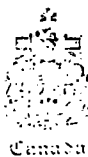


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TELEGRAMS AND OTHER COMMUNICATIONS SENT TO THE  
GOVERNMENT OF THE UNITED STATES BY THE  
DEPARTMENT OF EXTERNAL AFFAIRS REGARDING THE  
TRANS-ALASKA PIPELINE SYSTEM AND THE ECOLOGICAL  
DANGERS ARISING FROM THE TRANSPORTATION OF OIL  
BY TANKER FROM VALDEZ, ALASKA TO UNITED STATES'  
PORTS ON THE PACIFIC COAST.

President of the Privy Council



Le Président du Conseil privé

M  
b2701133

RETURN TO AN ADDRESS OF THE HOUSE OF COMMONS dated June 16, 1971,  
showing:

A copy of all letters, telegrams and other communications sent to  
the Government of the United States by the Department of External  
Affairs regarding the Trans-Alaska Pipeline System and the ecological  
dangers arising from the transportation of oil by tanker from Valdez,  
Alaska to United States' ports on the Pacific Coast.

The attached information has been received by the President of the  
Privy Council from the Department of External Affairs.

*Allan Rock*  
PRESIDENT OF THE PRIVY COUNCIL

Motion for the Production  
of Papers No. 235

Mover: Mr. Douglas

Dated: June 17, 1971

NOTE  
Original document available  
for examination in  
Room 134-N, H of C  
NOTA  
Document original disponible  
pour consultation  
Bureau 134-N, C des G

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NO. 235  
No \_\_\_\_\_



YEAR 1971  
ANNÉE \_\_\_\_\_

ORDER/ADDRESS OF THE HOUSE OF COMMONS  
ORDRE/ADRESSE DE LA CHAMBRE DES COMMUNES

MOVER - PROPOSEUR

Mr. Douglas

DATE

May 19, 1971

ROUTINE PROCEEDINGS & ORDERS OF THE DAY NO.  
FEUILLETON ET ORDRE DU JOUR NO

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PAGE

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RETURN BY THE SECRETARY OF STATE FOR EXTERNAL AFFAIRS  
DÉPÔT DU SECRÉTAIRE D'ÉTAT AUX AFFAIRES EXTÉRIEURES

SIGNATURE  
MINISTER OR PARLIAMENTARY SECRETARY  
MINISTRE OU SECRÉTAIRE PARLEMENTAIRE

That an humble Address be presented to His Excellency praying that he will cause to be laid before this House a copy of all letters, telegrams and other communications sent to the Government of the United States by the Department of External Affairs regarding the Trans-Alaska Pipeline System and the ecological dangers arising from the transportation of oil by tanker from Valdez, Alaska to United States' ports on the Pacific Coast.

- Letter of February 18, 1971 from the Secretary of State for External Affairs to The Honourable W.P. Rogers, Secretary of State, Washington, D.C.

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ENGLISH

71 JUN 21 10 51 AM '71

Ottawa, February 18, 1971.

Dear Bill,

I would like to suggest that officials of our two Governments consult concerning problems which are likely to arise as a result of the movement of oil by tanker from Valdez to the United States Pacific Northwest.

I recognize that no decision has been reached by the United States Government to authorize construction of the Trans-Alaska Pipeline. In view of the serious risks of pollution to the Pacific coast of our two countries from the massive movement of oil by tanker from Valdez to the Pacific Northwest, I consider that it would be desirable for consultations to take place before a decision is reached. This would be in keeping with the tradition of consultation between our two countries on issues where there is a joint interest.

I must add that this issue is one of great importance to Canadian public opinion, particularly in the Province of British Columbia.

Yours sincerely,

Mitchell Sharp.

The Honourable W. P. Rogers,  
Secretary of State,  
Department of State,  
WASHINGTON, D. C.

NO. 260  
No



YEAR 1971  
ANNÉE

ORDER/ADDRESS OF THE HOUSE OF COMMONS  
ORDRE/ADRESSE DE LA CHAMBRE DES COMMUNES

MOVER - PROPOSEUR

Mr. D. Anderson

DATE	VOTES AND PROCEEDINGS NO. - PROCÈS-VERBAUX, FASCICULE N <sup>o</sup>	PAGE
November 12, 1971	209	ii

RETURN BY THE SECRETARY OF STATE FOR EXTERNAL AFFAIRS  
DÉPÔT DU SECRÉTAIRE D'ÉTAT AUX AFFAIRES EXTÉRIEURES

SIGNATURE  
MINISTER OR PARLIAMENTARY SECRETARY  
MINISTRE OU SECRÉTAIRE PARLEMENTAIRE

That an humble Address be presented to His Excellency praying that he will cause to be laid before this House a copy of the government's communication to the Government of the United States presented in the latter half of August of 1971 concerning environmental damage from the proposed tanker route between Valdez, Alaska and Cherry Point, Washington.

Aide-Memoire to U.S.A. Government dated August 18, 1971 and attachments.

NOTE  
Original document available  
for examination in  
Room 134-N, H of C  
NOTA  
Document original disponible  
pour consultation  
Bureau 134-N, C des C

*December 17/71*

AIDE-MEMOIRE

The great concern of the Canadian Government regarding proposals to transport oil by tanker from Alaska to the Puget Sound area has been made known to the United States Government on a number of occasions during the course of this year. The most recent occasion was at a meeting of United States and Canadian officials in Washington on June 29. At that meeting a proposal was elaborated in an Aide-Memoire for detailed consultations to be held as soon as possible, as had been discussed by Canadian Ministers with the Secretary of State Mr. Rogers on June 10, to explore the various implications of the proposed oil movements.

In a response of July 9 the Department of State suggested that, as an alternative to holding further meetings at that time, any additional information which the Canadian authorities might have to offer be conveyed in written form. It remains the Canadian view that it would be advantageous to discuss certain specific aspects of the likely environmental impact of the implementation of proposed plans for oil movements from Alaska but in the meantime certain technical and other material has been prepared touching upon the principal questions raised in the Canadian Embassy's Aide-Memoire of June 29.

Attached as Appendix I is a study entitled "The Environmental Consequences of the Proposed Oil Transport Between Valdez and Cherry Point Refinery". This document is accompanied by a general commentary (Appendix II) highlighting certain conclusions suggested in the study covering Canadian water-front property values in the area and postulated costs in the event of a mishap to a supertanker in the Strait of

Georgia system. It will be seen that the main paper (Appendix I) is supported by five Annexes dealing with the impact of oil spills under the following headings: Wildlife; Property, Parks and Recreation; Fisheries; Industry; Physical Consequences of Two Hypothetical Oil Spills. This material demonstrates that a major oil spill arising from large tanker operations would have disastrous effects for the environment and ecology in the Canadian (as well as United States) coastal area, that a great deal of the damage would be beyond capacity to prevent or repair, and that much of the damage would be of a nature not measurable in any economic terms.

Appendix III is an analysis of the international legal situation as it would pertain to the operation of an oil tanker route into the Puget Sound area. This analysis shows that while under established international law damage in Canadian territory from events occurring in United States territory would give rise to clearly valid claims for indemnity, there nevertheless remains the problem of how in present circumstances anyone could obtain prompt and adequate compensation.

In general terms, as outlined on earlier occasions, the Canadian Government is convinced that if the full economic costs of the substantial environmental risks are taken into account it will be found desirable to avoid introducing large and hazardous tanker movements into the inner waters of the Pacific Coast. The Canadian Government is concerned, moreover, that there has so far been no indication of plans to provide for compensation, however negligible the risks of damage from oil spills may be judged to be by United States experts. As expressed by Canadian Ministers to Secretary of State Rogers on June 10 it is the view of the Canadian Government that

the proposed oil shipments should by-pass Pacific coastal waters adjacent to Canadian territory. It is appreciated that United States residents in the Puget Sound area may be able to accept significant risks of damage from oil spills as a "trade-off" against the assumed economic benefits from oil supplied by tanker to the Cherry Point refinery; however, no persuasive case has been made to justify Canadians accepting these serious risks (demonstrably likely to have greater impact in Canadian than in United States territory) without any benefits to offset them.

In its Aide-Memoire of July 9 the Department of State alluded to the question of joint contingency plans to deal with potential oil spills. Since there is a difference of view between the Canadian and United States Governments as to the nature and magnitude of oil tanker movements that should be permitted in the future in the inner waters on the West Coast, there does not exist at this time any agreed and workable basis for the establishment of a joint contingency plan in that area. The Canadian Government would, however, be prepared to exchange technical information as the first step in examining the situation on the Atlantic Coast.

In the June 29 discussion, in the context of the expressed Canadian opposition to the proposed tanker movements in the inner coastal waters, the United States side enquired about alternative sources of oil supply for the States in the Pacific northwest. In order to explore this aspect of the question the competent Canadian authorities would be prepared to discuss the technical and other factors which might affect the continuing contribution to the oil needs of the region from Canadian sources.



In the light of all the foregoing considerations it is the position of the Canadian Government that the United States Government should take whatever steps might be necessary to exclude the proposed substantial increase in the movement of oil by tanker into the coastal waters adjacent to Canada.

Washington, August 18, 1971.

DEPARTMENT OF THE ENVIRONMENT

THE ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED OIL  
TRANSPORT BETWEEN VALDEZ AND CHERRY POINT REFINERY

Submitted by  
Water Management Service

August 5, 1971

THE ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED OIL  
TRANSPORT BETWEEN VALDEZ AND CHERRY POINT REFINERY

The hazard to the marine and coastal environments associated with tanker transport may be considered to occur in two related, but distinct, ways. One is the continuing leak of oil to the environment resulting from the myriad of routine operations associated with the oil industry, both intentional and accidental, which contributes the major but less spectacular contribution to marine oil pollution. The other is the spill arising from mishap (grounding, collision, structural failure or fire) in which all or a significant fraction of the cargo is released to the environment over a short period.

There is considerable evidence that, through good "housekeeping" practices, and spurred by appropriate legislation, the amount in the first category, i.e. the continuous spillage may be so reduced as to render this hazard acceptably small. This reasoning could be made to apply to future legislation in the Strait of Georgia region." However, there is also considerable evidence to suggest that there is no way in which the consequences of a massive spill in an enclosed seaway can be limited. Unfortunately, experience supports the view that such a spill is indeed, inevitable. From such reasoning, the conclusion was reached that, from an environmental point of view, the location of a major terminal

for the proposed tanker traffic in an enclosed high-use region, such as the Strait of Georgia, is a mistake. Other considerations support this conclusion. It is known that a major portion of the oil in spills on open coasts, i.e. open to the full sweep of wind, wave and tide, can be, in relatively short time, effectively dealt with both by natural forces, assisted where possible, by human efforts. Thus through appropriate site selection the consequences of a spill can be reduced by several orders of magnitude.

In recent years, there has been a major effort to provide a consequence limiting capability equivalent to the size of the cargoes carried. In general, dispersants have shown the only possible method of success. However, there are many cases where the use of dispersants is restricted and these are usually associated with enclosed systems such as the Strait of Georgia.

The extent of the destruction of the marine environment resulting from a catastrophic spill cannot adequately be estimated from an economics point of view. It is obviously impossible to put a price on the destruction of a species of wildlife or the decimation of a coastline. The annexed material provides additional information on the impact of an oil spill on the regional Canadian interests.

The rich wild life along the proposed tanker route will be placed in a precarious position should a major spill

occur. At least five species are already in danger of extinction and an additional hazard could threaten complete extermination. No method presently exists for adequately cleaning oil-fouled birds with the result that the death rate of retrieved birds alone is 97 per cent. The immediate and long-term consequences to local wildlife cannot be estimated, depending as they do on location, toxicity, time etc. Until adequate safeguards or assurances are given for the protection of wildlife in these areas, the potential threat should not be allowed to materialize.

Coastal parks on the west coast of Vancouver Island and within the Straits of Juan de Fuca and Georgia are extremely vulnerable to this type of pollution. The shorelines and islands within these Straits are particularly so because of the relatively slow rate of water exchange and circulation patterns. In the intertidal zone, there would be widespread destruction to marine flora and fauna, in addition oil covered waters would seriously affect sea birds and waterfowl colonies, marine mammals, fishes and the whole ecology and aesthetics of this area.

The fishing industry of British Columbia is a major source of revenue both in the commercial and recreational forms. It is unnecessary to emphasize the physical effects of an oil spill on limiting fishing operations, but equally

more important is the longer term effects on fish populations in the area. Of particular vulnerability to oil pollution are the spawning grounds, eggs and larval and juvenile forms of fish species and it is possible for the repercussions of a major spill to be felt over many years.

Industry, along the coastlines could be prevented, by a spill, from utilizing water for industrial processes. The transport of logs for the pulp and paper industry could be halted or the logs themselves contaminated by oil. The cleaning of machinery, waterfront, boats and gear is an expensive undertaking. The final annex in this submission takes two hypothetical cases of a mishap resulting in the discharge of 20,000 tons of oil over a short period. It is worth commenting that the proposed size of tankers utilizing the Valdez-Cherry Point route carry over 200,000 tons of oil.

The physical characteristics of the region and the potential damage to the marine environment arising from a major spill, would probably pose a much greater threat to Canada than to the United States. Further, the benefit to Canada is non-existent, hence no justification by an internal balance of benefit against hazard can be made.

The danger is real; Canada's concern is real; it is to be hoped that the various options to minimize or eliminate environmental consequences be carefully considered.

Water Management Service,  
Department of the Environment,  
August 5, 1971.

IMPACT OF OIL SPILLS OCCURRING ALONG THE VALDEZ ALASKA -  
STATE OF WASHINGTON, SUPER TANKER ROUTE ON WILDLIFE

The plight of oil covered birds in coastal and inland waters is one of the most obvious symbols of damage by man to his environment. Their vulnerability to death in such situations is so great that for every 100 birds actually retrieved and, depending upon where the oil spill occurs usually only a small percentage of oil fouled birds are actually retrieved, only three will survive and return to the wild. A spot of oil as small as a fifty cent piece on the breast feathers of alcids is fatal. Death to birds in oil covered waters can be attributed to various causes, such as poisoning due to ingestion of oil, to drowning and to exposure resulting from the removal of the waterproofing capability from body feathers. Unfortunately, there is as yet no method which is completely effective in cleaning and re-waterproofing bird feathers.

The west coast of British Columbia is a major migratory route for ducks, geese and many other types of birds which move south from Alaska. Some of the migrating birds move down the mainland part of North America, but many move down the coastline, the majority using the inside passage between Vancouver Island and the mainland of British Columbia, the minority using the west coast of Vancouver Island route.



The Russian snow goose, a bird reared on Wrangle Island in Arctic Siberia, migrates down through the Bering Strait through the Aleutians and down the west coast of British Columbia to the Vancouver area at the mouth of the Fraser River. Normally these birds do not touch any part of Canada until they alight at the Fraser River. It is estimated that there are some 400,000 of such birds.

Canada geese migrate south from Alaska and the northern part of Canada, and include four identifiable dark races of geese. They move south from the Glacier Bay part of Alaska, from the Copper River delta and from the Aleutians. The Copper River delta group move south touching at times the Queen Charlotte Islands, but more often the Tofino area on Vancouver Island, before proceeding down to the Clackamas River area in Oregon. The Aleutian Canada goose, a rather rare bird due to the introduction of foxes to their breeding areas a few years ago, migrates down the coast stopping occasionally at the mouth of the Fraser River.

The brants, a sea goose raised in the Yukon delta of Alaska, migrate south down the west coast, stopping at numerous coastal inlets. As a rule on their southerly migration they stay on the outside coast of Vancouver Island, but on their northerly spring migration they move up the inside passage, stopping in Boundary Bay, the mouth of the Fraser and then up through the Strait of Georgia. There are approximately 150,000 of such birds.

Besides the aforementioned 400,000 snow geese, approximately two million ducks move through the west coast area.

Numerous sea bird colonies exist on the west coast, but though scientific investigation is going ahead by public and private bodies on these bird colonies, they are as yet little understood. However, some of the islands adjoining the Queen Charlottes and to some extent the Queen Charlottes themselves are very important for such birds as auklets, merres, puffins, guillemots, cormorants and various species of gulls. Tens of thousands of one species, the ancient merlette, is raised at the top end of the Queen Charlottes. The young, delicate, downy and relatively helpless when two days old, go right down to the water and start moving out from the shore. They of course would become very vulnerable to oil spills at this point.

Hecate Strait is a very important fishing area for halibut and various other species of fish. The islands and islets in the Strait are extremely important for sea birds on both sides of Hecate Strait. Some of the sooty sheerwaters, the pink-footed sheerwaters and the slender billed sheerwaters, are creatures that have been raised in the far south in the southern latitudes of Cape Horn and the coast of Chile. In summer they move up to our latitudes and spend their summer in large flocks in Hecate Strait, in the fishing

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area north of Vancouver Island and on the west coast of Vancouver Island.

The western coast is the last major area in North America for the bald eagle and these birds are scattered up and down the whole length of the coast.

While trumpeter swans are not known to nest in the west coast area, an important segment of the world population of 3,000 birds, do winter here in scattered flocks.

The perigrine falcon, which in the last few years has disappeared from many parts of North America is still, as yet, found in large healthy numbers on the Queen Charlottes, breed principally on Langara Island. The race in this area is called the Peale's falcon, though it is a colour phase of the same falcon found in other parts of North America. It is a species which preys on sea birds.

There are close to 14 or 15 major sea bird colonies on the Canadian side of the Strait of Juan de Fuca. This Strait is rich in animal life, food for all these birds and large fish.

In the Sturgeon Bands, Boundary Bay area 200,000 ducks can be observed at any one time between September and January. These ducks do not use Boundary Bay as a feeding area, but rather as a sanctuary, moving into the mouth of the Fraser River to feed. Boundary Bay is only some 12 miles from Cherry Point.

Many years ago sea otters inhabited the whole of the west coast, but man over-harvested them to a point where Canada has not had a single one of these creatures for seventy to eighty years in her waters. A few sea otters were fortunately left, some in the Aleutian Chain and some down in California. Sea otters from the Aleutian Chain have been recently introduced to the kelp bed off the west coast of Vancouver Island. These creatures are particularly sensitive to oil pollution.

Canada receives \$500,000 annually as her share of the revenue from the seal industry. If a major oil spill were to occur 10 - 50 miles off the British Columbia coast during the period of January to May there could be a significant kill of fur bearing and immature seals from suffocation and ingestion of oil. It may take a decade to restore the equilibrium before controlled harvesting could commence once more.

Related to the fur bearing seal is the sea-lion which inhabits the large bare rock islands in large pods or rookeries on both the west coast of Vancouver Island and the inside passage. Like the fur bearing seal these surface moving marine mammals could encounter a severe spill which could drastically reduce their numbers.

Seven to eight species of whale can be found in Canadian waters, of which the great grey whale and the killer

whale are best known. The latter venturing into the Strait of Georgia. Oil spills fall into two broad categories, high sea spills and confined area spills. However the former type of spill, because of its distance from observation is also more effected by the time lapse between the spill and the reporting of the same let alone the length of time required by any clean up group to reach the spill area. Because of this the area which may be covered by a high sea spill could be vast. Adding to this, evidence from the Arrow incident has shown that not all birds die in situ because there the major avian mortality occurred in the vicinity of Sable Island, some 150 miles southeast of the Arrow. The magnitude of a major spill on the high seas and its effect on ocean birds and surface moving marine mammals would be extremely difficult, if not impossible to measure, let alone predict.

A major spill in the Gulf of Alaska or off the Queen Charlottes would be directly in the area utilized by two to three million slender-billed sheerwaters and the ten million alcids. Both species only come to land to breed. The effect of an oil spill on these birds would directly effect the Peale's falcon which preys upon the smaller alcids and, as stated previously, breeds only along the coast of British Columbia. Further to this, the distribution of pelagic birds at sea approximates that of major fishing areas and certainly that of major marine upwellings.

Confined spills fall into two broad subcategories, (a) in large straits such as the Strait of Juan de Fuca, and (b) in small enclosed harbours such as Vancouver. The closer to shore that the spill occurs generally means that more species would be affected, though the total number of birds involved may decrease. As stated previously the Vancouver area, Boundary Bay and the Fraser River south to Bellingham are major concentrations for seabirds, shorebirds and waterfowl.

Therefore any large spill, which occurs in either of the two main categories, and the probability that there will be a spill is recognized and well documented, could affect five wildlife species which are presently of worldwide concern because of their much reduced numbers or potential for extinction. These species are the sea otter, trumpeter swan, Peale's falcon, bald eagle and the Queen Charlotte Canada goose. This does not even acknowledge the probability of deleteriously affecting numerous previously mentioned species, which presently thrive in large numbers along and around the proposed super tanker route. Species protected by the Migratory Birds Convention between Canada and the United States would be affected.

The sea bird avifauna along the proposed route is considered to be one of the richest and most varied in the world. With the probability of a major oil spill openly

acknowledged as one of the concomitants of the super tanker route, and with the present state of knowledge on sea bird avifauna pointing conclusively to the decimation or possible extinction of some species, it would surely be imperative that other means for transporting oil must be found, if transporting oil is the object and not alternative sources of power, which would not have within them the potential for massive destruction of wildlife.

Water Management Service,  
Department of the Environment,  
August 5, 1971.

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IMPACT OF OIL SPILLS OCCURRING ALONG THE VALDEZ ALASKA -  
STATE OF WASHINGTON, SUPER TANKER ROUTE ON PROPERTY, PARKS  
AND RECREATION

The Strait of Georgia, an inland sea, is continually affected by the ever varying currents on wind, tidal phase and river discharge. Its waters have a slow rate of turnover, approximately one month for surface waters and one year for bottom waters. The water circulation pattern is counter-clockwise. Because of all these factors the Strait is very vulnerable to any type of pollution, and as a result of the water circulation pattern, oil spills would spread all over the Strait. In areas where spills have already occurred, it has now been recognized that oil conglomerates persist after a clean up. The slow water exchange rate of the Strait of Georgia would exaggerate the effects of these oil conglomerates and enable them to remain indefinitely within the Strait. However, not only would the Strait be affected by oil spills within its confines, but also by oil spills from the south through the Strait of Juan de Fuca and, to a lesser extent, from the north through Johnstone Strait. Much of this water into the Strait of Georgia is carried in the form of tides travelling from four to eight knots in the southern channels and as high as 14 knots in the northern channels. The enormous difficulties faced in containing and cleaning up



oil spills with these velocities of tidal currents, need not be further emphasized.

Boundary Bay, twelve miles from Cherry Point, one of the principal west coast waterfowl and seabird sanctuaries and feeding areas, could very quickly be lost to an oil spill along with many thousands of waterfowl and seabirds which use it regularly because of its shallow waters and exposed mud flats, not to mention its loss as a summer recreation area.

The large intertidal oyster beds in the Strait of Georgia would also be extremely vulnerable, as would marine mammals such as the killer whale and the porpoise which come right into the Strait, and the sea-lion which can be found in hugh pods or rookeries up the coast of Vancouver Island or on the inside passage.

The extensive coastal waterways of the Strait of Georgia and the Strait of Juan de Fuca presently provide some of the worlds finest recreational opportunities for swimming, boating and sport fishing. Numerous summer cottages, permanent homes and marinas have been established throughout the area. Each year 100,000 pleasure craft of all sizes, cruise the inland waters of the Strait and fish for the various species, of which salmon is of primary importance. A major oil spill within the Strait would in all probability befoul boats, lines, beaches and coves. Based upon todays waterfront real estate values it can be estimated that the shoreline

property along the 1,700 miles of Canadian coastline within the Strait of Juan de Fuca and Strait of Georgia system up to the 50th parallel totals approximately one billion dollars. It is evident that if even a small percentage depreciation in the desirability of this property, caused by actual soiling of the beaches, deterioration of water quality or even the threat of either of these would impose a serious loss on property owners.

A major oil spill in the Strait of Georgia, coming into the Strait through the aforementioned Johnstone Strait and the Strait of Juan de Fuca, would rapidly depreciate the attractiveness of Canada's first National Marine Park and further, it could conceivably write off from further consideration this unique Canadian marine environment.

The National Park on the west coast of Vancouver Island encompasses approximately 75 miles of coastline which is completely exposed to the open Pacific Ocean and thus extremely vulnerable to any form of sea pollution. The Park lies on the Pacific Flyway and is thus a major stop-over for thousands of migrating birds. The Park consists of three physically separate areas known as Long Beach, Broken Group Islands in Barkley Sound and the West Coast Trail. From the ecological point of view, the most important marine features of each area which would be threatened in the event

of offshore pollution, would be as follows:

1) LONG BEACH

- a) The offshore marine flora and fauna. It is the habitat of whales, sea-lions, seals, waterfowl, seabirds, etc., just to mention a few of these creatures.
- b) Small rocky islands and offshore rocks with their seabird colonies and sea-lion rookeries.
- c) The intertidal zone of lagoons and tide pools supporting a diversity of marine life.
- d) Approximately twelve miles of spectacular sand beaches already receiving very heavy visitor use.
- e) Sheltered inland tidal waters with their important seabird feeding and sport fishing area.

2) BROKEN GROUP ISLANDS CONSISTING OF 90 - 95 ISLANDS OR ROCKS

- a) The primary consideration here is the undisturbed state of the flora, fauna and sea life associated with a small group of offshore islands, containing seabird nesting areas, sea-lion rookeries, waterfowl etc.
- b) The abundance of different species of fish which make the islands very popular for sport fishing and sailing.

3] WEST COAST TRAIL:

- a) The primary feature of this area of the Park is the 45 miles of historic life-saving trail with its aspect towards the open ocean. It is a wilderness area of extremely rugged unspoiled coastline with numerous sand beaches, a major sandstone shelf subject to tidal inundations, sea-lion rookeries, tidal pools and many other marine features vulnerable to offshore pollution.

To subject the coastal waters and inside passage of British Columbia to the probability of a major oil spill, which would undoubtedly destroy large areas of parks, which would change the essence of the Pacific Northwest seascape and which would destroy their aesthetic recreational value, is to make a drastic decision which would redound to the detriment of our generation in the opinions of future generations of all nations.

Water Management Service,  
Department of the Environment,  
August 5, 1971.

IMPACT OF OIL SPIILLS OCCURRING ALONG THE VALDEZ ALASKA -  
STATE OF WASHINGTON, SUPER TANKER ROUTE ON FISHERIES

Pollution with crude oil and oil fractions damages the marine ecology through several effects. These are:

1. Direct kill of organisms through coating and aphyxiation.
2. Direct kill through contact poisoning of organisms.
3. Direct kill through exposure to the water soluble toxic components of oil at some distance in space and time from the source of the spill.
4. Destruction of the generally more sensitive juvenile forms of the organism.
5. Destruction of the food sources of the higher species.
6. Incorporation of sub-lethal amounts of oil and oil products into the organisms resulting in reduced resistance to infection and other stresses.
7. Destruction of food values through incorporation of oil and oil products into fisheries resources.
8. Incorporation of carcinogens into the marine food chain and human food resources.
9. Disruption of any of the numerous events necessary for the propagation of marine species.

For all the above effects the severity will depend on the type, magnitude and location of any oil spillage. It

is difficult to imagine the impact of a total spill from a super tanker in relatively enclosed waters. Previous large spills have had disastrous consequences, although having the advantage of offshore dispersion. The Strait of Juan de Fuca and the Strait of Georgia will not provide such an advantage and will, by their geographical characteristics, compound the likelihood of an accident. Therefore, it is these highly fished areas that are most vulnerable to the proposed tanker route.

#### Salmon Fishing

The commercial salmon fishing industry in this area lands (at 1970 prices) an average of over \$16 million, the majority of which is Canadian. In addition, in Canada alone the recreational fishing is currently in excess of 300,000 boat days annually and, during 1963-65, landed an average of nearly 300,000 pounds of salmon annually. Heavy oiling of this area would cripple both recreational and commercial fishing not only for as long as the oil persists, because of oil damage and contamination of nets, lines and lures, but it would also continue to disrupt the fishing for many seasons because of ecological damage.

Each spring young Pacific salmon leave fresh water and move to the sea. For young salmon by far the most important waterways to the sea are the passages between

Vancouver Island and the Mainland, the Strait of Georgia, Juan de Fuca and Johnstone. Approximately half of the salmon caught by Canadians pass through these waters as juveniles on their way to feed in the ocean. While migrating seaward the young salmon tend to follow along shorelines where oil would tend to accumulate in the event of a major spill.

Many species of salmon remain in shore to their natal stream and the Strait of Georgia and Juan de Fuca are particularly important for these "resident" species. Young salmon whether migrating or "resident" tend to feed mostly near to the surface where plankton and other young fish concentrate, and also travel close to the surface when migrating. The effect of an oil spill on such an activity needs to be investigated very closely as it suggests serious deleterious consequences.

#### Herring

The annual value of the British Columbia herring fishing is estimated at three to four million dollars. The major effect of an oil spill, apart from the possible immediate consequences on the distribution and abundance of adult herring, would be on the repopulation of the species. Herring come inshore to spawn, the eggs are deposited mainly on vegetation in the intertidal zone, the areas most effected

by oil spills. After hatching, the larval herring are concentrated near the surface of the water where they tend to be carried about passively by currents. The arrival of oil along the shoreline during the spawning season would in all likelihood cause a mass mortality of eggs and larval herring through asphyxiation and contamination. Prolonged exposure to oil may permanently damage the herring spawning beds of eel grass with resulting long term effects on the herring population. Herring spawning occurs around the San Juan Islands, the southern Gulf Islands and the White Rock-Boundary Bay area. The immediate restrictions to fishing in the presence of oil could, if the conditions persist, produce severe hardship to the herring industry, whilst the major impact of ecological effects would be felt three to four years later with a continuing cycle of recurrences.

#### Subtidal Organisms

The present commercial landed value of clams and oysters in British Columbia is one million dollars. As mentioned previously the intertidal zone is particularly vulnerable to oil contamination, and the industry in a region affected by a spill could be completely disrupted both by direct mortality of the harvest or through the impairment of the flavour.

Water Management Service,  
Department of the Environment,  
August 5, 1971.



IMPACT OF OIL SPILLS OCCURRING ALONG THE VALDEZ ALASKA -  
STATE OF WASHINGTON, SUPER TANKER ROUTE ON INDUSTRY

Of the 5.9 billion feet of lumber cut annually on the west coast of British Columbia about 0.9 billion feet is transported by land, 1.5 billion feet by barge and 3.5 billion by boom. The barged wood is dumped into the salt water for handling once it reaches its destination. Considering only the 3.5 billion feet of boomed logs, this represents a value of about 200 million dollars.

Not all of these logs would be in the water at one time and be affected by an oil spillage, and it is difficult, if not impossible, to estimate such a number. Just one per cent of the total of the annual traffic would represent 2,000,000 dollars. Contaminated logs would affect the logging industry in numerous ways. If they were usable, and one factor may be the depth to which the oil had entered into the log, extra costs and time would result in handling such logs, and in modifying the conveyor systems, especially the waste system for bark and sawdust. To certain lumber oil penetration may not be detrimental, i.e., to construction grade, but to pulp mills the oil penetration may affect the chemical balance in the mash and thus be detrimental to the production of paper. Research in this area is necessary and answers to other innumerable questions

must be answered in order to prevent a serious set back to the lumber and pulp and paper industry.

Extra costs would be involved should log booms be required to change their route because of an oil spill or be delayed in arriving at their destination. The cost would not only be measured in time but also in usable timber because of attack by the marine borers. Again, only research can provide figures on such loss.

There are still further questions which must be answered. Would the burning of oil soaked residue increase the particulate resulting from combustion above the permitted level? How much would it cost to clean oil fouled mill equipment? What is to be done with discarded, oil soaked logs? Will this result in increased burning?

Industry, and especially the pulp and paper industry and fish products plants located on the coast of British Columbia, uses large volumes of water in its operations. Has a study been conducted to estimate the potential damage to machinery and to the dislocation of production which may occur should a major oil spill spread into the intake waters used by industry?

The forestry and fishing industries in British Columbia are the mainstay of the income of that province. Their continued economy is essential. Thus, before any decision is made which would seriously affect this economy, many more questions must be raised and research conducted to fully answer each question.

Water Management Service,  
Department of the Environment,  
August 5, 1971.

PHYSICAL CONSEQUENCES OF TWO HYPOTHETICAL OIL SPILLS

A group of scientists from the Pacific Region, Marine Sciences Branch, Department of the Environment undertook an exercise on oil spill drift. The purpose was to describe the motion of the particular oil slick resulting from hypothetical accidents under severe but not uncommon conditions, using best available information. The group allowed itself one day to complete a self appointed task of investigating two hypothetical cases of 20,000 ton spills occurring over a 24 hour period. The spread of such a slick on the surface was taken, using reference 1, to have an area of about 3 square miles 24 hours after the spill, 40 square miles after 48 hours and ultimately 65 square miles with a thickness of 200 microns. The drift due to the wind was taken to be downwind at 3% of the wind speed. This drift was vectorially added to the tidal current.

First Case

Spill occurring at Race Rocks (48°17'N 123°32'W) at 0500 hours, July 11, 1971, with wind field normally associated with westerly winds of 25 mph at Race Rocks. It is interesting to note that a triple collision of vessels occurred at this chosen date, time and location.

The following tables and figures give the history of the spill and position of the slick centre.

July 11, 1971	0500	48°17'N	123°32'W	Spill begins.
July 11, 1971	1330	48°17'N	123°34'W	Slick about 1 square mile. Tidal current and wind, opposed until now, give the slick the form of a large puddle near the source.
July 11, 1971	1900	48°18'N	123°20'W	Slick about 2 square miles.
July 12, 1971	0430	48°18'N	123°23'W	Slick about 3 square miles, flow stops at source. Figure 1.
July 12, 1971	1406	48°18'N	123°16'W	
July 12, 1971	1936	48°22'N	123°05'W	
July 13, 1971	0330	48°23'N	123°09'W	Slick about 40 square miles. Figure 2.
July 13, 1971	0700	48°24'N	123°05'W	
July 13, 1971	1500	48°24'N	123°08'W	
July 13, 1971	2230	48°32'N	123°14'W	Slick about 60 square miles. Oil ashore on Discovery Island, Sydney Island and San Juan Island. Figure 3.
July 14, 1971	0830	48°25'N	123°10'W	Oil in Baynes Channel ashore at Cadboro Bay, Oak Bay, Trial Island. Figure 4.
July 14, 1971	1500	48°26'N	123°08'W	
July 14, 1971	2300	48°38'N	123°15'W	Oil reaches Turn Point, ashore on Stuart Island.

Subsequently the slick would continue to oscillate up and down Haro Strait with the tide, gradually being pushed by wind action into Georgia Strait via Boundary Passage and mainly into the San Juan Islands.

- N.B. i) Race Rocks is not most probable site for an accident.
- ii) The above results would be entirely different if another wind field was postulated.
- iii) The relationship between tidal flow and wind drift determines the character of the slick.
- iv) Spreading rates for oil dispersion are based on very scanty data.
- v) Little is known about the current's behavior.

#### Second Case

Spill occurring at Alden Bank (48°48'N 122°50'W) at 0100, January 1, 1971, under conditions normally associated with a 20 mph wind at Tsawwassen Ferry Jetty. The wind and current act together so that the spill takes the form of a long band or streamer downstream from source.

January 1, 1971	0100	Spill occurs at 48°48'N 122°50'W.
January 1, 1971	0600	First oil reaches shore in Boundary Bay just 5 hours after mishap.
January 1, 1971	1500	4000 tons ashore in Boundary Bay, 2000 tons in streamer around Point Roberts from Boundary Bay to 48°47'N, 123°06'W; 4000 tons in streamer from 48°47'N, 123°06'W to Patos Island; 2000 tons between Alden Bank and Clark Island. Figure 6.

January 2, 1971 1330 Oil flow stops. Additional 1000 tons of oil ashore on Point Roberts; 1000 ton slick to west of Point Roberts; 8000 ton slick around Alden Bank approximately 8 miles by 3 miles; 3000 ton streamer from 48°48'N, 123°03'W to 48°56'N, 123°11'W; 1000 ton streamer in crescent around Patos Island. Figure 7.

January 2, 1971 1550 5000 additional tons ashore at Point Roberts and Boundary Bay; 3000 ton slick immediately to west of Point Roberts; 1000 tons ashore on Saturna Island; 1000 ton slick at 49°02'N, 123°30'W; 3000 ton streamer from 48°53'N, 123°13'W to 48°59'N, 123°23'W. Figure 8.

January 3, 1971 0410 3000 tons ashore on Galiano Island and leaking through Active Pass; 1000 tons ashore on Valdes Island leaking through Porlier Pass; 3000 ton slick centred on 48°57'N, 123°10'W. Figure 9.

January 3, 1971 1620 3000 ton slick now at 49°02'N, 123°10'W. Figure 10.

Subsequently some of the remaining oil would go ashore on Valdes Island, some through Porlier Pass, and the rest across Georgia Strait at least as far as Sechelt Peninsula and then either into Howe Sound and English Bay or towards Thormanby Islands and Pender Harbour.

- N.B.
- i) Current data are extremely poor in the complicated region between Point Roberts, Boundary Passage and Rosario Strait.
  - ii) Behavior of the Fraser River outflow depends greatly on the time of year.
  - iii) As in the first case, a completely different picture would emerge from the assumption of a different wind field.

The above cases are demonstrative of the dispersion that would probably occur in the case of an oil spill mishap in the region of Juan de Fuca and Georgia Straits. The amount chosen for the spill is less than 1/10 of the amount proposed for tanker transportation and is postulated to occur over a relatively short period. Obviously the propagation and effects of a major tanker disaster could be much more widespread and serious than the assumed cases.

Reference I

Fay, J. A. Physical Processes in the Spread of Oil on Water Surfaces; Proceedings of the Conference on Prevention and Control of Oil Spills; Washington, D. C., June 1971.

Water Management Service,  
Department of the Environment,  
August 5, 1971.



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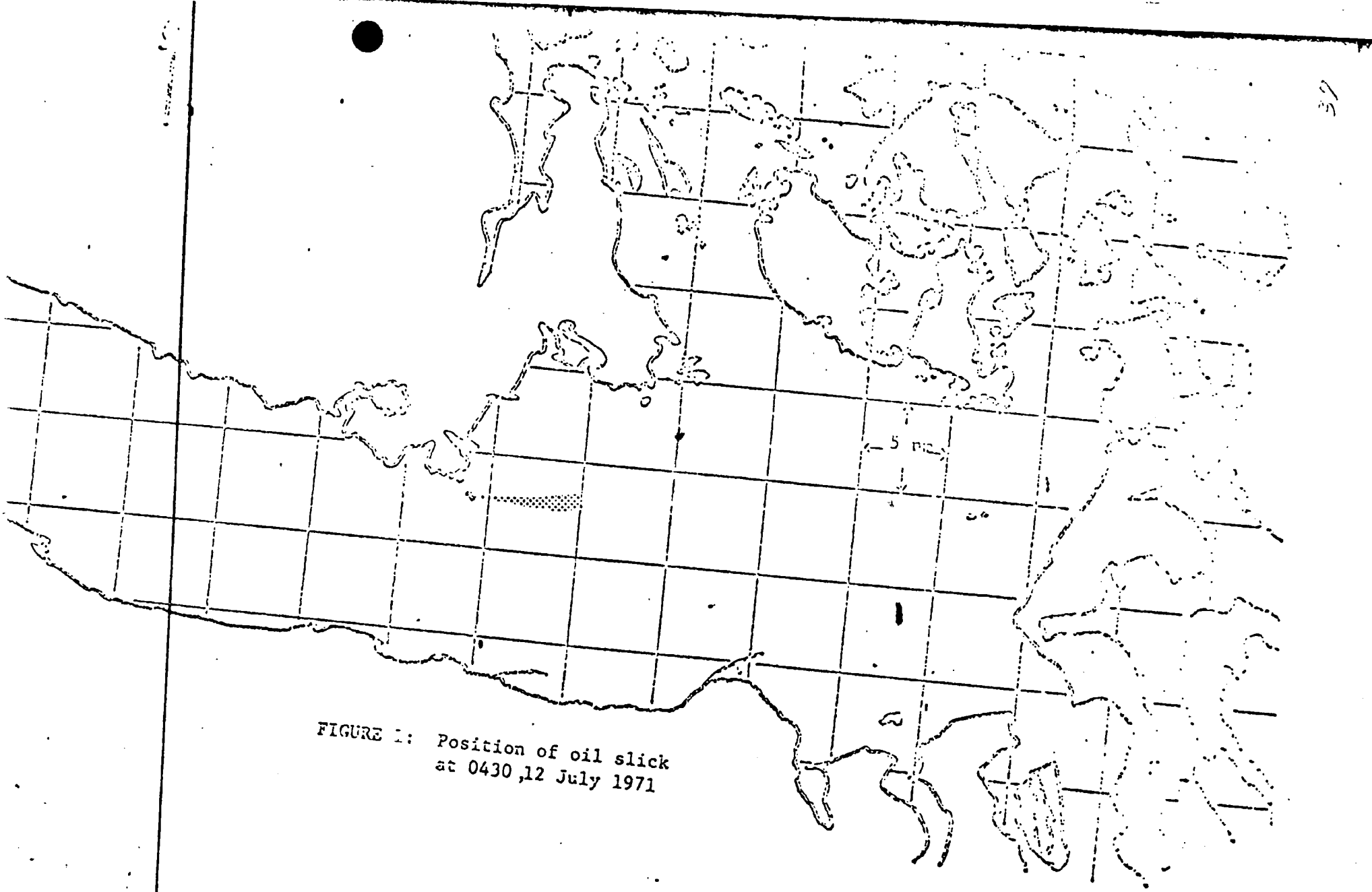


FIGURE 1: Position of oil slick  
at 0430, 12 July 1971

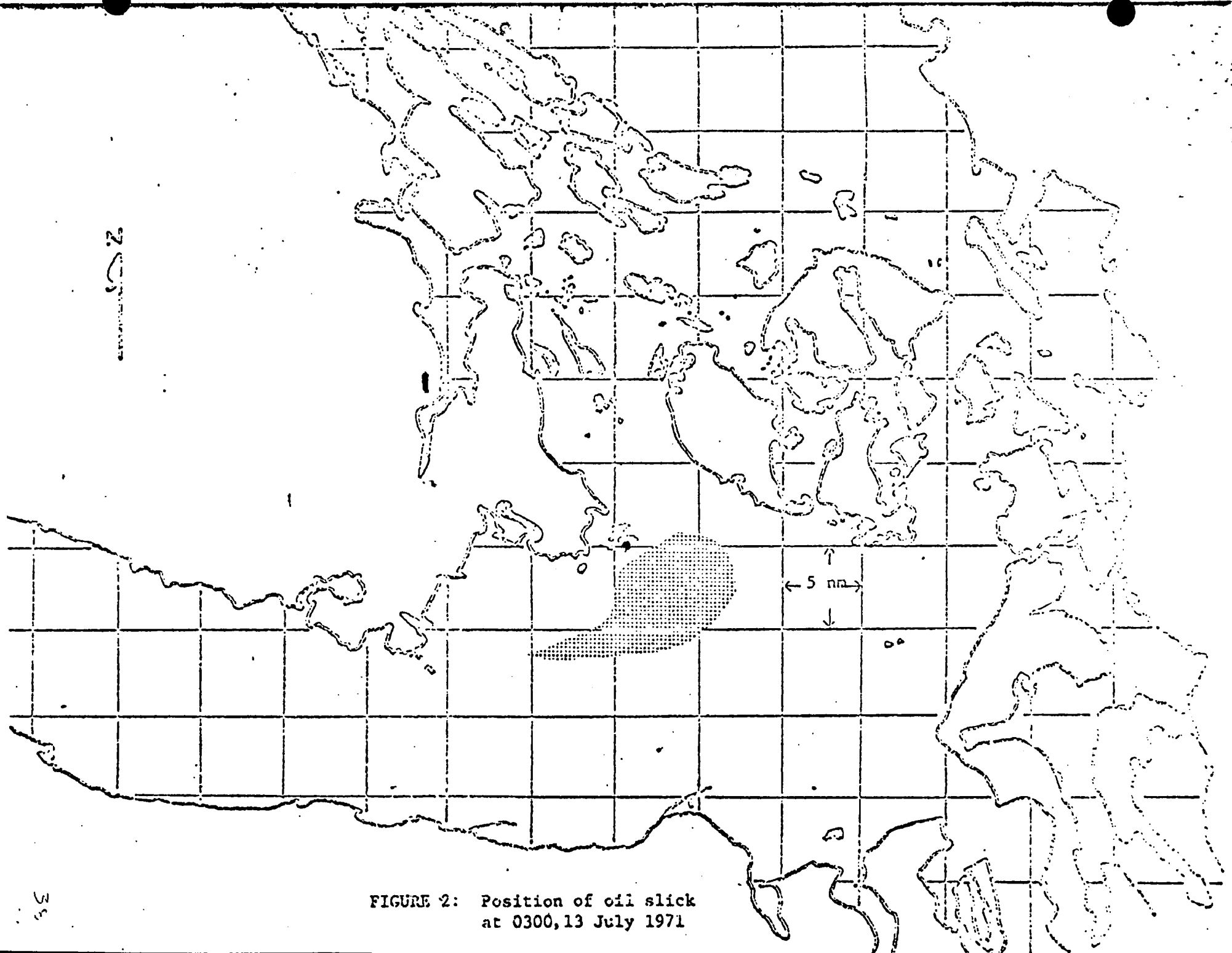


FIGURE 2: Position of oil slick  
at 0300, 13 July 1971

2.5

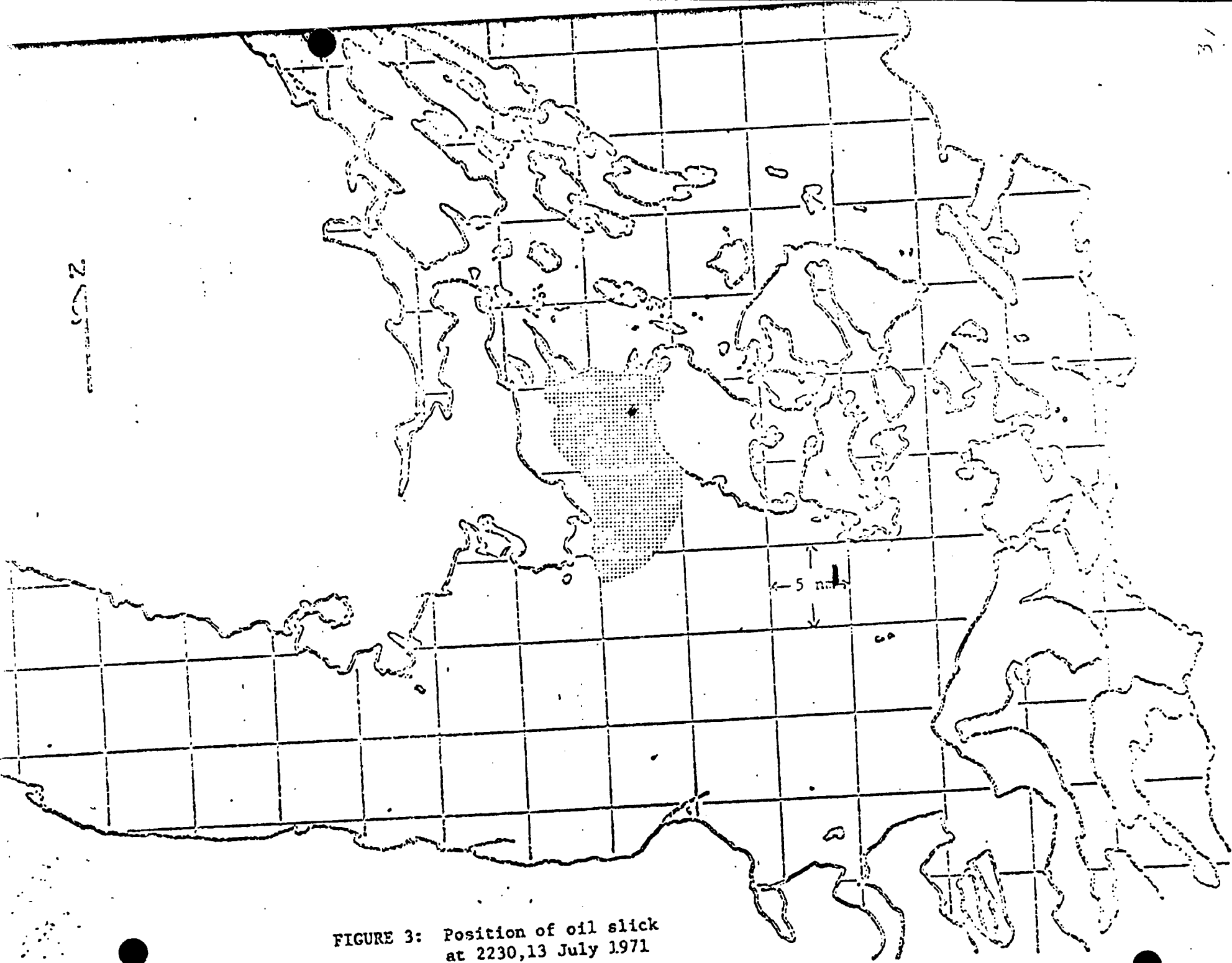


FIGURE 3: Position of oil slick at 2230, 13 July 1971

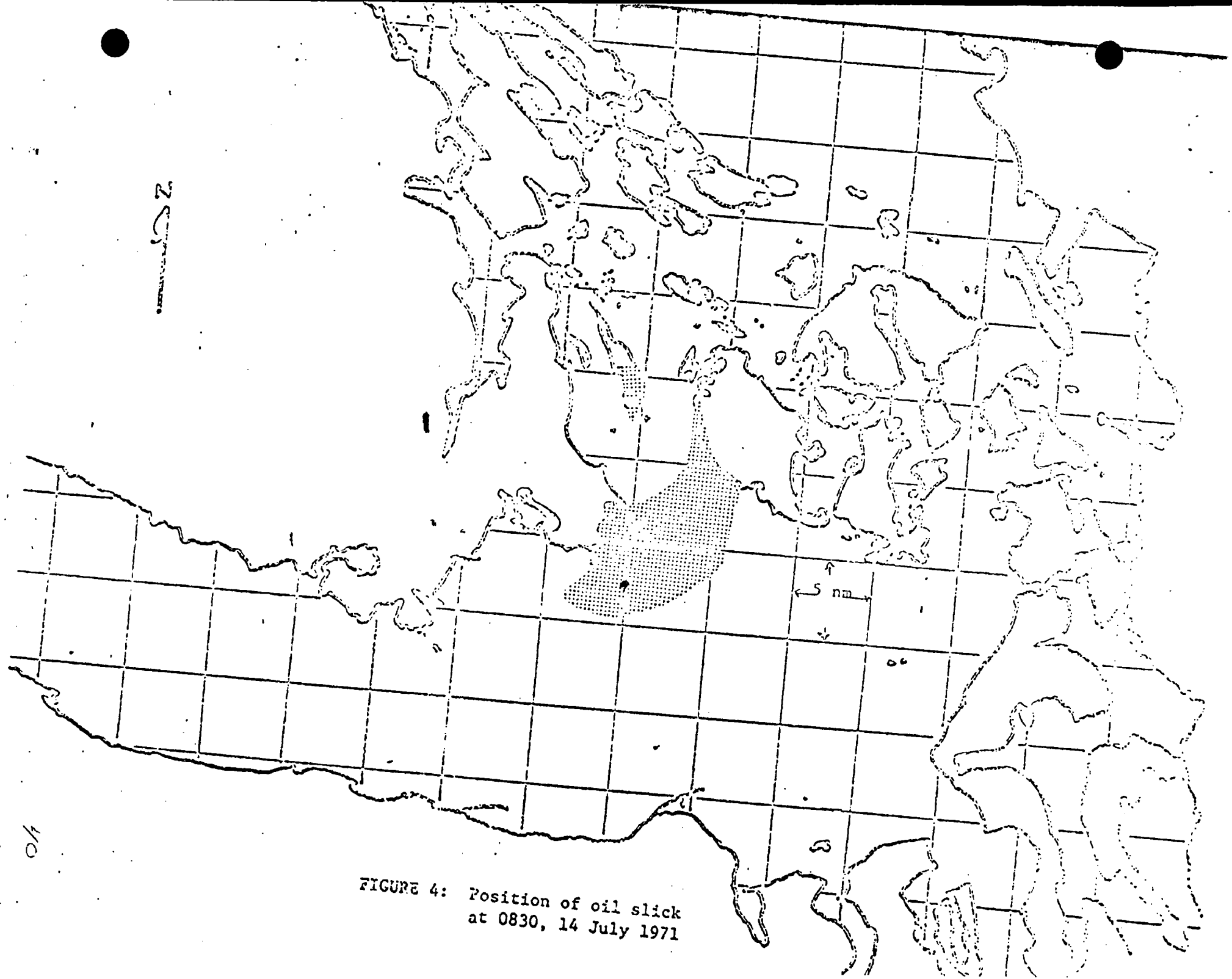


FIGURE 4: Position of oil slick  
at 0830, 14 July 1971

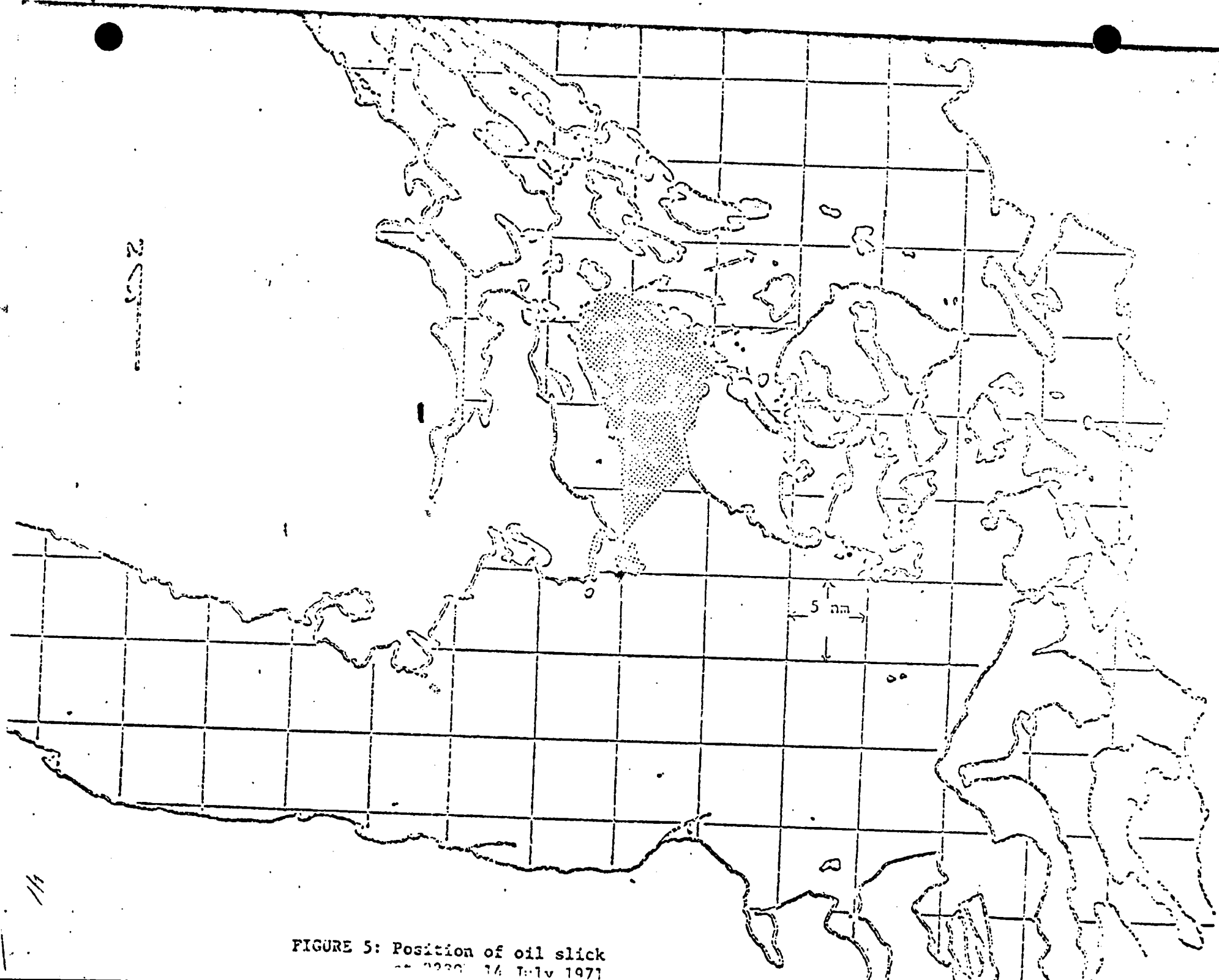


FIGURE 5: Position of oil slick  
at 0230 14 July 1971

FIGURE 6: Location of oil  
at 1550, 1 January 1971

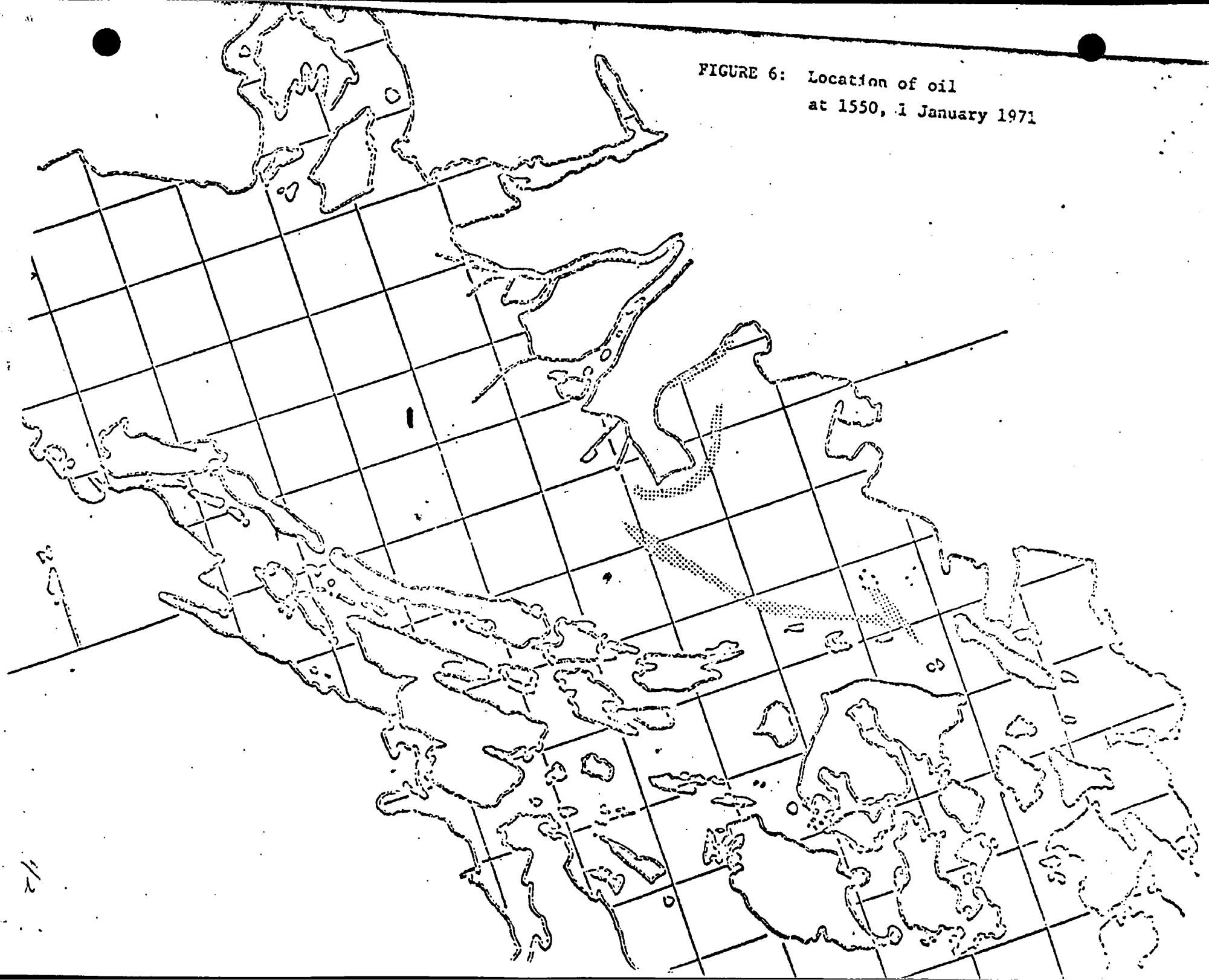
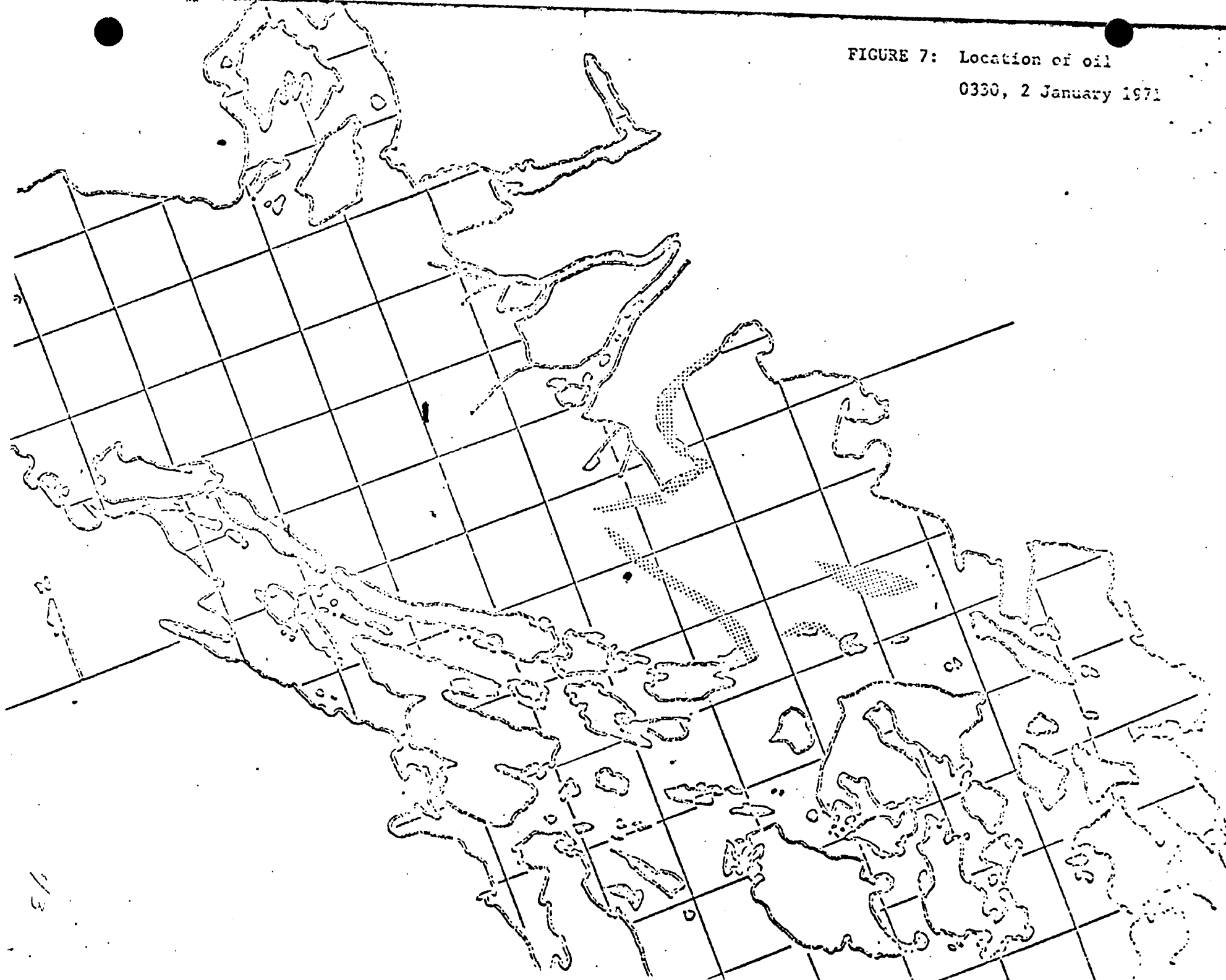
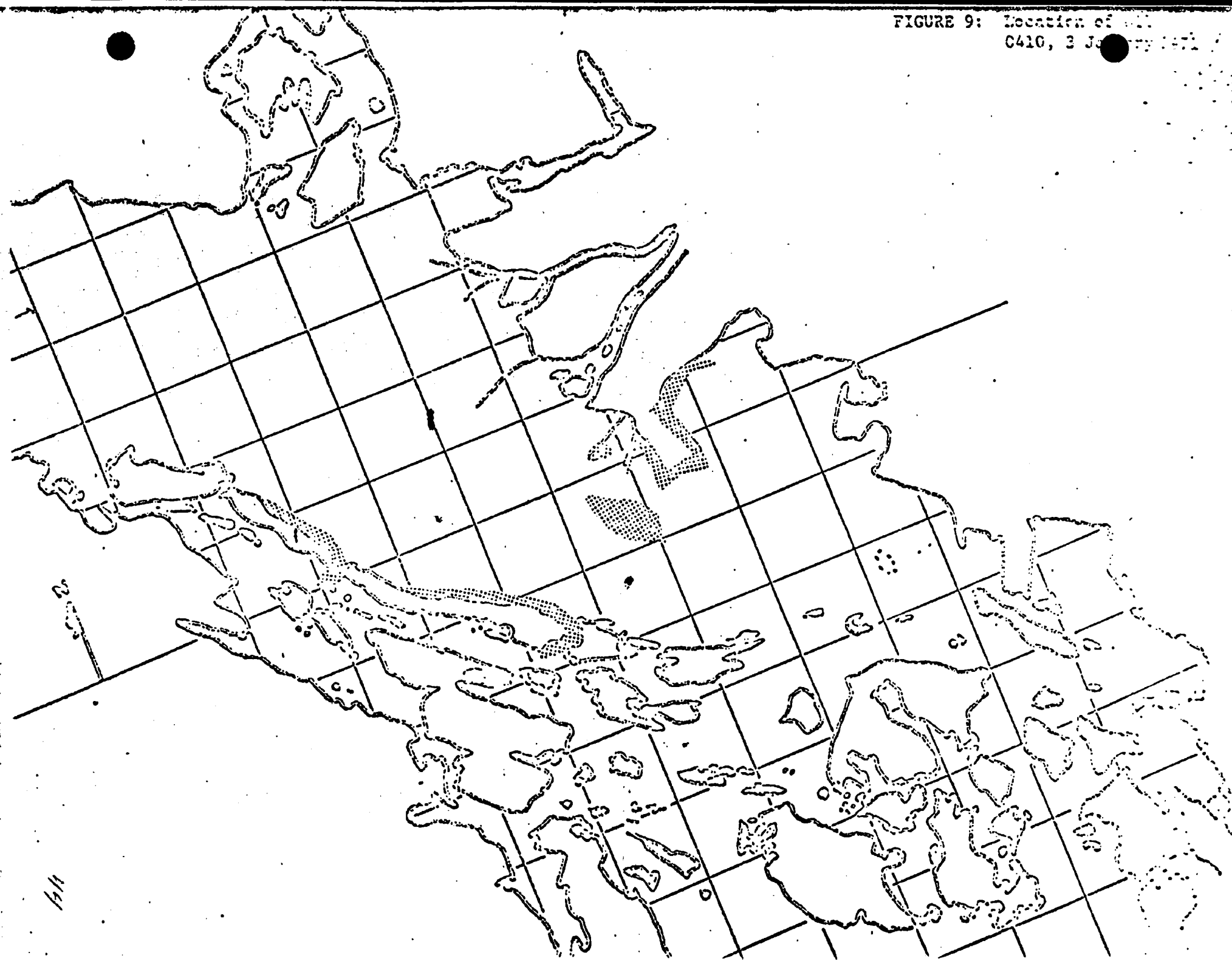


FIGURE 7: Location of oil  
0330, 2 January 1971



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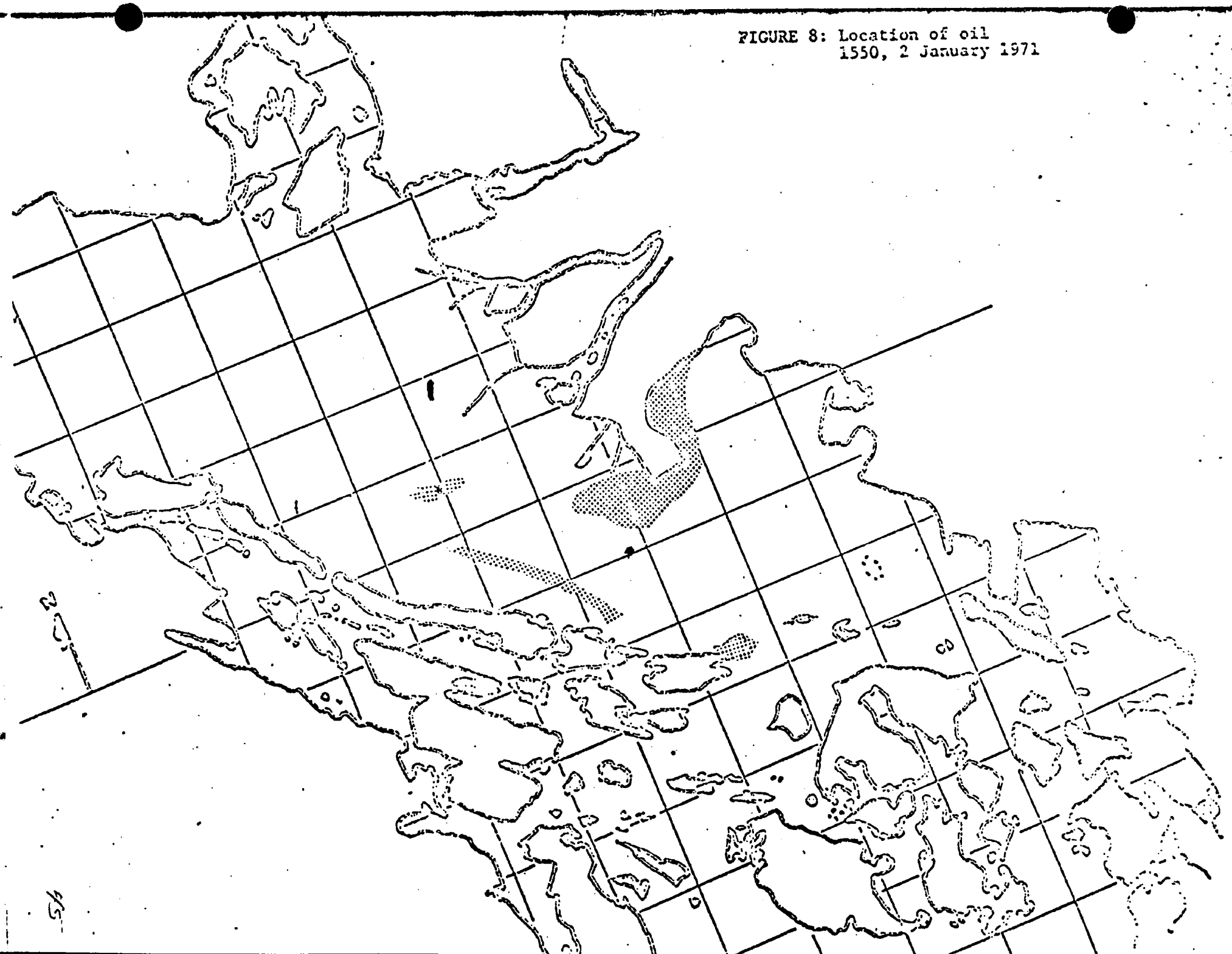
FIGURE 9: Location of ...  
0410, 3 January 1971



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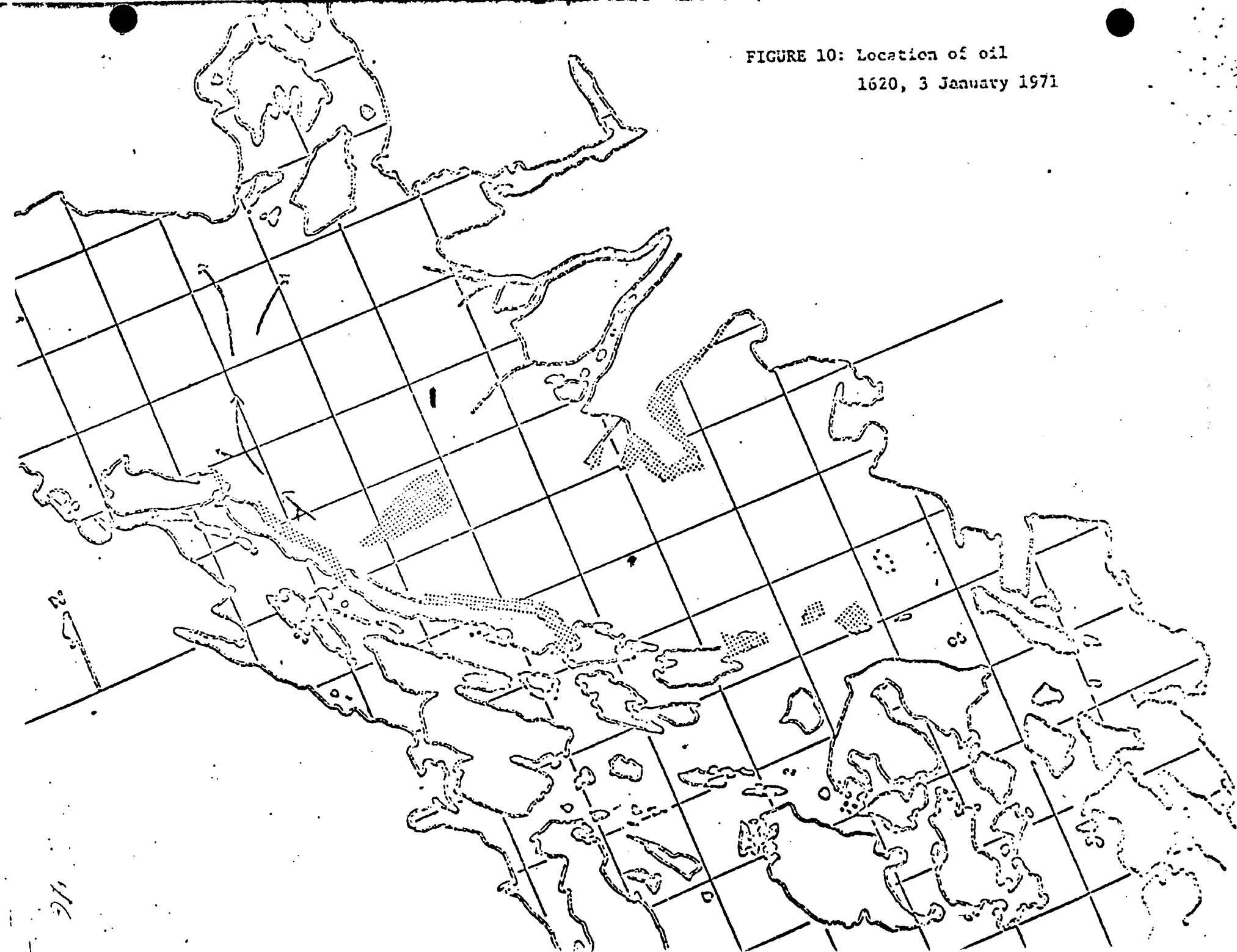


FIGURE 8: Location of oil  
1550, 2 January 1971



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FIGURE 10: Location of oil  
1620, 3 January 1971



Commentary

A perusal of Appendix I will reveal some alarming questions and serious misgivings about the possible route of supertankers into the semi-enclosed waters of Juan de Fuca and Georgia Straits. It is in this area that the most disastrous consequences and the greatest economic damage is likely to occur. The effects of a major spill on the high seas has already been demonstrated to Canada through the "Arrow" grounding in Chedabucto Bay last year. It is not known how much more serious a similar spill could be in enclosed waters but it is clear that not only is the extent of soiling likely to be doubled because of the lack of dispersive characteristics associated with the open seas, but the proximity of the shorelines will also magnify the affected area.

If it is postulated that a supertanker uses the Strait of Georgia and should suffer a mishap it is possible to attempt to evaluate the consequences in terms of economic value.

In Appendix I the dangers of using inshore waters is described in some detail in the hope that some option may be found to remove this greatest hazard. It may not be feasible to challenge the use of supertankers on the high seas but the operation of these vessels in close proximity to Canadian boundaries and in restricted and enclosed waters produces very serious potential hazards to Canadian life and property.

Firstly, however, there are those many items that are beyond valuation. The wildlife population could be decimated. Some species are already precariously near to extinction, the sea otter, trumpeter swan, Peale's falcon, bald eagle, and the Queen Charlotte Canada goose. One more hazard could produce the final extinction of one or more of these. It is difficult to put a price on the enjoyment of day's fishing, the spectacle of seals at play, or retirement in a seashore cottage. However, some attempt is made in the following paragraphs to produce some figures.

The fur-bearing seal industry produces \$500,000 annually for the west coast economy. The commercial salmon fishing industry in this area lands a catch of about \$16 million a year, whilst in excess of 300,000 boat days are taken up by the recreational salmon fishing. The herring and the shellfish industries contribute another \$3-4 million and \$1 million respectively.

The pulp and paper industry could suffer a considerable loss. Of the 5.9 billion feet of lumber cut annually on the west coast, 3.5 billion feet are transported by log boom. The value of the boomed logs is some \$200 million and hence any percentage loss through delay or damage to this resource would be considerable.

It has been estimated that Canadian waterfront property values in the region from the mouth of the Juan de Fuca Strait to the 50th Parallel amount to approximately one billion dollars, which would make it probably the largest single sector subject to economic losses resulting from oil damage. The loss to property value may occur by direct soiling, by deterioration of water quality due to oil shipping operations, or merely the threat of either or both of these occurring.

Finally and separately from economic depreciation is the cost of cleanup. Once again it is stressed that very little is known about containing or cleaning a spill in enclosed waters. The cost may be far in excess of our previous experiences and we would have to presuppose that cleanup can indeed be accomplished. An attempt to formulate some values for a postulated mishap to a supertanker within the Strait of Georgia system indicates that a major oil spill in the Strait of Georgia system could result in an economic loss to Canada in the order of \$100,000,000, not including such aspects as losses to wildlife species and aesthetic considerations.

APPENDIX III

PROPOSED OIL TRANSPORT TO  
CHERRY POINT REFINERY

- Legal Considerations -

Relevant International Law

It is a well-established principle under international law that a state has a duty to prevent activities under its jurisdiction from damaging persons or property within the territory of any other state. This principle finds support in the International Arbitration between Canada and the United States over the damage caused by the Trail Smelter in British Columbia to property within the State of Washington. In this case the tribunal held that "no state has the right to use or permit the use of its territory in such a manner as to cause injury by fumes in or to the territory of another or the properties or persons therein, when the case is of serious consequences and the injury is established by clear and convincing evidence." The tribunal also decided an indemnity was payable in the event of future damage and that the injured party was entitled to be reimbursed for reasonable costs incurred in the investigation. Similarly, in the Corfu Channel Case, the International Court of Justice declared that every state is under an obligation "not to allow knowingly its territory to be used for acts contrary to the rights of other states". Evidence of the wide recognition of this principle is also provided in the 1963 report of the IAEA panel of experts on the disposal of radioactive wastes in fresh water, in which it is stated:

"It is a general rule of international law that a state must not abuse its rights under international law by allowing alteration of the natural conditions of its own territory to the disadvantage of the natural conditions of the territory of another state."

It is important to note that the decision of the tribunal in the Trail Smelter case depended to a large extent upon earlier decisions relating to damage caused by polluted water. It is clear, therefore, that it has broader application than damage resulting from pollution of the air and may be applied in any instance where there has been a breach of duty causing extra-territorial damage. The drawback of the present juridical situation, however, is the lack of adequate means of enforcement of this obligation between states not to damage the environment of one another. Unless states involved agree to submit to the jurisdiction of an arbitral tribunal or unless the states involved are bound by a declaration of acceptance of the compulsory jurisdiction of the International Court of Justice a damaged party is powerless in seeking compensation for damage suffered nor may he even seek a discontinuation of the injurious activity. If there were agreement between states such as Canada

and the United States to submit to some compulsory third party settlement procedure in respect of damage caused to the environment of one state by the activities of the other, then the legal position of persons suffering damage would be much improved.

The proposed intensification of oil tanker traffic off the west coast of North America will be accompanied by a sharp increase in the risk of damage by oil spills, not only as the result of accidents from areas within the limits of national jurisdiction such as the United States side of the Straits of Juan de Fuca where there is a clear duty to avoid activities which may cause damage to a neighbour, but also from areas outside the limits of national jurisdiction on the high seas. If an oil spill were to occur which posed a serious pollution threat to Canada, the Canadian authorities could and would intervene to minimize or avert the pollution danger. This is not yet conventional international law but on the basis of international customary law it is recognized by some countries as a right of the state to take protective measures when threatened by a serious risk of pollution or where a proposed activity could produce an irreversible degradation within the marine environment. Apart from this very limited remedial measure international law is almost totally inadequate to meet the hazards posed by a massive oil spill. Preventive steps in advance of an incident such as the implementation and enforcement by a coastal state of standards of navigation and safety can only be implemented at present through unilateral action.

The United States, with the full support of Canada, has taken an initiative on the multilateral plane within IMO to eliminate intentional discharges of oil and oily wastes and to minimize accidental spills of oil by ships. The elimination of intentional discharges is to be achieved if possible by 1975 but not later than 1980; the minimization of accidents is to be achieved through the early implementation of a variety of navigational and other safety measures. At present the 1954 International Convention for the Prevention of Pollution of the Sea by Oil seeks to limit the amount of oil and oily wastes discharged by vessels and under the 1969 amendments to this Convention (not yet in force) further limitations are to be imposed. However, the enforcement of these discharge standards is complicated and so far largely ineffective, and thus large quantities of oil continue to be discharged into the marine environment by ships. On the proposed west coast tanker route, it is apparently intended that only vessels of United States registry will be used. In these circumstances, it should go without saying that United States vessels engaged in this operation will employ only the highest standards consistent with or even better than those recommended to IMO and that the United States vessels involved would presumably adhere to operating procedures whereby

the discharge of oil and oily wastes was entirely prohibited. The Canadian Government would expect the implementation of such measures as the minimum requirement on the part of the United States to demonstrate its willingness to assume fullest state responsibility with respect to the conduct of this hazardous operation on the high seas quite apart from any movements in coastal waters.

### Legal Remedies to Obtain Damages

Both international law and the domestic laws within Canada and the United States would in certain circumstances provide for varying levels of compensation to Canadians who suffered damage in Canada as the result of oil pollution. However, factors such as the present limitation of financial liability of shipowners in international conventional law and the legal problems involved in instituting an action in foreign courts, and enforcing any judgement obtained in such courts, present such a complex situation that in practical terms a Canadian would find himself unable to obtain prompt and adequate compensation, and in most cases any compensation, for any damage he had suffered. Because such legal remedies would be of little practical immediate assistance to Canadians who suffered damage or inconvenience as the result of oil pollution caused by United States tanker traffic on the high seas, or in waters under United States jurisdiction, the existence of such remedies should not be a major factor in arriving at any decision to permit potential polluters to undertake activities of a hazardous nature.

Any list of the obstacles to be overcome would never be exhaustive but for an individual, or a corporate person (other than those with immense financial resources) to contemplate proceedings in United States courts would be unwise. The legal complexities of carrying on an action in these domestic courts would involve litigation expenses well outside the financial limits which most could contemplate. There are also considerations of time. A small claimant who suffered a loss of his livelihood - or even an impairment of it - would be confronted with a litigation period of years which could, and likely would, mean financial ruin.

The difficulties of pursuing a claim in Canadian courts for damage caused by pollution on the high seas should also be noted. Unless either the ship owner or the owner of the pollutant are available within Canadian jurisdiction there is virtually no remedy open for Canadian claimants under domestic law, unless the judgement of the Canadian court can be registered and confirmed in the United States and such registration would itself be subject to decision of the United States courts.

The limitations of international law, in whatever forum that law may be applied, are thus almost totally inadequate to meet the claims for compensation which would arise as a result of a massive oil spill. Under present international conventional law the liability of a shipowner carrying oil is limited to \$7 million per incident. Given the total effect a massive oil spill could have upon the living resources and the use and amenities provided by the marine environment, it can be assumed that this amount would provide in many cases only minimal compensation for the many potential victims. Nor does it appear that recent or present international activities to improve the current inadequate situation will be sufficient to provide full and adequate compensation for oil pollution victims in all cases. The 1969 Brussels Civil Liability Convention continues to limit the liability of a shipowner to a maximum of \$14 million and does not assign any responsibility to the owner of the pollutant. The projected international fund for oil pollution victims which was promoted in the first instance by coastal states as a means of correcting some of the defects of the 1969 Convention also seems destined to fall short of the objective of full and adequate compensation for oil pollution victims. It may also set an unrealistic limitation on financial liability, although it will at least impose some of the burden upon the owner of the pollutant, namely, the oil companies. In sum, present international conventional law offers only limited and solely financial reparation to pollution victims.

Apart from the legal remedies which may be available to gain some measure of monetary compensation the Canadian Government must take into account that oil pollution off the West Coast may cause damage to wildlife and fish stocks which would have a bearing on present international arrangements between the United States and Canada. In the case of salmon, for example, depletion of Canadian stocks could give rise to Canadian requests for compensation by way of fishing for United States salmon. In addition Canada might wish to guard against a situation where depletion of United States salmon stocks by United States oil pollution damage might result in pressure by United States fishermen to fish Canadian stocks. A proportionate reduction in United States exploitation of the bird populations might also have to be considered, should United States oil pollution kill large numbers, in order that Canadians would continue to enjoy established benefits.



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