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A 1935 US Plan for Invasion of Canada

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The following is a full-text reproduction of the 1935 plan for a US invasion of Canada prepared at the US Army War College, G-2 intelligence division, and submitted on December 18, 1935. This is the most recent declassified invasion plan available from the US archival sources. Centered pagination is that of the original document. The spelling and punctuation of the original document are reproduced as in the original document, even when in error by present-day norms.

This document was first identified by Richard Preston in his 1977 book, "The Defence of the Undefended Border: Planning for War in North America 1867-1939" (Montreal: McGill-Queen's University Press.) Preston's reference citation (p. 277) identified this to be archived at the US Military History Collection, Carlisle Barracks, Pa., coded AWC 2-1936-8, G2, no. 19A. It was located by the US National Archives and supplied on microfilm.

The military planning context of this document is War Plan Red, which was approved in May 1930 by the Secretary of War and the Secretary of Navy. War Plan Red and supporting documents are available from the US National Archives on microfilm, in the Records of the Joint Board, 1903-1947, Roll 10, J.B. 325, Serial 435 through Serial 641. In War Plan Red, the US Army's theatre of operations is defined to be: "All CRIMSON territory" (p.80), and the US Army's mission, in bold type: ULTIMATELY, TO GAIN COMPLETE CONTROL OF CRIMSON (p. 84). CRIMSON is the colour code for Canada. In 1934, War Plan Red was amended to authorize the immediate first use of poison gas against Canadians and to use strategic bombing to destroy Halifax if it could not be captured.

In February 1935, the War Department arranged a Congressional appropriation of $57 million dollars to build three border air bases for the purposes of pre-emptive surprise attacks on Canadian air fields. The base in the Great Lakes region was to be camouflaged as a

civilian airport and was to "be capable of dominating the industrial heart of Canada, the Ontario Peninsula" from p. 61 of the February 11-13, 1935, hearings of the Committee on Military Affairs, House of Representatives, on Air Defense Bases (H.R. 6621 and H.R. 4130). This testimony was to have been secret but was published by mistake. See the New York Times, May 1, 1935, p. 1.

In August 1935, the US held its largest peacetime military manoeuvres in history, with 36,000 troops converging at the Canadian border south of Ottawa, and another 15,000 held in reserve in Pennsylvania. The war game scenario was a US motorized invasion of Canada, with the defending forces initially repulsing the invading Blue forces, but eventually to lose "outnumbered and outgunned" when Blue reinforcements arrive. This according to the Army's pamphlet "Souvenir of of the First Army Maneuvers: The Greatest Peace Time Event in US History" (p.2).

The following document is a declassified public domain document and may be freely reproduced. This should be of particular interest to people in the Halifx and Quebec City regions, then considered to be the most strategic cities in Canada.

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SUPPLEMENT NO. 3

TO

REPORT OF COMMITTEE NO. 8

SUBJECT:

CRITICAL AREAS OF CANADA AND APPROACHES THERETO

.

Prepared by:

SUBCOMMITTEE NO. 3

Major Charles H. Jones, Infantry, Chairman.
Lt. Col. H.W. Crawford, Engineers.

I. Papers Accompanying.

1. Bibliography. (Omitted, filed in Rec.Sec.)
2. List of Slides. "
3. Appendices (1 and 2). "
4. Annexes. (Incl. A,B,C,D,E,F,G,H,K, and L) "

II. The Study Presented.

Determine under the geographical factor, the critical areas in Crimson (Canada) and the best approaches thereto for Blue. A critical area is assumed to be any area of such strategic importance to either belligerent that control thereof may have a material bearing on the out-come of the war.

III. Facts bearing on the study.

1. General Considerations:

An area in Crimson territory may be of strategic importance from the viewpoint of tactical, economic, or political considerations. In the final analysis, however, critical areas must be largely determined in the light of Red's probable line of action and Crimson's contribution to that effort.

2. Geographical Features of Canada.

a. Location and extent. The location and extent of the Dominion of Canada is shown on the Map herewith (see Exhibit A). It comprises the entire northern half of the the North American continent, excepting only Alaska and the coast of Labrador, a dependency of the colony of Newfoundland.

The principal political subdivisions are those located along the border of the United States. These from east to west are:

(1) The Maritime Provinces:
Prince Edward Island.
Nova Scotia.
New Brunswick.
(2) Quebec.
(3) Ontario.
(4) The Prairie Provinces:
Manitoba.
Saskatchewan.
Alberta.

(5) British Columbia.

Newfoundland, while not a part of the Dominion of Canada, would undoubtedly collaborate in any Crimson effort.

b. Topography. (Slide 14852)

The great area in eastern Canada underlain by rocks of Precambrian age is known as the Canadian Shield. Its northern boundary crosses the Arctic archipelago; the eastern boundary lies beyond Baffin Island and Labrador, and reaches the depressed area occupied by the St. Lawrence, a short spur crossing this valley east of Lake Ontario to join the Adirondack Mountains of New York. The southern boundary runs from this spur west to Georgian Bay thence along the north shore of Lake Huron and Lake Superior, thence northwest from the Lake of the Woods to the western end of Lake Athabaska. Its average elevation does not exceed 1500 feet. The greatest known elevations are in the eastern part of Baffin Island and along the coast of northern Labrador. Peaks of the Torngat Mountains of Labrador have elevations of between 4000 and 5000 feet. The coast is one of the boldest and most rugged in the world, with many vertical cliffs rising 1000 to 2000 feet high. Occasional exceptions occur in which there are reliefs of several hundred feet, as in the hills along the north shore of Lake Huron and Lake Superior. The area is dotted with lakes, large and small, and of irregular outline. A lowland of considerable extent stretches for some distance into Ontario and Manitoba from Hudson Bay.

Extending south and west form the Canadian Shield, between the Appalachian Mountains on the east and the Cordilleras on the west, lies the Great North American plain. The northeastern portion of this plain called the St. Lawrence lowlands occupies southern Ontario, south of a line extending from Georgian Bay to the east end of Lake Ontario; eastern Ontario lying between the Ottawa and St. Lawrence rivers, and that part of Quebec lying adjacent to the St. Lawrence between Montreal and Quebec.

The plain west of the Canadian Shield, known as the Interior Plains, stretches northward to the Arctic Ocean between a line approximately joining Lake Winnipeg and Lake Athabasca, Great Slave Lake and Great Bear Lake on the east, and the foothills of the Rocky Mountains on the west.

That part of the St. Lawrence Lowlands lying in the eastern angle of

Ontario, and in Quebec south of Montreal and extending down the St. Lawrence is comparatively flat and lies less than 500 feet above sea level. On the lower St. Lawrence it is greatly narrowed by the near approach of the Appalachian system to the Canadian Shield. The part lying adjacent to Lakes Ontario, Erie and Huron is of less even surface, has its greatest elevation of over 1700 feet south of Georgian Bay and slopes gently to the Great Lakes.

The Interior Plains region is in general rolling country with broad undulations and a slope eastward and northward of a few feet per mile, descending from an elevation of 3000 to 5000 feet near the mountains on the west to less than 1000 feet at the eastern border. The rolling character of the area is relieved by several flat topped hills, by flat areas that formed the beds of extensive lakes, and by deep river valleys.

The Appalachain and Arcadian regions occupy practically all that part of Canada lying east of the St. Lawrence, with the exception of the lowlands west of a line joining Quebec City and Lake Champlain. The Applachain region is a continuation into Quebec of three chains of the Applachain system of mountains. The most westerly of these ranges, the Green Mountains of Vermont, stretches northeast into the Gaspe peninsula, where it forms flat topped hills some 3000 feet high. The Acadian region, which includes

New Brunswick, Nova Scotia and Prince Edward Island is an alternation of upland with hills and ridges rising 2500 feet and higher. Adjacent to the Bay of Fundy is a series of ridges rising in places to 1200 feet. Between these two New Brunswick uplands, which converge toward the southwest is a lowland forming the whole eastern part of the province. This lowland extends east to include Prince Edward Island, the western fringe of Cape Breton Island and the mainland of Nova Scotia north of the Cobequid mountains, which have an elevation of 800 to 1000 feet. South of the Cobequid Mountains lies a long narrow lowland stretching from Chedabucto Bay to Minas Basin, and along the Cornwallis Annapolis valley between North and South Mountains. South of this lowland is a highland sloping to the Atlantic Coast. The northern part of Cape Breton Island is a tableland 1200 feet high with its central part rising to an elevation of over 1700 feet.

The Cordelleran region, a mountainous area bordering the Pacific extends from the United States through Canada into Alaska and embraces nearly all of British Columbia and Yukon and the western edge of Alberta and the Northwest Territories. The eastern part of the Cordillera is occupied by the Rocky Mountains, with peaks rising to 10,000 feet and 12,000 feet. They extend northwest and fall away towards the Liard River. The western part of the Cordillera is occupied by the Coast Range and the mountains of Vancouver and Queen Charlotte Islands. The Coast Range rises to heights of 7000 to 9000 feet. Between the Rocky Mountains and the Coast Range lies a vast plateau 3000 to 4000 feet high and cut by deep river valleys.

3. Population.

According to the census of 1931, the total population on June 1, 1931 was 10,376,786, of whom 5,374,541 were males. The inhabited areas of the Dominion are essentially confined to a narrow strip alolo the United States boundary, generally south of the 56th parallel of latitude west of the Lake Winnipeg, and south of the 49th parallel of latitude east of Lake Superior. Approximately 10% of the total population are found in the Maritime provinces, 61% in Quebec and Ontario, 23% in the Prairie Provinces and 6% in British Columbia.

Of the present population, 51.86% are of British descent, 28.22% French, and the remainder of widely scattered nativity.

4. Climate.

The climate of southern Canada is comparable to that of the northern tier of the states of the United States. The west coast of British Columbia tempered by the Pacific Ocean is mild and humid. The prairie provinces generally experience extreme cold weather from November to March, with heavy snow fall. The climate of southern Ontario, the St. Lawrence Valley and the

Maritime Provinces is much milder that that of the prairie provinces, but freezing temperatures are general between the end of November and the first of April, and the ground is usually covered with between one and three feet of snow. Any extensive military operations in Canada between November 1st and April 15th would be extremely difficult, if not impossible.

5. Communications.

a. Railways.

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There are only two railway systems in Canada, both crossing Canada east and west from the Atlantic to the Pacific. These lines generally parallel the United States border, in some instances crossing through the United States.

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(1) The Canadian national Railways system (See inclosure B) belonging to and operated by the government, has eastern terminals at Halifax, N.S., Portland, Maine (Grand Trunk), and through the Central Vermont, at Boston, New London and New York. Western terminals are Vancouver and Prince Rupert B.C. An extension from Cochrane, Ontario, to Moosonee, Ontario on James Bay, was completed by the Province of Ontario in July 1932, to connect with water routes to Churchill, Hudson Bay and with the northern route to Europe.

(2) The Canadian Pacific system (see inclosure C) has its eastern terminus at Saint John, N.B. and it western terminus at Vancouver, B.C. As indicated by the systems maps, there are numerous branch lines serving the industrial and farming areas of the Dominion, and connecting lines tying in with various railroads of the United States.

From a military viewpoint, these railroads provide excellent transportation facilities for Blue, if invasion of Crimson is decided upon, and being located in close proximity to the border are, from the Crimson viewpoint, very liable to interruption. This is particularly true at Winnipeg some 60 miles north of Blues border, through which both transcontinental systems now pass. This fact probably encouraged Canada to construct the railroad from The Pass, Manitoba and develop the port at Churchill.

Complete details concerning all railroads of Canada are contained in Appendix No. 1.

b. Highways.

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In recent years Canada has greatly increased and improved her road construction and while there are enormous stretches of country, particularly in the northern portion of the Dominion, with few or no roads, the southern portion is well served with improved roads. A number of transcontinental motor roads are under construction or projected, the most important being the "Kings International Highway" from Montreal to Vancouver, via Ottawa, North Bay, Sudbury, Sault Ste. Marie, Winnipeg, MacLeod, Crow's Nest Pass, Fernia and Cranbrook. Another highway is being constructed from Calgary to Vancouver.

The principal roads in Ontario, Quebec and the Maritime Provinces are shown on Inclosure D, herewith. Roads in the Prairie Provinces and British Columbia are shown on inclosure E.

The majority of improved roads are classified as gravel; macadam and concrete construction amounting to only 7870 miles out of a total of some 95,000 miles improved. Gravel roads will require extensive maintenance under heavy motor traffic, especially during the spring.

c. Water Transportation.

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(1) Inland Waterways.

The Great Lakes, with the St. Lawrence River, is the most important fresh water transportation system in the world. At the present time it affords a draft of 21.0 feet over all the Great Lakes and through the Welland Canal into the St. Lawrence. From the Atlantic Ocean to Montreal, the present head of ocean navigation on the St. Lawrence, a draft of 30.0 feet is available, adequate for the great majority of ocean shipping.

For some distance above Montreal the present channel has an available depth of only 14.0 feet.

The inland waterway is of prime importance to the economic life of both the United States and Canada for the transportation of bulk commodities, especially for the movement of wheat from the western plains to shipping centers on the eastern seaboard; of iron ore from the mines in Minnesota to foundaries along Lake Ontario; and for coal from the mines of Pennsylvania and West Virginia to Ontario, Quebec and the northwest.

The locks at Sault Ste. Marie, the boundary channels between Port Huron and Detroit and to a lesser degree the Welland Canal are the critical points on this waterway and effective control of such areas is vital to Blue.

Navigation on the Great Lakes is generally closed by ice from about the end of November to the first of April.

The St. Lawrence River is ordinarily ice bound for a similar period, but somewhat later about early in December to the latter part of April. While there are a number of Canadian lake ports of importance, Montreal is the only one which would not be automatically closed by Blue control of the Lakes. Montreal is also an important ocean port and will be considered along with other deep sea ports.

(2) Ocean Shipping.

The Dominion of Canada owns and operates a cargo and passenger carrying fleet consisting of some 57 cargo vessels and 11 passenger ships.

The principal ocean ports and the magnitude of Canadian ocean traffic is indicated by the following tabulation:

A. Number and tonnage of sea-going vessels entered and cleared at the principal ports of Canada. (For year ending March 31, 1934.)

PORT	SEA-GOING VESSELS arrived	departed	TOTAL TONS (REGISTERED)
Halifax, N.S. *	1259	1484	7,540,990
Yarmouth, N.S.	535	519	1,102,191
St. John, N.B. *	684	688	2,924,822
Montreal, Quebec *	1078	907	7,266,569
Quebec, Que. *	397	308	3,388,829
Prince Rupert, B.C.	1141	1155	251,881
Vancouver, B.C. *	2332	2137	11,705,775
Victoria, B.C.	1927	1938	8,874,481
New Westminster, B.C.	678	700	3,123,606
IMPORTANT SECONDARY PORTS.			
Churchill, Man. *	15	15	132,000
Three Rivers, Que	79	79	424,560
Windsor, N.S.	56	69	201,032

Note: The above figures do not indicate amount of commerce; Register tons are gross tons. (Namely cubical contents in cubic feet divided by 100) less deductions for crews space, stores, etc.

A brief description of the above ports to indicate size, available depths and important terminal facilities is included in Appendix No. 2.

While the above tabulation lists the principal ports, it should be realized that there are a large number of less desirable ports having available depths at low water of from 20 to 30 feet and provided with satis-

factory terminal facilities, which can be used in an emergency for landing troops or supplies. Examples of this class of harbors are:

Pictou, N.S.
Sydney, N.S.
Canso, N.S.
Gaspe', Quebec
Sorel, Quebec

The port of Montreal, favorably located at the head of ocean navigation on the St. Lawrence and the foot of inland navigation of the Great Lakes, is a natural shipping and railroad center. The port of Quebec is less favorable situated economically being more than 100 miles northeast of Montreal. Strategically, however, Quebec controls the commerce of Canada moving to or from the Atlantic seaboard. Its possession by Blue would interrupt eastern rail and water communication between England and the Maritime Provinces and the rest of Canada.

The port of Halifax is one of the best harbors on the Atlantic Coast and the principal winter port of Eastern Canada. The harbor has been extensively developed by the Dominion government as a modern ocean terminal and naval base. It is fortified, though much of the armament is obsolescent. In case of war with Red, Halifax would become of prime importance to Red as a naval base and as a debarkation point for overseas expeditions in case Blue controlled the St. Lawrence. However, the routes available for a Red advance from Halifax into northeastern United States or towards Quebec and Montreal are quite difficult.

The port of Saint John, New Brunswick is similar in many respects to the port of Halifax. It is open throughout the year and equipped with the most modern terminal facilities, including one of the largest drydocks in the world. It is an important shipping center for grain and dairy products. Due to the proximity of the port to the United States border and the fact that the principal rail connections (C.P. Ry.) passes through the state of Maine, the port would be of little use to Crimson or Red, at least in the early stages of war, provided Blue made any effort to control this area.

The port of Vancouver, B.C. came into prominence with the opening of the Panama Canal, providing an alternate route to that of the transcontinental railroads for grain, dairy, lumber and the other products of western Canada to Europe.

The port of Victoria, on Vancouver Island, is similarly situated, but due to the absence of rail connection with the mainland is more concerned with passenger and mail traffic than with bulk commodities. Esquimalt, two miles west of Victoria, and the only Canadian naval base on the west coast, is equipped with a large modern drydock, and affords good anchorage for the largest vessels. Consequently this area is of prime importance to Crimson. With the closing of the Panama Canal to Red traffic and the presence of Blue naval forces based on Honolulu, its commercial value is largely destroyed. Assuming that Blue controls the St. Lawrence and cuts Crimson's eastern communication with Red, the areas importance is enhanced, although it remains a decidedly unsatisfactory outlet. If Red should win control of the Pacific steamship lanes, the area becomes of first importance to Red. All factors considered, it must be controlled by Blue.

The port of Prince Rupert is a first class harbor with modern terminal facilities and excellent and extensive anchorages. It becomes of extreme importance to Crimson, if and when they are denied the use of the southwest British Columbia ports, although, as in the case of Vancouver, it affords a most unsatisfactory and hazardous route to Europe. Physical occupation of Prince Rupert harbor by Blue is not vital, but closing the port to ocean traffic should be effected.

The port of Churchill, Manitoba now offers a good harbor and limited but modern terminal facilities, affording a back door to the Prairie Provinces and, by way of Moosonee, Ontario, and the Temiskaming and Northern Ontario Railroad, with central and western Ontario. Hudson Bay and James

Bay are open to navigation only about 4 months of the year, but this condition is partially offset by the fact that the distance from the Prairie Provinces

to Europe, via Churchill is from 500 to 1000 miles shorter than the rail-water route via Montreal. In case Red is denied the use of the Atlantic or Pacific ports, or both, Churchill will afford an outlet for grain and meat products from Ontario, Manitoba and Sasketchewan and an inlet for military supplies and troops from Europe unless the northern trade route through Hudson Strait is controlled by the Blue fleet, and this is improbable.

d. Air Transportation (Civil).

During 1933 there were 90 commercial aircraft operators in Canada. Their activities included forest file patrols, timber cruising, air photography, transportation of passengers, express and mail, etc.

To encourage a more widespread interest and knowledge of aviation the Department of National Defense, since 1928, has issued two light airplanes and made certain grants to each of 23 flying clubs and a large air terminal has been built at St. Hubert, seven miles south of Montreal and a terminal airdrome at Rimouski, Quebec for the reception of trans-atlantic mails.

At the close of 1934 there were 101 air fields of all types, 368 civil aircraft and 684 licensed pilots in Canada. Some details of airports in New Brunswick and Nova Scotia are given in a letter from the Office of the Chief of Air Corps, herewith. (See inclosure F)

e. Telephone and Telegraph.

(1) Cables.

Six transoceanic cables have termini in Canada, five on the Atlantic and one on the Pacific. The Atlantic cables are landed at Halifax, though several of them are routed through Newfoundland. The Pacific cable lands at Vancouver from whence a cable also leads to the United States.

(2) Radio.

A transoceanic commercial radio beam service is carried on by a station at Drummondville, Quebec, with Australia, Great Britain and the United States. In 1932 a direct radio telephone circuit with Great Britain was opened through the medium of this beam station.

(3) General.

Canada is well supplied with local telephone, telegraph and radio service.

Interruption of Canada's trans-oceanic telegraph and radio service will seriously handicap Red-Crimson cooperation.

6. Other Economic Factors.

a. Agriculture.

Agriculture, including stock raising and horticulture, is the chief single industry of the Canadian people. Canada is not only self-sustaining, as far as food is concerned, but has a large excess for export. Food production is varied and so distributed throughout the dominion that each section is practically self-sustaining and cutting her off from the outside would would mere serve to deny her people certain luxuries, such as coffee, tea, sugar, spices and tropical fruit.

The Maritime Provinces are noted for their fruit and vegetable crop, particularly for the oat and potato crops of Prince Edward Island and New Brunswick and apples in Nova Scotia. Quebec and Ontario are mixed farming communities with the Niagara peninsula specializing in fruit. Manitoba, Saskatchewan and Alberta are the principal wheat producing centers, with other grains and stock raising of increasing importance. The rich valleys of British Columbia produce apples, other fruit and vegetables.

b. Forests.

The principal forests are in the provinces of British Columbia, Ontario, Quebec, New Brunswick and Nova Scotia. The manufacture of lumber, lath, shingles and other products such as paper pulp, is the second most important Canadian industry.

c. Mineral Resources.

Canada is one of the greatest mineral producing countries of the world. Nova Scotia, British Columbia, Quebec, Ontario, Alberta and the Yukon Territory contain the chief mining districts. The following summary notes pertinent facts concerning minerals of primary military importance.

Aluminum. Aluminum was the 16th ranking Canadian export in 1934. Large quantities of bauxite, the principal source of supply were imported from the United States.

Coal.

There are enormous deposits of coal in Canada, largely in Nova Soctia and New Brunswick, in the east and in Alberta, Saskatchewan and British Columbia in the west. Due mainly to the distance of the fields from the manufacturing and industrial centers, about 50% of the coal consumed is imported from the United States, via the Great Lakes. Statistics for the calendar year 1933 show:

Produced:

Nova Scotia	6,340,790 tons
New Brunswick	314,681 "
Manitoba	3,036 "
Saskatchewan	903,776 "
Alberta	4,748,074 "
British Columbia	1,484,653 "
Yukon Territory	638 "

Imported:

From United States	8,865,935 tons
From United Kingdom	1,942,875 "

Total - - - - - - .....22,265,235 tons.

(see slide 14855)

In case of war with the United States, Canadas coal imports from this country would be cut off and her railroads and industrial activities seriously handicapped. If Blue controlled the Quebec area and Winnipeg, Canada's railroads and industries dependent upon "steam power" would be crippled.

Copper.

The world production of copper in 1933 was (in short tons):

Canada	149,992	Mexico	43,900
Rhodesia	144,954	Peru	28,000
Belgian Congo	73,409	Spain and)	
Chile	179,200	Portugal)	34,720
Japan	75,459	United States	196,190

Canada's production was distributed approximately as follows:

Province	Tons	
Quebec	35,000	Eastern Townships
Ontario	72,700	Sudbury area
Manitoba	19,000	Flin Flon
Saskatchewan	1,600	
British Columbia	21,600	Western Manitoba

Iron and Steel.

Canada ranks seventh among the nations as a producer of iron and steel but only a small percentage of her production is derived from domestic ores, in view of the abundant supply of higher grade ores in Newfoundland

and Minnesota. The Wabana section of Newfoundland contains the largest known single deposit of iron ore in the world. There are large iron ore deposits in Quebec, northern Ontario and British Columbia but for various reasons they are handicapped for blast furnace treatment. Iron and steel are produced in Nova Scotia (Sydney) and in Ontario. Iron ore is obtained from the Mesabi Range in Minnesota, via the Great Lakes and from Newfoundland. (See slide 14856) The bulk of iron and steel products, however, are imported, principally from the United States and the United Kingdom.

Lead.

Lead is obtained in Canada largely from deposits in British Columbia, the largest porting being exported to England.

Nickel.

The world production of nickel in 1933 was about 50,736 tons, of which about 82% originated in the Sudbury district, north of Georgian Bay in Ontario. The remainder came chiefly from New Caledonia (Fr.). A new deposit of nickel was recently discovered in northern Saskatchewan but has not yet been worked.

Nickel is necessary to industry and indispensable in war. Control of the Sudbury mines, in case of war, is therefor of vital importance.

Petroleum.

The production of crude oil or petroleum in Canada during 1934 amounted to 1,417,368 barrels, principally from the Turner Valley field in Alberta. A small amount is also obtained from wells near Monkton, New Brunswick and in southwest Ontario, between Lake Huron and Lake Erie. Considerable quantities are also imported from the United States.

Zinc.

Canada ranks fourth among the worlds producers of zinc. Her output in 1934 totaled 298,579,531 pounds. The principal producing mines are located in the Kootenay district of British Columbia and near Flin-Flon in northwest Manitoba. Approximately 2/3 of the zinc exported goes to Great Britain.

d. Manufacturing.

(1) General.

Canada is the second largest manufacturing country in the British Empire, with Ontario and Quebec the most important industrial centers. The relative standing of the various provinces during 1933, based on the value of products manufactured, was approximately as follows:

Ontario	$1,000,000,000.
Quebec	650,000,000.
British Columbia *	146,500,000.
Manitoba	91,000,000.
Alberta	55,000,000.
Nova Scotia	53,000,000.
New Brunswick	45,000,000.
Saskatchewan	36,000,000.
Prince Edward Island	3,000,000.

*Includes Yukon Territory

The principal industries ranked according to gross value of products (1932) are:

Pulp and Paper	$123,415,492.
Central Electrical Stations	117,532,081.
Non-ferrous metal smelting	100,561,297.
Slaughtering and meat packing	92,366,137.
Flour and food mills	83,322,099.
Butter and Cheese	80,395,887.
Petroleum Products	70,268,265.
Bread and other bakery product	51,244,162.
Cotton yarn and cloth	51,197,628.
Printing and publishing	50,811,968.

Clothing factory, women's	44,535,823.
Automobiles.	42,885,643.
Rubber goods.	41,511,556.
Hosiery and knitted goods	40,997,210.
Sawmills.	39,438,057.

(2) Munitions.

(a) Aircraft.

There are at present six firms manufacturing aircraft as follows:

Canadian-Vickers.....Montreal, Que.
De Haviland.....Toronto, Ont.
Curtis Reid.....Cartierville, Que.
Fairchild.....Longueuil, Que.
Boeing.....Vancouver, B.C.
Ottawa Car Mfg. Co.....Ottawa, Que.

Aero engine factories have been established by:
Armstrong-Siddeley Motors Co. at Ottawa, Que.
Aero Engines of Canada at Montreal, Que.
Canadian Pratt-Whitney Aircraft Co. at Longueuil, Que.

(b) Miscellaneous.

During the World War Canada demonstrated her ability to divert her peace time industries to the production of munitions, when she manufactured and exported large quantities of shells, fuses, cartridge cases, explosives, gun forgings, machine guns and small arms ammunition. This production could not be obtained in case of war with Blue but some munitions could be produced if her factories were free to operate and raw materials were available. The government arsenal at Lindsey, Ont., is equipped to produce small arms ammunition and the arsenal at Quebec manufactures some small arms and artillery ammunition.

e. Commerce.

Analysis of Canada's industry and resources indicate that she has a sufficiency or surplus of certain raw materials but a deficiency of others. The more important of these materials are as follows:

(1) Sufficiency or surplus;

Arsenic, asbestos, cadmium, cobalt, copper, feldspar, fish oil, fluospar, foodstuffs, furs, gold, graphite, gypsum, lead, leather, magnesium, mica, nickel, silver, talc, wood and zinc.

(2) Deficiency;

Aluminium, antimony, bauxite, barytes, camphor, chromite, coal, cotton, flax, hemp, iron, jute, kaolin, manganese, mercury, nitrates, phosphate, petroleum, opium, quinine, rubber, silk, sugar, sulphur, tea, tin, tobacco and wool.

7. Combat Estimate.

a. All matters pertaining to the defense of Canada are under a Department of National Defense (Act of Jan. 9, 1923) with a minister of National Defense at the head. A Defense Council has been constituted to advise the Minister.

b. The Navy has an authorized complement of 104 officers and 812 men, a large majority serving under 7 year enlistments. In addition certain specialists are loaned from the British Royal Navy. The Reserve consists of from 70 to 113 officers and from 430 to 1026 men recruited from sea-faring personnel.

The ships of the Royal Canadian Navy are:

Built	Class	Displacement	Name	Location	Status	Armament
1931	Destroyer	1337 tons	Saguenay	Halifax, N.S.	In comm.	4-4.7"
1931	"	1337 "	Skenna	Esquimalt,B.C.	" "	4-4.7"

1919	"	905	"	Champlain	Halifax, N.S.	"	"	3-4"
1919	"	905	"	Vancouver	Esquimalt,B.C.	"	"	3-4"
1918	Mine Sweeper	360	"	Armentieres	Esquimalt,B.C.	"	"	
1918	" "	360	"	Festubert	Halifax, N.S.	"	reserve	
1918	" "	360	"	Ypres	Halifax, N.S.	"	"	

c. Army.

(1) Personnel: Estimated Strength (by G-2):

Organized Forces.

	Active	Reserve	Total
Permanent Active Militia	403		403
Officers	403		403
Men	3300		3,300
Non Permanent Active Militia			
Officers		6,911	6,911
Men		44,962	44,962
Reserves, Non-active			
Officers		10,000	10,000
Men		30,000	30,000
Total Organized	3,703	91,873	95,576 *

Note: The Canada Year Book, 1935, pp 1114, gives permanent and non-permanent active militia 1934:

Permanent Officers and men---------	3,760
Non-permanent officers and men-----	135,184
Total	138,941

The latest information concerning the distribution of the active militia is shown on the accompanying map. (Incl. G)

(2) It is probable that the Non-permanent Active Militia can be brought to a strength of 60,000 at M plus 15 and to full strength of 126,000 in M plus 30 days. (Note: This estimate is approximately twice that of G-2, First Army.) New troops will begin to appear in 180 days at the rate of 50,000 monthly.

d. Air Service.

The Royal Canadian Air Force operates under a directorate in the office of the Chief of Staff of the Army.

Strength (Dec. 1, 1934)

Active:	
Officers	117
Men	664
Reserve:	
Officers	38
Men	236
Total	1,055

The equipment consists of some 84 combat planes with probably 20 on order. (G-2 estimate) The Armaments Year Book, League of Nations, gives a total of 166 planes of all kinds and the Statesman Year Book, 1935 gives 189 planes of all kinds. It is probable that about one squadron of pursuit and one squadron of observation could be organized for immediate service.

e. Comment.

The location of Canada's industry and population along a narrow extent front facing the northern United States border and her relatively weak

military and naval forces, widely dispersed, will necessitate a defensive role until Red forces are landed. The promptness and effectiveness of British aid must depend upon suitable debarkation points on Canada's east coast. The West Coast does not favor overseas operations unless Red controls the Pacific, and even then is too remote from critical Blue areas.

f. Red Reinforcements.

Various estimates have been made of the size, composition, and time of placing Red reinforcements in Canada. In any such estimate, the time factor is of prime importance but depends on an unknown quantity, viz, "the period of strained relations."

The following estimate is considered conservative:

Probable Enemy Forces in Canada

Days after M Day	Crimson men	Crimson Div.	Empire (Less Crimson) Men	Empire (Less Crimson) Div.	Total Men	Total Divisions
15	25,000	5	---	---	25,000	5
30	50,000	5	---	---	50,000	5
60	50,000	5	126,000*	8	176,000	13
90	50,000	5	203,000	13	253,000	13
120	50,000	5	238,000	16	288,000	21
150	50,000	5	255,000	16	305,000	21
180	90,000	6	255,000	16	345,000	22

*Under certain conditions this force might be landed in Canada by 30 M.

Air Forces.

Red has available at once 48 squadrons of 10 to 12 planes each. The following forces can probably be landed in Canada as indicated.

10 M	13 squadrons.
30 M	30 squadrons.
60 M	41 squadrons.
90 M	56 squadrons.
120 M	74 squadrons.

f. Conclusion.

Crimson cannot successfully defend her territory against the United States (Blue). She will probably concentrate on the defense of Halifax and the Montreal-Quebec line in order to hold bases of operation for Red. Important secondary efforts will be made to defend her industrial area and critical points on her transcontinental railroad lines.

8. Areas of Strategic Importance.

Analysis of the above data and discussion indicates certain areas which would become of considerable military importance in the event of war with Red; namely,

a. The Halifax Monkton St. John area, sometimes called the Martime Province area.

b. The Montreal Quebec area, sometimes called the St. Lawrence Area.

c. The Great Lakes Area.

(1) Niagara River Area.
(2) Sarnia-Windsor Area.
(3) Sault Ste. Marie Area.
(4) Sudbury Area.

d. Winnipeg Area.

(1) Winnipeg City and vicinity.
(2) Churchill, Manitoba Area.

e. Vancouver-Victoria Area.

(1) Ports of Vancouver and Victoria, area.
(2) Prince Rupert area.

f. The reasons why these various areas are strategically important may be briefly summarized as follows:

(1) Halifax Monkton St. John Area. (Maritime Province)

The port of Halifax is the key point in the area, for while the port of St. John affords excellent facilities for an overseas expedition, it is so close to the United States border that uninterrupted use by Red cannot be expected. At Monkton, the peninsula connecting Nova Scotia and the mainland narrows to 14 miles. With Halifax in possession of Crimson, this area affords the best defensive position to prevent any advance westward by Red.

(a). Control of Halifax by Blue would:

1. Deny Red the only ice free port on the east coast and the only ports, other than the St. Lawrence River ports, suitable as an overseas base.
2. Deny Red a prepared naval base on the east coast, from which to operate against Blue naval forces or commercial shipping.
3. Disrupt transoceanic submarine cable service between Crimson and Red (except from Newfoundland) and between Crimson and the West Indies.
4. Deny Red the use of certain air bases from which to operate against northeastern United States.

(b) The control of Halifax by Blue, renders the Port of St. John and the Monkton area of secondary importance. Failing to secure Halifax control of the Monkton area by Blue would:

1. Deny Red the use of St. John Harbor.
2. Cut the lines of communication between the port of Halifax and St. John and the remainder of Canada.
3. Place Blue directly across the only line of advance (by Red) from Halifax, on the shortest possible defensive line.
4. Deny Red the use of certain air bases from which to operate against northeastern United States.
5. Give Blue the use of various small air fields at Monkton and St. John.

(2) Montreal - Quebec Area (St. Lawrence River Area).

The ports of Montreal and Quebec, while ice bound about four months of the year, still afford the best overseas base both as to facilities and location. In addition the area is of great commercial importance in that it controls all lines of communication, by land, sea and wire between industrial and agricultural centers of Canada and the eastern seaboard. While Montreal has the larger and more commodius harbor and terminal facilities, Quebec, due to its physical location, is the key point of the area.

Control of this area by Blue would:

(a) Deny the use of all good St. Lawrence River ports to Red.

(b) Cut all Canada, west of Quebec, viz. industrial, and agricultural centers from the eastern seaboard.

(c) Deny Red and Crimson and make available to Blue, the principal air bases in eastern Canada.

(d) Deny Crimson coal and iron from Nova Scotia and Newfoundland as well as all imports via the Atlantic.

(3) The Great Lakes Area.

This area comprises several critical points:

(a) Niagara River crossings and Welland Canal.

(b) The waters connecting Lake Huron and Lake Erie.

(c) The great industrial area of Canada - that part of Ontario lying between Lake Huron and Lakes Erie and Ontario.

(d) The waters connecting Lake Superior and Lake Huron, including the Soo Locks.

(e) The Sudbury nickel-copper mines.

Control of the Great Lakes waterway is vital to Blue, for the transportation of iron ore, coal and grain and such control will necessitate occupation of a bridgehead covering the narrow boundary waters at and near the Soo Locks and in the Detroit Area. The bridges over the Niagara River and the Welland Canal, connecting Lake Erie and Lake Ontario are of importance to Blue for occupation of the Important industrial area of the Niagara-Ontario peninsula. The Welland Canal would become of importance as a line of communication if Blue seized the peninsula. While control of that area is of importance in crippling Crimson industry, it is probably of greater importance in denying the enemy Crimson and Red, a most convenient base for operations against highly industrialized areas in the United States.

(4) Winnipeg Area.

Winnipeg is the nerve center of the transcontinental railroad system. Control by Blue will effectively separate eastern and western Canada and block transportation on men, grain, coal, meat and oil to the east. The completion of the Canadian National Railroad to Churchill Manitoba on Hudson Bay and the development of the port at Churchill provide an alternate route to Europe via Moosonee, Ont., and the Tem. and Ont. Ry. to northeast Ontario. While the water route through Hudson Bay is only open about four months of the year, and the ports are supplied by single track railroads, a considerable amount of traffic could be developed in an emergency.

(5) Vancouver - Victoria Area.

As pointed out above, the ports in this area are of secondary importance only under the conditions, which may reasonable be assumed. However, the area has certain military importance, due to the naval base at Esquimalt, and is a possible outlet for the Canadian plan provinces and western Canada. Its control by Blue would deny the enemy any base or outlet on the West Coast; simplify the problem of protecting our shipping in the Puget Sound area; and interrupt cable communication with the far east.

While Prince Rupert, B.C. has an excellent harbor and terminal facilities with good rail connections leading east, naval blockade of this port would be readily possible, once the Vancouver - Victoria area was in Blue control.

9. Routes of Approach to the Areas of Strategic Importance.

a. Halifax - Monkton - St. John Area (Maritime Provinces) (Incls. D & H).

Three possible routes of approach are considered, viz:

(1) Via water from Boston or New York to Halifax or vicinity.

(2) Via water from Boston or New York to ports in Western Nova Scotia and thence overland to Halifax.

(3) From Eastern Maine, via St. John and/or Fredericton to Monkton - Amherst - Truro to Halifax.

b. Discussion of Routes of Approach to the Halifax - Monkton - St. John

(Maritime Province) Area.

(1) The distance by water from Boston to Halifax is 370 miles and from New York 600 miles, or in time about 30 or 50 hours respectively. The Port of Halifax is fortified and would undoubtedly be mined. A frontal attack would require a large force and would involve undesirable delays. Other developed ports of Nova Scotia on the Atlantic are too distant from Halifax and involve a long advance after a landing is effected and this advance would be over difficult terrain.

A number of undeveloped bays along the east shore offer favorable conditions for landing operations and of these, St. Margarets Bay, the nearest, being some 16 miles by road west of Halifax, appears satisfactory. Deep water, with a minimum depth of 7 fathoms extends nearly to the head of the Bay, not far from Hubley and French Village, which are on an improved road and on the railroad from Yarmouth to Halifax. The bay is protected from all winds and seas, except those from the south and is of sufficient size to harbor any fleet required for the expedition. Tidal range is the same as at Halifax, 6 to 6 1/2 feet. There are numerous small but adequate boat and barge landings on the west, north and east shore of the bay, from whence improved roads lead to the main highway.

The highway Hubbard - French Village - Hubley - Halifax is 18 feet wide, of macadam, with east grades and with concrete bridges capable of carrying heavy artillery and tanks. The railroad is single track, standard gauge and parallels the road. It has rather heavy grades and is of light construction.

Rocky wooded hills rise rather steeply to a height of 200 to 400 feet all around St. Margarets Bay, but the roads are within the 50 foot contour and the terrain between the roads and the water is greatly rolling. The main highway French Village - Halifax, runs through low rocky hills and movement off the roads by wheeled vehicles would be practically impossible.

(2) The ports on the western shore of Nova Scotia off the Bay of Fundy are subjected to extremely high tides - 20 to 25 feet, and generally afford only limited terminal facilities and have depths generally inadequate for docking transports. Tidal currents are strong. From Windsor, on the Avon River, to Halifax, there is one improved road and a branch of the Canadian Northern Railroad. The distance is about 50 miles, with high ground and good defensive positions in the center of the island. As a route of approach to Halifax it is considered inferior to the route from St. Margarets Bay.

(3) The All Land Route via Eastern Maine.

This route involves an advance from the Maine border of approximately 320 miles over difficult terrain. The St. Johns River, rising near the border of northern Maine, flows south just east of the Maine - New Brunswick border to Woodstock, thence generally southeast through Fredericton to St. John. It is navigable from the mouth to the falls some distance above Woodstock, N.B. The average tidal range at St. John is 20 1/2 feet, decreasing up stream. The river is crossed by a highway and a railroad bridge at Fredericton, each nearly 1/2 mile long. Two other bridges, a cantilever railroad bridge and a suspension bridge span the river about one mile above the city of St. John. There are numerous ferries operating alone the river. It is apparent that the St. John River is a serious obstacle to any advance overland from Maine. While the St. John could be bridged, such operations would result in considerable delay.

The railroad and road nets available are shown on Inclosures B, C and D. They are reasonably adequate for a force of the size probably required for this operation.

(4) Conclusion.

If Halifax is to be captured without the use of large forces and expenditure of considerable time and effort, it must be accomplished promptly

before Red reinforcements can be landed or Crimson organize for its defense. Any advance overland from Maine would eliminate all elements of surprise and make the capture extremely difficult - a major operation.

An overseas expedition is one of the most uncertain of military operations, and with the Red fleet on guard in the North Atlantic, with Red's immediate military objective the retention of a base in eastern Canada for future operations against Blue, a joint operation against Halifax must be promptly and perfectly executed to assure any hope of success. This route is considered the best but existing conditions at the time, may make this route impracticable, and the all land route necessary.

c. The St. Lawrence Area. (Quebec - Montreal)

The only practicable routes of advance for Blue, into this area, are from northern New York, New Hampshire and Vermont and from northwest Maine. (See map) (Incl. K)

(1) Rivers.

(a) The St. Lawrence River flanks the left side of all routes of approach to Quebec. From Montreal to Three Rivers it flows through an alluvial plain, with the south bank 25 to 75 feet above the river. Below Three Rivers the banks increase steadily in height to Quebec, where they are 140 to 175 feet high. The normal rise and fall of the river above the tidewater is 10 feet but this maybe doubled by ice jams. Tidal range reaches a maximum of 18 feet at Quebec, and practically disappears at Richelieu Rapids 40 miles above Quebec. The river above Quebec is obstructed by ice from November to April but ice breakers can get through. The river from Quebec to Montreal, generally about 1/2 to 2 miles wide (except at Lake St. Peter) is navigable on a 30' draft to Montreal. The distance from Quebec to Montreal is 160 miles.

In the area south of the St. Lawrence, between Quebec and Montreal, are several rivers of importance which will naturally influence any plans for an advance on Quebec, viz:

Richelieu River
St. Francis River
Nicolet River
Becancour River
Chaudiere River
Etchemin River

Other streams will create obstacles of lesser importance.

(b) The Richelieu River flows north from Lake Champlain to enter the St. Lawrence about 35 miles north of Montreal. It is navigable on a 6 1/2 foot draft throughout its length.

(c) The St. Francis River rises in St. Francis Lake some 50 miles northwest of Jackman, Maine. It flows southwest to Lennoxville, Quebec, where it turns sharply northwest to flow into the St. Lawrence (Lake St. Peter). Headwaters are controlled. The regulated flow is some 3000 feet per second or more, with an average fall of 6.6 feet per mile. It is not fordable below Sherbrooke.

(d) The Nicolet River rises in Nicolet Lake, 8 miles west of Lake Alymer, and flows generally northwest to empty into the St. Lawrence at the east end of Lake St. Peter. The average low water flow is about 2000 feet per second. Banks in the upper reaches - hilly wooded terrain - are steep and from 200 to 500 feet higher. The average fall is about 21 feet per mile but there are a number of dams. From Arthabaska to Lake St. Peter the stream flows through a flat open country, with banks 25 feet high or less, except for a gorge starting about 4 miles north of St. Clothilda and ending 3 miles from Lake St. Peter. The river is not a serious obstacle but there are many swampy areas between it and the Becancour River.

(e) The Becancour River rises about 5 miles northwest of Lake St. Francis and flows north, then southwest, then northwest to enter the St. Lawrence a few miles below Three Rivers, Que. The lower reaches of the

river, below the vicinity of Lyster, Que, flows through generally flat country of gentle slope. The stream averages 300 to 400 feet wide and is fordable at few places. From Maddington Falls to within 3 miles of the St. Lawrence the river flows through a narrow gorge 100 to 250 feet below the surrounding flat country. The river is not a serious obstacle to an advance on Quebec, by reason of the general direction of flow in its lower reaches and the characteristics of the country.

(f) The Chaudierre River rises in Lake Megantic, about 45 miles west of Jackman, Maine and flows generally north into the St. Lawrence, opposite Quebec. From Lake Megantic to Hersey Mills, it flows swiftly between steep banks in a narrow valley. The adjacent terrain is rugged and heavily timbered. From St. George to Valley Junction the valley widens materially and the country is less rugged. Below Valley Junction the river flows through gentle undulating country between relatively low banks. The Chaudiere is a strong swift stream with an average discharge of over 4000 feet per second. The width varies from 200 feet at St. George to 400 feet or more in the lower reaches. From St. Maxine to the St. Lawrence it is 600 to 1500 feet wide. This river must be considered a serious obstacle.

(g) The Etchemin River rises in Lake Atchemin and flows northwest into the Chaudiere. It is 200 to 300 feet wide in the lower reaches, with banks generally high and steep. It forms a considerable obstacle.

(2) Terrain.

The southerly portion of the area bordering on the United States, east of the Richelieu River, is hilly verging on mountainous (up to 3000'). The Notre Dame Mountains extend the Green Mountains of Vermont in the form of a series of ridges, gradually decreasing in elevation from Lake Champlain northeast to the meridian of Quebec, thence northeast parallel to the St. Lawrence. From the St. Lawrence the terrain rises smoothly and gradually toward the southeast to the foothills of the Notre Dame Mountains. On the line Montreal Sherbrooke a serious of eight hills (wooded) rise sharply to heights varying from 800 to 1500 feet or more above the surrounding country.

In general the hills of the Quebec theatre are wooded, those below the 500 foot contour and east of the Becancour River sparsely, while west of the river there are densely forested areas at intervals.

(3) Roads.

The main roads to Montreal lead north from Plattsburgh, New York and Burlington, Vermont. Quebec may be reached via routes No. 1 and 5, through Sherbrooke, Que; via route No. 3 along the south bank of the St. Lawrence; or via Montreal and the north bank of the St. Lawrence. The latter is the longest route and undoubtedly the most difficult. Another route is available from Jackman, Maine, via route No. 23 through Valley Junction. The road net available is shown on inclosure No. "D" and "K."

(4) Railroads.

The railroads available are shown on inclosures "B" and "C." They are entirely adequate for any probable movement against this area.

(5) Discussion of routes.

(a) Northern New York - Vermont to Montreal

Roads: No. 9 from Plattsburgh to St. Lambert and South Montreal. Distance 69.2 miles, all paved.

No. 7 from Burlington, Vt., via St. John, Que. to St. Lambert or South Montreal. Distance 94.2 miles, all paved. There is a bridge across the Richelieu River at St. Johns. There are two highway bridges across the St. Lawrence at Montreal.

Railroads: Delaware and Hudson - Albany to Montreal.
New York Central - Malone to Montreal.
Rutland and C.P. - Burlington to Montreal.
Central Vermont and C.N. Montpelier to Montreal.

Comments: The terrain is favorable and no physical barrier to the advance as far as the St. Lawrence, except the crossing of the Rich-

elieu River, for a force moving from Vermont. An advance on Quebec from Montreal is possible, but offers the longest route, with many rivers perpendicular to the line of advance (down the St. Lawrence) which offer excellent defensive positions.

(b) Northern Vermont and New Hampshire to Quebec.

Physical features: The Richelieu River on the west and the Chaudiere and Etchemin Rivers on the east tend to delimit the zone of advance.

Roads:

No. 5 - Newport, Vt. to Sherbrook then No. 7 to Valley Junction to the highway bridge on the St. Lawrence and to Quebec, or via No. 23 from Scott Junction to Levis, Que and the ferry to Quebec. Distance 212.5 miles from Newport, Vt. All improved road, mostly gravel. Some of the road through the hilly country is paved. No. 5 from Sherbrooke via Victoriaville is an alternate route.

No. 23, Jackman, Maine - Valley Junction - Levis. This distance is 109 miles. The road is improved and about 50% paved. It is the shortest route. It crosses the Chauderie and Etchemin Rivers. There are numerous alternate routes and connecting roads.

Railroads:

Canadian Pacific - Newport to Quebec.
Canadian Pacific - Jackman via Megantic to Quebec.
Canadian National - Portland, Me., via Sherbrooke to Quebec.

Comments:

While the terrain in this sector is hilly verging on the mountainous, with several defiles and river crossings, it offers the shortest and best route of advance on Quebec.

d. The Great Lakes Area.

This area must be considered under the following subdivisions, as the routes of approach vary, and approach must be made from all of these directions.

The Buffalo - Niagara River Area.
The Port Huron - Detroit Area.
The Sault St. Marie or Soo Locks - Sudbury Area.

(1) The Buffalo - Niagara River Area.

Bridges cross the Niagara River at Buffalo (Peace Bridge); at Niagara Falls (suspension Bridge) and the (lower Arch Bridge) and at Lewiston, New York. " " "

Roads: The road net approaching the Niagara River from the United States and leading across the river into southern Ontario and through Hamilton to Toronto and Montreal, is one of the best along the international boundary and is entirely adequate for any probably movement.

Railroads: The Canadian Pacific and the Canadian National railroads have a network of railways connecting Buffalo with Toronto and points east. Branch lines lead to all important parts of the Niagara peninsula.

Comment: The crossings over the Niagara River should be promptly secured to assure a line of advance into the Niagara Peninsula of Ontario.

(2) The Detroit - Port Huron Area.

This area has much the same characteristics as the Buffalo Niagara River Area but beyond securing the crossings over the boundary waters, sufficient area to cover the Great Lakes water routes against Crimson interference is essential.

Crossings:

Ambassador Bridge - Detroit - Windsor.
Two tunnels (one railroad) Detroit - Windsor.
Numerous ferries.

Railroads and roads: There is an excellent railroad and road net available for any advance eastward from Detroit and Port Huron.

Comment: The Ontario Peninsula is of great industrial importance to Canada and a military area of great strategic value, as a base for air or land operations against the industrialized areas between Chicago and Buffalo. Any Blue operations should advance via Buffalo - Niagara Falls and Port Huron - Detroit simultaneously.

(3) Sault Ste. Marie - Sudbury Area.

The best route of approach to the Sudbury area, about 200 miles east of the Soo, is obviously via Sault St. Marie, along the north shore of North Channel. An operation along this route, automatically covers the Soo. The Canadian Pacific railroad and one good gravel road leads east from the Soo. These provide ample facilities for supply of the probable force required. The southern flank of this line is protected by North Sound and the north flank by rough heavily wooded terrain entirely devoid of roads or other communications suitable for the movement of armed forces.

(4) Winnipeg Area.

The main route from the United States to Winnipeg is north from Grand Forks and Crookston through Emerson. A main road follows the west bank of the Red River, from Emerson into Winnipeg. A good hard surface road from Grand Forks and one from Crookston furnishes a suitable road net south of the border. There are several secondary roads on both sides of the border to supplement the hard surface roads.

The Canadian Pacific has two main lines extending north from the border, one leading from Fargo through Gretna along the west bank of the Red River, and one from Thief River Falls, through Emerson along the east bank of the Red River. The Canadian Northern has a line from Grand Forks through Emerson Junction to Winnipeg on the west bank of the Red River and another line connecting with Duluth and extending through Warroad to Winnipeg.

The best and only practicable route of approach is obviously north from Grand Forks and Crookston. The terrain is flat and open and offers no natural obstacles to an advance.

Churchill, on Hudson Bay, has rail connection by the Canadian National system at Hudson Bay Junction about 325 miles northwest of Winnipeg. The best and only route of approach to cut this line is along the railroad from Winnipeg.

(5) The Vancouver Area (Vancouver - Victoria) (See Incl. E & L) (Omitted)

The best practicable route to Vancouver is via Route 99 through Bellingham, a distance of 55 miles and over a paved highway, through wooded and farming country. A secondary and longer route lies about 15 miles further to the east running through Sumas to strike the highways running east from Vancouver at the meridian of Mission City.

The Grand Trunk Railroad extending from Vancouver to Seattle furnishes a satisfactory rail service.

Victoria and Esquimalt, on the island of Vancouver can be reached by water only. Ferry service is maintained between Vancouver and Nanaimo on the east shore of the island, some 50 miles north of Victoria and between Vancouver, Burlingham and Port Angeles and Victoria. The best route of approach is by water from Port Angeles, Washington.

IV. Conclusions:

a That the critical areas of Canada are:

(1) The Halifax-Monkton-St.John Area (The Maritime Provinces).
(2) The St.Lawrence Area (Quebec and Montreal).
(3) The Great Lakes Area.
(4) The Winnipeg Area.

(5) The Vancouver Area (Vancouver and Victoria).

b. That the best routes of approach to these areas are:

To (1) By joint operations by sea from Boston.
(2) From Northern New Hampshire-Vermont area.
(3) (a) From Sault St. Marie and the Soo Locks Area.
(b) From Port Huron - Detroit Area.
and (c) From the Buffalo-Niagara Falls Area.
(4) From Grand Forks-Crookston through Emerson.
(5) Along Puget Sound through Everett and Bellingham, supported by an attack by water in Puget Sound.

V. Recommendations.

None.

VI. Concurrences.

The committee concurs in the foregoing conclusions.

CHARLES H. JONES
Major, Infantry,
Subcommittee Chairman.

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