, at the instigation of the GOC-in-C, PACIFIC Command, a fourth 6" gun, that was lying idle in PRINCE RUPERT, was mounted with the BARRETT Battery on a temporary basis, but absence of control equipment meant that it could be fired in an emergency by direct observation only.

VENN PASSAGE

50. Construction of a 12-pdr Battery for VENN PASSAGE came low on the priority list recommended by the Coast Defence Construction Committee (81), - in fact the Interim Plan of 1938 included only batteries at BARRETT and FREDERICK in its provision for PRINCE RUPERT defences (82). At the beginning of the war the Navy closed the passage between DUNDAS POINT and VERNEY ISLAND with a spiked A/M TB boom and anti-submarine net, and anchored outside the barrier a covering guardship, HMCS GRIZZLY, a converted pleasure yacht mounting a single 6-pdr (83).

51. Immediately after PEARL HARBOUR, anticipated forms and scales of attack for the West Coast had been increased to the same level as those for the ATLANTIC Coast (84) and a JAPANESE raid against PRINCE RUPERT, soon to become the scene of important American military activities, was considered a distinct possibility. To give additional strength to the closing of VENN PASSAGE a 75-mm gun was mounted on a permanent emplacement at DUNDAS POINT, in June 1942, its arc of fire covering the water to the north across to MEKLAKATLA Village. At the same time two 25-pdrs of the 63 Fd Bty RCA were put in position on VERNEY ISLAND, on the north side of the narrow passage (85). These guns remained at VERNEY, manned successively by the 3 Fd Bty and 6 Fd Bty until September 1943, when a 75 mm gun, moved from DUNTZE HEAD (86)(see para 23 above), was permanently installed and manned by a detachment of the 102 Coast Bty (87).

FAIRVIEW

52. The inclusion in the PRINCE RUPERT scales of attack of bombardment by a capital ship or one or two 8-inch gun cruisers (88) brought to the fore the matter of the limited range of FORT BARRETT's "Interim" six-inch battery. In January 1942 the UNITED STATES War Department, whose interest in the defences of PRINCE RUPERT was increasing for obvious reasons, made available two 8-inch coast guns on disappearing mounts to be installed as a second counter-bombardment battery.

A site was surveyed on the west side of DIGBY ISLAND (89), but the substitution of two 8-inch railway guns in the AMERICAN offer necessitated the selection of a site close to the CNR track on KAIEN ISLAND.

53. A position was picked at FAIRVIEW POINT, a mile below the city, on 29 March (90). The guns were run in on sours, from the main CNR line, and solidly braced upon positions under which a large quantity of rock had been sunk into the muskeg. By the end of June both guns were ready for firing (91). From their position the guns could cover an arc of fire extending approximately 25,000 yards from the city area (92). Like the 8" battery at CHRISTOPHER POINT the FAIRVIEW FORT utilized a US horizontal base range-finding system, which operated independently of the fortress FCP. A Cloke plotting board system was employed, making use of the existing observation posts at BARRETT FCP, at the DIGBY FOP, and a specially constructed base-end station at KEEN HILLS, on the north end of DIGBY ISLAND.

CASEY

54. At the same time that added protection was given to VENN PASSAGE, in June 1942, the A/MTB defences of the southern entrance to PRINCE RUPERT Harbour were strengthened by moving two 25-pdr guns to CASEY POINT, on KAIEN ISLAND, just below the 750 yard anti-submarine net. Again it was a troop of the 63 Fd Bty that dug the gun pits between the railway track and the sea, and mounted and manned the guns. In November of the same year a 6-pdr Hotchkiss "stopping-gun" was brought across the channel from CHARLES POINT and set up at CASEY POINT as a boom defence gun, the position at CHARLES being abandoned of the blinding effect from the long searchlights (93).

SEARCHLIGHTS

55. Modern searchlights (60-inch, 800,000,000 CP) and power plants have been installed to cover the southern entrance to PRINCE RUPERT Harbour, but in the inner waters of VENN PASSAGE and the CHARLES-CASEY narrows it has been found necessary to carry on with less up-to-date DL equipment (94). Two new GE 45 degree "illuminated area" lights were installed at FREDERICK POINT in April 1941 (95), and two concentrated beam fighting lights at BARRETT in July (96). In both cases three 45-HP Gardner Diesel engines supplied the power. These equipments replaced temporary commercial lights operated from September 1939 by the 2 SL Bty (CD) RCA. At DUNDAS the illuminated area was lit by two 18-inch commercial type searchlights with a 5 to 15 degree dispersion. Illumination of the boom at CASEY POINT was supplied by a British searchlight with a 16 degree dispersed beam of 2,000,000 candlepower, powered by a Leyland four-cylinder gasoline engine from the last war (97).

FIRE COMMAND

56. The TREATT Report recommended no fortress system of range-finding for PRINCE RUPERT, on the grounds that the accuracy limits of counter-bombardment Battery Observation Posts would be adequate, and that serious smoke screening was not anticipated (98). In view, however, of the subsequent installation of armament on a greater scale than that visualized in 1937, as well as the extension of range-finding possibilities made available by the introduction to coast defence of radar, a fortress system of control was adopted, with a temporary Fire Command Post being constructed on the hill behind BARRETT FORT. Situated at a point 350 feet above sea level, the Post consisted of three cells that housed a base-end station for the FAIRVIEW 8-inch battery, a daylight observation post for BARRETT Battery, and the FCP itself. To give better range to the radar equipment, (an RDF set, CD No 1 Mk V) the FCP was to move to a permanent position on the 1,000 foot level at MOUNT HAYS when the inclined railway under construction at that point in 1944 reached completion.

57. Through a command exchange established at the FCP the fire commander was linked by direct lines to each of the six forts, the Boom gun and the FOP on DIGBY ISLAND. Additionally, a magneto alarm system reached all forts from the FCP. As an emergency alternative to telephonic communications, CD 12 W/T sets were located at all forts. The arduous work of laying and maintaining submarine cables in the difficult tidal currents of PRINCE RUPERT Harbour, and the tremendous task of building land communications through country unsurpassed in CANADA for its difficult terrain were accomplished by the 9 Area Signals Coy (formerly 9 Fortress Signals), in a manner well in keeping with the traditions of the Royal Canadian Signals.

CONCLUSION

58. The story of CANADA's coast artillery defences on the PACIFIC Coast during the Second World War is, in general, the story of the careful formulation of a comprehensive, long-term plan, the making of subsequent modifications necessitated by changing circumstances, and a steady progression towards a fulfillment as complete and efficient as numerous adverse and often unforeseen limitations would allow. While the one test that might have proved the efficiency of these defences did not materialize, and their deterrent value on the enemy must be taken into account, the record of what was accomplished would seem clearly to indicate that the potential threat of enemy attack had been met in the best way possible.

FIXED COAST ARTILLERY DEFENCES ON THE PACIFIC COAST

1. Provisional Defence Scheme, MD No 11, 5 Feb 21..
File HQS 3545 Vol 1.
2. CGS Memo to Minister - 7 Feb 40. File HQS 5199-C,
FD 15.
3. Summary regarding Guns, Mines, Lights, and
Anti-Submarine Defences of Canadian Harbours -
25 Sep 19. File HQS 66, Vol 14. For detailed
list of armament in 1919 see Appendix 1.
4. CGS Memo.
5. On 8 Mar 36 German forces reoccupied the RHINE-
LAND in defiance of the Treaty of Versailles.
6. CGS Memo.
7. For summary of Approved Ultimate Plan of Coast
Defence MD No 11 as at 7 Dec 38 see Appendix
2.
8. CGS Memo to Minister, 19 Aug 39. File HQS 5199-C
FD 15.
9. For summary of approved Interim Plan of Coast
Defence MD No 11, as at 7 Dec 38 see Appendix
3.
10. An examination 4.7-inch battery installed at
YORKE ISLAND in 1938 was designed to protect
VANCOUVER from a surprise attack from the north.
11. CGS Memo to Minister, 9 Sep 38. File HQS 3498,
FD 19.
12. The exception was the 6-inch battery at POINT
GREY, VANCOUVER, where permanent emplacements
were not constructed until the late summer of
1940. GS 0787 Defensor to Canmilitary, dated
4 Oct 40. File HQS 5199-C FD 15.
13. CGS Memo to Minister, 19 Aug 39. HQS 5199-C, FD 15.
14. Telegram 236 DOC MD 11 to CGS. 27 Aug 39,
HQS 5199-C, FD 15.
15. The relationship of range to the angle of
mounting of coast artillery is indicated in
the following table, which shows extreme
ranges for 6" and 9.2" guns using 6 CRH ammunition.

	Mounting	Angle in degrees	Range in yards
6" guns	Mk II	15	14,500
	Mk V or VI	45	24,500 ¹
	(naval) Mk XII	15	15,600
9.2" guns	Mk V	15	21,000 ²
	Mk VII or IX	35	31,300 ²
	Mk C VIa	30	29,500 ²

- 1 High velocity
- 2 Supercharged

16. This battery was never installed. Vide CGS Memo to Minister - 2 Apr 21. File HQS 8704-4, Vol 1.
- 16a. As early as 1913 the need for moving the counter bombardment battery of 9.2s forward from Signal Hill had been pointed out by Sir Ian Hamilton. In his report on Esquimalt Defences, given in his capacity of Inspector-General, Overseas Forces, he had suggested Albert Hill as a site for these guns, S 1433 d.16 Oct 13.
17. Three modern 9.2-inch high angle (35°) mountings ordered from the War Office in 1936, intended for ALBERT HEAD, and six 45° 6-inch equipments ordered for MARY HILL and BARRETT POINT (PRINCE RUPERT) in 1938, with delivery promised in 1940 and 1941, were all diverted to the Atlantic Coast on the outbreak of War with Germany - DOC MD No 11 ratified by CGS 10 Sep 39, File HQS 5199-C, FD 15.
18. At the outbreak of war the two DUNTZE HEAD 12-pdr guns were at FORT MACAULAY in front of the 6" guns whither they had been moved in 1926 to facilitate annual gun practice on 6-inch and 12 pdr equipments by the 5 BC Coast Bde. They were returned to DUNTZE HEAD in June, 1940.
19. On 7 Nov 39 the Minister approved a Chiefs of Staff recommendation for disposition of four 6-pdr twin equipments expected in 1940 as follows:- One to DUNTZE HEAD, three to Atlantic Command originally intended for BELMONT, OGDEN PIER and NARROWS NORTH (VANCOUVER). File HQS 5199-C, FD 15.
20. War Diary, 17 SL Bty (CD) RCA 30 Sep 39. Later instructions were issued that stopping shots would only be fired on demand from the examination vessels.
21. The Examination Line ran from CAPE CALVER at the south side of PEDDER BAY to CLOVER POINT.
22. 5 (BC) Coast Regt War Diary - 4 May 40.
23. CGS Memo to Minister 7 Feb 40. File HQS 5199-C FD 15.
24. Canadian members of the Conference were Air Commodore AE GODFREY, RCAF (WAC) and Col CV BISHOP, Fortress Commander, V & E Fortress. In addition Commodore WJR BEECH, RCN, and Maj-Gen RO ALEXANDER, GOC-in-C, Pacific Command attended. - 8704-4 Vol 1, 21 Oct 40.
25. In a night letter to the GOC-in-C Pacific Command the CGS (Maj-Gen HDG CRERAR) pointed out that the local representatives submitting the recommendations were not a sub-committee functioning through the Permanent Joint Board of Defence. Such recommendations should have come through Service HQ.

26. File HQMS. Permanent Joint Board of Defence, Vol 1, dated 21 Jan 41.
27. Pacific Command letter VS 38-1-1-20 over VS 36-2-1-42 dated 16 Feb 41 on File HQS 8704-4, Vol 1.
28. GOC-in-C Pacific Command to NDHQ VS 38-1-1-20, dated 31 Nov 41 on File HQS 8704-4, Vol 2.
29. CGS Memo to Minister 2 Apr 41. File HQS 8704-4 Vol 1.
30. DMO & I Memo 4 Dec 41 File HQS 8704-4 Vol 2.
31. Erratum. For "Mk VII" read "Mk CVIa". This Canadian conversion of a British mounting was used successfully for 9.2" guns. The new 45 degree Mk VI mounting for the MARY HILL 6" guns referred to in para 22 was of UK production and differed only slightly from the MK V mounting originally called for in the Ultimate Plan.
32. From August 1939 to June 1940 BLACK ROCK mounted two 12-pdrs. In June 1940 two 12-pdrs were moved from FORT MACAULAY to DUNTZE HEAD, and as they went into action the BLACK ROCK guns were taken to the new fort at GOLF HILL where they fired their proof rounds on 25 Jul 40. BLACK ROCK FORT remained without armament until July 1942 when the two 12-pdrs were brought across from DUNTZE HEAD to make room for the new 6-pdr duplex emplacement there.
33. GOC-in-C to DND PCS 523-1-17-24(ART) dated 1 Jun 42 - War Diary Pacific Command (GS). The 75 mm gun was mounted at DUNTZE HEAD on 13 Aug 42 - War Diary 5 (BC) Coast Regt, RCA.
34. War Diary 17th S/L Bty (CD) RCA, 13-19 Sep 39.
35. CGS Memo to Minister dated 7 Feb 40. File HQS 5199-C, FD 15.
36. GS 0787. Defensor to Cannilitary - dated 4 Oct 40, File HQS 5199-C, FD 15.
37. Locations of lights on completion of installation: Fighting lights (CB) - MARY HILL (3), ALBERT HEAD (2), SAXE POINT and HARRISON POINT (for FORT MACAULAY), CLOVER POINT(2), HOLLAND POINT(2); Illuminated Area Lights (DB) - RODD HILL(2), BLACK ROCK, DUNTZE HEAD, McLAUGHLIN POINT(2).
38. CGS Memo to Minister dated 7 Feb 40. File HQS 5199-C, FD 15.
39. War Diary HQ 5 (BC) Coast Regt RCA dated 15 Dec 43.

40. 8 Fire Commander's Standing Orders, V & W
Fortress Appendix "B" dated 15 Mar 43.
41. "A Resume of Work done by No XII Area Signal
Coy" - Maj B GWYNNE, OC No 11 Area Signal Coy,
RC Signals dated 19 Oct 43.
42. Two 4" Naval guns were mounted in STANLEY PARK
by Naval Authorities for protection of VANCOUVER
during the first World War. These were dis-
mounted about six months after installation.-
"Summary regarding Guns, Mines, Lights and Anti-
Submarine Defences of Canadian Harbours." -
25 Sep 19, HQS 66, Vol 14.
43. Appendix "A" to letter CGS to DOC MD 11 dated
12 Dec 38, on HQS 5199-C FD 15.
In Feb 1940 the Ultimate Plan shows both A/MTB
batteries to be located at NARROWS NORTH.
44. Effective maximum ranges for the 6-inch guns at
POINT GREY on their 15 degree mountings were
given as:-

Full charge 2 CRH	11500 yards
Full charge 6 CRE	14500 yards
45. Appendix "B" to letter CGS to DOC MD 11 dated
12 Dec 38, on HQS 5199-C, FD 15.
46. War Diary 15 (Van) Coast Bde, RCA, dated 6 Oct 39,
and 3 Sep 40.
47. IG (A)(WC) Report - 58 Coast Bty RCA, VANCOUVER,
BC, - HQS 8328-826.
48. HQS 20-1-12, FD 34 (Oprs) dated 1 Oct 43.
49. Report on Defences of VANCOUVER, - Maj BDC TREATT,
MC,RA. 15 Dec 36, File HQS 8337-1, FD 2.
50. War Diary - Headquarters, MD No 11 - 2 Sep 39.
51. Tele 17 DOC 11 to DND dated 18 Sep 39.
52. Tele 966, DOC 11 to DND dated 12 Sep 39.
53. War Diary- 15 (Van)Coast Bde RCA 3 Oct 39.
54. HQS 20-13-12-13, dated 29 Jan 43.
55. HQS 20-1-12, FD 33, dated 25 Sep 43.
56. War Diary - 15 (Van) Coast Bde RCA, dated 3 Nov 41.
57. Joint Services Committee - PACIFIC Coast, Item
24 Special Meeting 29 Dec 43 - File PCS 508-1-1-4
over 508-2-4-10 (JSC).
58. C6855-1, dated 9 Mar 43. Proposed sites of the
other three 4-inch naval equipments were STEVE-
STON, KAIEN STATION(PRINCE RUPERT), and CLARENCE
ISLAND (near YORKE ISLAND).

59. Letter, GOC-in-C Pacific Command to DND PCS 508-2-5-1, d 15 Apr 42 on HQS 20-13-12-15.
60. PACIFIC Command Telegrams 2187, 2211, 2227 and 2279 dated 30 Jun to 8 Jul 42 on file HQS 20-13-12-15.
61. HQS 20-1-12, FD 33 (Oprs) dated 25 Sep 43.
62. In arguing that no counter-bombardment battery was needed at YORKE ISLAND, Maj TREATT pointed out that there was little likelihood of an enemy vessel attempting to reduce the battery before forcing the passage, because
 - (a) It was most difficult for a ship to hit a Coast Defence battery.
 - (b) The bombarding ship would be in a dangerous position, exposed in narrow waters to sea and air attack.
 - (c) Such a bombardment of the battery would not prevent information getting through to VANCOUVER and VICTORIA.
 - (d) The bombardment would delay the attack on the main objective. (VANCOUVER or ESQUIMALT). HQS 2027, dated 3 Dec 36.
63. Fort Record Book, FCP VANCOUVER.
64. These recommendations followed a visit to YORKE ISLAND by Col JH CUNNINGHAM, US Army, 14 Coast Arty, Harbour Defence of PUGET SOUND, and Col CV BISHOP, OC VICTORIA-ESQUIMALT Fortress Area. - HQS 8704-4 Vol 2, 11 Jun 41.
65. PCS 508-2-5-1 (Oprs) dated 15 Apr 42, on HQS 20-13-12-15.
66. Memo DMO & I to VCGS dated 24 Apr 42 on HQS 20-13-12-15.
67. War Diary - 1st Searchlight Regt RCA. 27 Aug 39.
68. See 35 above.
69. War Diary 3 Searchlight Bty (CD) RCA 30 Jan 41.
70. Fort Record Book, FCP VANCOUVER.
71. Memo CGS to Minister, HQS 5199-C FD 15 dated 7 Feb 40. See also TREATT Report, VANCOUVER, HQS 1066, FD 15, dated 15 Dec 36.
72. Minister of CD Construction Committee, 12 Jan 42, S 6756, Vol 4.
73. PC 1243, dated 24 Feb 42 on HQS 20-8-12-13, Vol 2.
74. Fortress Record Book, FCP VANCOUVER.
75. Letter DMO & P to GOC-in-C Pacific Command, dated 28 Mar 44, HQS 20-1-12-13 (Oprs).

76. TREATT Report on PRINCE RUPERT Defences - dated 5 Apr 37. HQS 161, FD 1.
77. Ibid.
78. The Coast Defence Construction Committee, appointed by the CGS, Maj-Gen EC ASHTON, in March 1937, based its recommendation for the selection of BARRETT POINT upon a reconnaissance of the area made by the DES, Col EJC SCHMIDLIN, in October 1937 - HQS 6756, Vol 1.
79. HQC 7521, Vol 7 dated 3 Jun 38.
80. Fort Record Books, FREDERICK and BARRETT Forts.
81. In a list of priorities for construction of West Coast Defences prepared in August 1937, the VENN PASSAGE 12-pdr Battery ranked thirteenth out of fourteen projects - HQS 6756, dated 24 Aug 37.
82. HQS 5199-C, FD 15, - 7 Dec 38.
83. HMCS GRIZZLY was without motive power. Formerly she was owned by the motion picture star Wallace BEERY.
84. For a note on the history of Canadian Forms and Scales of Attack see Appendix 6 to "The Employment of Infantry in the Pacific Coast Defences".
85. War Diary, 63 Fd Bty RCA, dated 4 Jun 42.
86. HQS 338, FD 112 (DSD(W)) dated 27 May 43, on HQC 7521, Vol 7.
87. War Diary 102 Coast Bty, RCA, dated 20 Sep 42.
88. See 84 above.
89. Pacific Command letter VS 63-2-3-1 Dated 6 Feb 42, Pacific Command War Diary GS, Apx 53.
90. PCS 508-2-3-1 (Ops) dated 17 Apr 42 on HQS 20-13-12-14, Vol 1 FD 5.
91. Fort Record Book, FAIRVIEW Fort.
92. HQS 20-1-1-12-14 (Ops) MURCHIE to POPE, dated 30 May 42 gives the range as approximately 27,000 yards. The Fort Record Book at FAIRVIEW Fort lists the effective range at 24,600 yards.
93. Fort Record Book - CASEY Fort.
94. In March 1944 an emplacement for modern DEL equipment was under construction at DUNDAS FORT.
95. War Diary, 2 S/L Bty (CD) RCA - 23 Apr 41.

- 96. War Diary - 2 S/L Bty (CD) ICA - 7 Jul 41.
 - 97. Fort Record Book - CASBY FORT.
 - 98. TREATT Report, PRINCE RUPERT, HQS 161 FD 1,
5 Apr 37.
-