

10. Re: Proposed Chevron Refinery Expansion

Following is a report from the Director of Planning regarding the proposed Chevron Refinery expansion.

Further to the recommendations outlined in Item 29, Report 88, November 26, 1973 and Item 31, Report 92, December 10, 1973, the additional recommendations noted in this Item should be considered. For the information of Council, these two Items are attached.

RECOMMENDATIONS:

THAT the Company's agreement to reimburse the Municipality for costs incurred in any clean-up operation be clarified and formalized by way of the execution of a proper agreement; and

THAT for the purposes of evaluation and advice during an interim period until the regulating authorities are fully in operation, or for particular investigations which arise from any complaints, the B.C. Research Council or other capable independent testing laboratory be engaged by the Municipality at the expense of Chevron Canada Ltd.; and

THAT steam turbine spares or standby equipment be installed on critical parts in the sulphur plant to assure its continued operation under upset conditions; and

THAT these items become additional requisites to approval in principle of the project as outlined in Item 29, Report 88, and Item 31, Report 92.

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PLANNING DEPARTMENT  
JANUARY 9, 1974

SUBJECT: PROPOSED CHEVRON REFINERY EXPANSION

Background:

During discussion of the proposal by Chevron Canada Limited to expand its Burnaby refinery at the December 10 meeting of Council, several points and questions were raised relative to specifics of the proposal and the petroleum/energy situation in British Columbia in general. Moreover, further requests for more detailed information and an indication of the annual tax contributions from the oil product production and distribution plants in Burnaby have been received.

The following report attempts to provide answers to the many questions that have been raised. In some instances the final answers cannot yet be provided as the Planning Department is awaiting responses from outside agencies or technical sources; hence on such matters, these presents should be considered a status report.

A. Involvement of Environmental Control Agencies in Consideration of Expansion Plans

Consultations with representatives of the Federal Department of the Environment, the Provincial Pollution Control Branch, and the Greater Vancouver Regional District have been held from an early stage in the preparation of the current expansion program. Officials of these agencies along with the National Harbours Board, Canadian Pacific Railway, B. C. Hydro, and the Municipality's Consultant, Dr. A. D. McIntyre were furnished with preliminary draft material in February 1973, and comments and observations were requested. From the discussion and comments that ensued, Chevron's staff prepared the proposal that has been presented to Council, taking into account the standards and criteria that have been forecast by the various responsible agencies. Copies of the final submission were sent to the agencies and the Department has remained in contact up to the present in order to keep abreast of progress toward the establishment of specific regulations and implementation.

B. Monitoring and Corrective Action:

The performance of the industry is to be subject to the control and enforcement of the Federal and Provincial pollution control agencies, and both organizations will be equipped to and in fact conduct such monitoring as is necessary to assure that compliance is being maintained. In the case of the Provincial controls on air emissions and effluent discharges, the permitting authority in this area is to be the Greater Vancouver Regional District, and the maintaining in force of permits granted will be dependent on the permittee satisfying the conditions upon which the permit was issued. Moreover, there are provisions for penalties for continuing infractions under the Act, as described in the attached correspondence (Figure "A") dated January 3, 1974, from Mr. T. S. Bremner, Vice-President and Refinery Manager, Chevron Canada Limited.

In the case of the Federal regulations under the Department of the Environment, tolerable effluent discharges from the Chevron refinery to Burrard Inlet will be related to the recently-created guidelines for existing plants. Although no provision is made for penalties under the guidelines, failure by industry to meet the standards will render it liable to prosecution through the Courts under the Fisheries Act, which provides for penalties upon conviction of up to \$5,000 per day for offences, and gives the Court authority to order changes to bring about compliance.

No Federal air emission regulations have yet been developed for this type of industry, and Federal and Provincial officials are meeting to coordinate their efforts in control and enforcement where areas of responsibility overlap.

C. Clean-Up of Spills or Upsets and Recovery of Costs

The Council expressed an interest in learning whether or not the Municipality could arbitrarily clean up effluent in the event of an oil spill or some other kind of upset at the Chevron Refinery, and recover the costs thereof from the Company.

In Mr. Bremner's letter, the Company's position with respect to emergency clean-up operations is set out. The Company has stated its commitment to absorb all costs incurred in connection with necessary clean-up operations, including the costs of any municipal crews and/or equipment commissioned either by Chevron or by some responsible governmental regulatory authority.

The Company's Oil Spill Contingency Plan sets out responsibilities and procedures in the event of an oil spill mishap, including the notification of regulatory bodies and the securing of outside help in the form of men and equipment. If the Council wishes to be advised of any such mishaps, and have the opportunity to involve Municipal forces in the clean-up operations as a matter of course, it might request that the procedure be amended to require that the Contact Advisor notify the Municipality immediately in the event of any major spill. Moreover, the Company's agreement to reimburse the Municipality for costs incurred should be clarified as to "commissioning" and formalized in an appropriate way.

D. Landscape Development - Performance Bond

In the correspondence dated January 3, 1974, to which reference is made above, Item C, page 2, Chevron Canada has stated its willingness to post a performance bond to guarantee the completion of landscaping in accordance with the scheme set out in the proposal. With respect, it should be pointed out that the landscape proposal contained in the submission is totally conceptual at this stage, and that a meaningful performance bond could be achieved only with reference to a detailed landscape planting and grading plan, at a later stage of design development. The requirement that such a bond be utilized once a suitable fully detailed landscape architect's design has been approved, is recommended as an assurance that the beautification and screening objectives will be realized.

E. Tail Gas Plant

In the Manager's Report No. 88, Item 29 submitted accompanying the Company's expansion proposal, mention was made of the area of technical disagreement that exists between control agency representatives and Chevron's engineering division concerning the possible need for a tail gas plant coupled to the sulphur plant to achieve the 99% sulphur recovery to be required under Level "B" standards.

To clarify, we are advised by Chevron's engineering staff that the use of a tail gas plant would be a definite requirement to meet 99% recovery, if a conventional North American sulphur plant unit were to be installed. However, it is understood that a type of sulphur plant used in Europe may be capable of meeting the standard for a refinery with the capacity of that proposed, without the addition of the tail gas unit. The Company is presently awaiting technical data to confirm or otherwise its contention that the European equipment will achieve the stipulated level, given local conditions, plant throughput capacity, and the sulphur content of the crude oil used. In any event, Chevron has acknowledged its obligation to meet the control standard, whatever type of equipment may be thus necessitated. This matter will need to be settled to the satisfaction of the regulatory agencies prior to approval of the final engineering design for the expanded plant.

F. Record of Previous Spills and Upsets

Chevron Canada has for some time been in the practice of providing the Chief Health and Sanitation Inspector with a statement on spills and upset conditions occurring at the refinery. These reports are at this time being assembled and further information will be provided in time for the Council meeting of January 14.

G. Projected Shortfall of Petroleum Products in the British Columbia Market

It has been pointed out on previous occasions that a shortfall situation exists in the British Columbia petroleum industry in terms of meeting current demands, and moreover, that this situation is expected to become more severe as the demand continues to increase year by year.

The B. C. Energy Commission has supplied a forecast of supply and demand figures for the period 1973 through 1981, as requested. The attached letter and table (Figure "B") furnish the Commission's response and the trends currently projected for the Province are illustrated in the graph attached as Figure "C".

The present shortfall of refined product is being made up by imports from Alberta and U.S.A. refineries. However, in view of the U.S. petroleum deficit, there is speculation that the inflow of American product (principally fuel oil to B.C. coastal installations) may not be depended upon. In any event, it is now evident that further imports of refined product from the U.S. are unlikely. The Trans Mountain Pipeline is presently operating at its capacity of 410,000 barrels per day, delivering crude oil to the Lower Mainland area and Northwest Washington. At this time, approximately 70% of this flow of crude is exported to the U.S. -- however, sufficient crude oil is available to B.C. refineries to handle all projected refinery requirements, and the export via Sumas is to end in 1977 when the Puget Sound refineries are expected to switch over to Alaskan crude. When this happens, the entire capacity of the Trans Mountain line will be available to serve British Columbia's needs. There are four refineries in the Lower Mainland area supplied by this source -- two are located in Burnaby, with a combined present capacity of 44,000 barrels per day, one in Port Moody with an output of 32,000 barrels per day, and one in Ioco, with a capacity of 48,000 barrels per day. Three other small refineries are located elsewhere in the province, supplying local needs with assistance from Alberta product.

In order to cover the present shortfall and meet projected increases, the petroleum industry and the Provincial and Federal energy commissions have recognized that additional refining capacity must be created. Of the refineries operating in the Province at this time, only Chevron Canada has advanced to the point of announcing plans for expansion. However, as will be readily seen from the graph, the additional contribution will account for only a portion of the predicted deficit; hence it is almost certain that other refineries, including those in the Burrard Inlet area which have room for expansion, will be making preparations to follow in due course in order to meet the requirements of industry, commerce, and the public. It should be noted that the Commission estimates the demand rate of increase at  $4\frac{1}{2}\%$  per year, and that the "supply" figures as given take into account the proposed expansion of the Chevron refinery ("SOBC" in the table).

The Planning Department has written to the National Energy Board in Ottawa requesting comments on the proposed expansion, the petroleum energy situation in this part of Canada in general, and any statements the Board might be prepared to make regarding expansion of plants in the Burrard Inlet area as contrasted with alternative locations elsewhere in the province. To date, no reply has been received, but a further report will be directed to Council once the National body's comments are in.

#### H. Relocation of Facilities

It has been stated by Chevron that if the Company were to relocate its facilities from the present Burrard Inlet location, a period of at least five years would be involved. The reasons given include the complex design period for a new plant, and the time required for delivery of specialized equipment and components, particularly in view of prevailing materials shortages (steel, alloys, etc.)

This time frame seems not unrealistic in view of the complexity of the problem of creating a new site for such an industry, and could of course be increased if availability of materials became critical or if new pipelines and the like were involved.

#### I. Refinery Location Relative to Product Market

The Company in the attached correspondence (Item D, page 2) sets out its position relative to locational criteria and the drawbacks involved in a refinery location remote from the market area.

It is clear that there are reasons for commodity producers to locate close to their market region, as the relative economics of transporting raw materials versus finished products greatly favor this arrangement for most industries whose products are bulky, difficult to transport, or of relatively low value in relation to their weight. This is a definite factor in the petroleum product industry, and it may be seen that the economics of production and distribution make possible lower consumer prices in an area where this situation exists, compared with markets remote from the manufacturing source (as examples, northern or hinterland communities).

It had been suggested that a product pipeline from a remote refinery to its market might eliminate this difficulty using "slugs" in the line to separate dissimilar products; however, we are advised that this arrangement is neither practicable nor legal for certain products which are chemically incompatible or regulated by law. Moreover, from a general planning point of view, there are advantages in locating such specialized industries near a pool of professional, skilled, and semi-skilled labor.

J. Involvement of the National Energy Board and the Provincial Government

Copies of Chevron's submission, the accompanying Manager's Report item, and other related materials have been furnished the National Energy Board and the British Columbia Energy Commission. As noted above, a response has been received from the B.C. body, and we are awaiting the National Board's reply. Further, the British Columbia Government, through the Pollution Control Branch, Department of Lands, Forests, and Water Resources, has been involved on a continuing basis for roughly the past year.

K. Disposition of Chevron's Present Production Plant

As described in Mr. Bremner's letter (Item "E", page 4) several major components of the present process facility are retained or converted in the proposed expansion. In many instances, adaptation of the facilities and improvement to reduce noise output is involved (see "Noise" section in Proposal).

L. Comparison of Levels "A" and "B", Proposed Pollution Control Board Guidelines

A copy of the report of the Director of Pollution Control Branch which has been directed to the Pollution Control Board for review, consideration, and acceptance under the Pollution Control Act, 1967, has been furnished the Planning Department.

The standards being proposed for establishment as guidelines for the granting of permits are set out in three categories - Levels A, B, and C. Broadly speaking the categories are applied as follows:

- Level A is intended as the objective for new and proposed discharges and, within the limits of the best practicable technology, to existing discharges by planned staged improvements for industries.
- Level B is set as an intermediate objective for all existing discharges to reach within a period of time specified by the Director, and as an intermediate objective for existing discharges which are increased in quantity as a result of expansion.
- Level C is set as the intermediate objective for all existing chemical and petroleum industries to reach within a minimum technically feasible period of time.

Chevron has been advised that in all likelihood, it will be expected to meet Level B standards as a condition of the issuance of a Pollution Permit, through the authority of the Greater Vancouver Regional District.

The photocopied material attached and identified collectively as Figure "D" gives the quantitative values for air emissions, effluents, and ambient quality standards in each of the three categories as currently proposed by the Pollution Control Branch. It must be stressed that these guidelines have not yet been approved although it is expected that the Board will deal with them imminently, and they are therefore subject to change.

It is hoped that this material gives Council the information that it requires in this connection.

M. Federal Legislation and Bay Area Standards

Council has asked for a comparison of the Canadian Federal objectives and the Bay Area requirements with respect to air quality.

Chevron's letter of January 3 (page 5) contains a tabulation of those emission components listed in the National Air Quality

Objectives under the Clean Air Act, announced by the Honorable Jack Davis, Federal Minister of the Environment, on January 3, 1973. These levels at this time constitute only "objectives" in the full sense of the word, as we are advised that the creation of federal "regulations" is some time away. The right hand column lists the few corresponding values established under San Francisco Bay Area standards for ambient air quality which may be compared directly with the Canadian values. The majority of the Bay Area standards do not lend themselves to direct comparison with their Canadian counterparts, as those standards are expressed as stack emission levels as contrasted with the ambient levels specified in the National Objectives. To attempt a direct numerical comparison of certain component levels in the two different systems would be meaningless at best, and could be most misleading.

For this reason, a separate summary of the requisite standards under the Bay Area regulations follows.

<u>Pollutant</u>	<u>Standard</u>
Particulates	Opacity-Ringelmann 1 Grain Loading-0.15 gr/CF Process Weight- 40 lbs./hr. max.
Sulphur Dioxide	Emission Limit- 300 ppm Ground Level- 0.5 ppm for 3 min. 0.04 ppm for 24 hrs. SO <sub>3</sub> Grain Loading-0.08 gr., sulphur plants.
Hydrogen Sulphide	Ground Level- 0.06 ppm for 3 min. 0.03 ppm for 1 hr.
Lead	Emission Limit- 15 lbs./day Ground Level- 1.0 ug./m <sup>3</sup> over background.
Nitrogen Dioxide	Emission Limit - 250 million BTU- 125 ppm gas 225 ppm oil 1750 million BTU- 175 ppm gas 300 ppm oil

Odor

<u>Substance</u>	<u>Maximum Allowable Emission</u>	
	<u>Type "A"</u> <u>Emission Point</u> <u>(stack) ppm</u>	<u>Type "B"</u> <u>Emission Point</u> <u>(other) ppm</u>
Trimethylamine (CH <sub>3</sub> ) <sub>3</sub> N	0.02	0.01
Phenolic Compounds calculated as Phenol C <sub>6</sub> H <sub>5</sub> OH	5.0	2.5
Mercaptans Calculated as methylmercaptan		
CH <sub>3</sub> SH	0.2	0.1
Ammonia NH <sub>3</sub>	5000	2500
Dimethylsulphide (CH <sub>3</sub> ) <sub>2</sub> S	0.1	0.05

N. Monitoring by the Municipality

It has been suggested that the Municipality should monitor refinery pollution more than is recommended in the Manager's Report item dealing with this topic.

From the information given to us by the Department of the Environment and the Greater Vancouver Regional District, monitoring for the purpose of demonstrating compliance to the control agencies is required to be done by the industry involved or by a qualified independent testing laboratory, with results on continuous or periodic monitoring data turned over periodically to the control agency. The agency evaluates the data to verify compliance, or, if such is not achieved, takes the appropriate enforcement action. Monitoring equipment, methods, instrument location, maintenance, and similar matters are subject to the approval of the regulating body. In the case of the G.V.R.D., a staff of twelve inspectors is presently engaged, and the number is bound to increase as more effective controls are promulgated. The G.V.R.D. provides the staff to operate ambient air quality monitoring stations throughout the Greater Vancouver area, with equipment supplied and financed by the Federal Government. Additionally, the inspectors periodically visit industrial plants to verify monitoring procedures and results.

In the Company's letter, page 2, the refinery manager agrees to furnish a copy of all monitor data gathered with respect to sulphur dioxide ground level concentrations to Burnaby's Medical Health Officer, and to guarantee unimpeded access to the refinery for purposes of evaluating methods and verifying the authenticity of the data. The company contends that the monitoring program will cover the periods of concern including any interim period before government monitoring is fully operational.

Inasmuch as the governmental agencies both authorized and equipped to interpret, verify, and act upon monitoring data with respect to refinery emissions are the Regional District and the Federal Government, and inasmuch as the Corporation of Burnaby possesses neither the professional expertise nor the costly equipment to conduct an effective monitoring program, your staff is unable to recommend that the Municipality accept direct responsibility for direct monitoring or control. The points that have been made concerning the necessity to have data available to the Municipal government at all times, however, are well taken, and it would be advisable to require that monitoring results be furnished the Medical Health Officer on all emissions regulated by the senior governments. The authority for enforcement would lie with those designated agencies, but the Municipality would thus have information at hand which would show up any violations.

For purposes of evaluation and advice during an interim period or for particular investigations, it is again recommended that the B.C. Research Council or other capable independent testing laboratory be engaged as a consultant to the Municipality.

O. Taxes Paid by Oil Product Production and Distribution Plants in Burnaby

It had been requested that Council be furnished with a breakdown of taxes paid by the oil refineries and storage/distribution plants in Burnaby in 1973. The attached Table I. (Figure "E") has been compiled, giving the total municipal tax contributions of the several companies involved, and separating out the waterfront vs. non-waterfront plants. The total taxes cited include general tax, school tax, hospital tax, business tax, and water and sewer charges. Also noted is an approximation of the gross land area involved in each facility in acres, the acreage considered to be actually in use, and the 1974 assessment for General Purposes, for land and improvements only.

Of the total \$1,463,150.08 collected from these sources, \$619,955.01 was derived from the two refinery installations in the Municipality, and \$843,195.07 from the other storage plants, bulk plants, and distribution centres.

It may be noted that the refinery and oil storage plant properties represent 2.96% of the Municipality's total land acreage, while the tax return from these sources represented 3.77% of the total Municipal revenue from taxes in 1973.

With respect to the assessment figures, it should be remembered that these amounts are the current assessments for land and improvements only, do not include machinery assessments, and do not represent property values for acquisition purposes, which would unquestionably be many times higher.

Burnaby has for some years relied on a favorable and growing industrial tax base to keep residential property taxes down. It is a fact that residential development "consumes" more in the way of municipal services than does a corresponding area of typical industrial development (capital and operating costs for schools, parks, and hospitals; social services; additional police protection; maintenance of considerably greater lengths of internal streets, sidewalks, street lighting systems, and utilities, etc.), and that a healthy industrial sector in a municipality tends to subsidize the residential sector. Diversified industrial development of course also provides employment opportunities for the local population, and is a consumer for commercial and industrial goods and services produced by others in the Municipality.

As the Municipality's residential population grows, so too should the commercial and industrial sectors, not only to maintain a favorable municipal fiscal balance, but also to assure a balanced and integrated pool of habitation/employment/commerce. There will in future undoubtedly be increasing pressure to create new industrial areas in Burnaby for development. In terms of planning policy and practice, there are definite limitations to the locations where such industrial expansion could occur, without introducing new industrial traffic and activity to areas which hitherto had been free of this type of use. As a matter of principle, the creation of new conflicts should not be permitted. Consequently, where existing under-utilized industrial belts and enclaves occur, and where the land is not required for other purposes such as park or institutional use, the industrial properties should be developed to their optimum potential in a manner consistent with the highest standards attainable, as an alternative to opening up new areas.

In the case of the Chevron refinery property, the land has been used for industrial purposes since 1936, and the great majority of local residents have located in the vicinity since that date, fully aware of the presence of the refinery and all that it entails. The lands represent an established industrial enclave recognized in the Urban Structure report, and the surrounding non-public lands are virtually 100% developed. What is most important is that any additional development be to the highest possible standards, in order to assure that no degradation of the environment or area amenities occurs, and that in fact positive improvements will be made to benefit the area as a whole.

P. Proposed Electrical Service

In response to a query regarding the reasons for Chevron's proposal to convert from their existing 12 Kv service to a 60 Kv service with substation, the Planning Department has learned from B.C. Hydro sources that the conversion will be necessitated by the proposed expansion's increased electrical load, and that it also will provide a higher degree of reliability and continuity of service. The existing refinery is just adequately served by the present supply, with no spare capacity. The proposed 60 Kv



system is inherently less subject to outages as a result of mishaps than are lower voltage lines, and the 60 Kv service existing on Penzance Drive across the frontage of the property is part of a "double-ended" network -- that is, it may be fed from either the Buntzen Lake supply or the Horne Payne substation, in the event of a failure in any part of the system. Consequently, it is considered to be a highly reliable source of energy, reducing the chance of refinery upset due to external power failure to a finite but extremely low level.


Further, the Hydro Authority has indicated that it will specify a special main circuit breaker ring assembly at the refinery's substation, to further ensure security and reliability. The Authority will not make available any lower voltage emergency service to the plant, as this is considered both unnecessary and contrary to Hydro's policy.


The oil company's engineering staff advise that standby generators and an emergency steam turbine back-up system are maintained to take care of upset situations involving power failure. Using these systems, adequate power is available to operate instrumentation, valves, safety lights and the pumps and other pieces of apparatus necessary to safely "bring down" the plant from operating temperatures and pressures without danger. It is understood that steam turbine spares could be installed on critical parts in the sulphur plant to assure its continued operation under such conditions, and it is recommended that this be made a requirement.

Q. Report on Present Situation at Sites of Recent Major Oil Spill Disasters

The Planning Department has been asked to obtain information on the present status of marine life and the local ecological state in the areas affected by the disastrous oil spills in Santa Barbara Channel, Chedabucto Bay, and the English Channel. The most up-to-date published material on the topic locally available has been obtained, and a further qualitative statement from the respective local authorities will be obtained as quickly as possible. A further report will be presented in the near future.

Respectfully submitted,

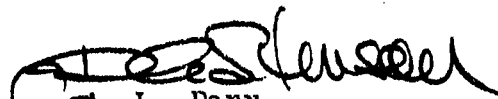
  
A. L. Parr,  
DIRECTOR OF PLANNING.

  
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Attach.

Post Script: Response from National Energy Board

As mentioned in the above report, the National Energy Board was invited to furnish its comments and observations on the proposed expansion, its relationship to the energy supply situation and possible alternative sites. A copy of the letters sent to the National Energy Board and the B.C. Energy Commission, and the response just received from Mr. M. A. Crowe, Chairman of the national body, are attached, identified together as Figure "F".

  
A. L. Parr,  
DIRECTOR OF PLANNING.

ITEM 10  
MANAGER'S REPORT NO. 3  
COUNCIL MEETING Jan. 14/74



T.S. Bremner  
Vice-President & Refinery Manager

**Chevron Canada Ltd.**

Head Office: 355 Burrard Street, Vancouver 1, B.C.  
Refinery: 355 North Willingdon Avenue, Burnaby 2, B.C.

January 3, 1974

Mr. A. L. Parr  
Director of Planning  
The Corporation of the District of Burnaby  
Municipal Hall  
Burnaby 2, B. C.

Dear Sir:

Re: Chevron Refinery Proposal

We felt it might be of some assistance if we took this opportunity of offering our views, comments and observations on some questions that were raised by members of Council at the meeting on December 10, 1974 relative to the Burnaby Refinery Modernization and Expansion Proposal:

(A) Air Monitoring Program

The Pollution Control Act is provincial legislation administered through the Greater Vancouver Regional District by the appointment of a Regional Director of Pollution Control who has the powers necessary for the carrying out of the Act for industrial air emissions in the Regional District.

In brief the Act states that no person shall cause or permit the emission into the air of any contaminant from an industrial source without a permit or approval from the Director.

The Act provides for the suspension and cancellation of permits for a variety of reasons including non-compliance. Penalties under the Act include a fine not exceeding One Thousand Dollars or imprisonment for a term not exceeding three months. For continuing offences provision is made for fines not exceeding five hundred dollars for each day the offence is continued.

Standards for the purpose of controlling the quality of emissions in respect to the petroleum industry relative to this Act are expected to be promulgated shortly by the Provincial Pollution Control Board.

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As pointed out on Page 21 of our submission to Council, we propose to continue to monitor sulphur dioxide (SO<sub>2</sub>) ground level concentrations. Our purpose would be to co-ordinate this program with the ultimate requirements of the senior government regulatory agency in respect to monitoring procedures, methods, etc. However, as in the past, we will furnish a copy of all data gathered in this regard to the Burnaby Medical Health Officer. In addition, we will guarantee the Medical Health Officer, or his authorized representative, unimpeded access to the refinery to verify authenticity of the data collected and for the purpose of evaluating the methods being used for the compilation of this material. This program will be fully operational in 1974 and will cover the periods prior to, during, and subsequent to completion of the refinery project. This will insure that any intervening, interim period between the commencement of senior government monitoring procedures and completion of the refinery project will be covered as well.

(B) Oil Spills and/or Upsets

It has been our long standing policy to report to the Burnaby Health Department in writing any extraordinary situations that might cause our neighbours concern, in respect to the refinery operation. We are not in a position to comment on the question of Burnaby's inherent power and authority, in this regard. However, we believe the Company has in the past demonstrated its moral and corporate responsibility to take all necessary measures, including the payment of all the costs incurred, to restore the status quo of the community.

An examination of the records will indicate, we feel, that there has been precious few such instances considering the fact that we have been in the refining business in Burnaby now for some 39 years. We are confident that with the installation of the new facilities proposed and the advances in technology our performance in the future will be further enhanced. Nevertheless, it is our continuing commitment that should such occasion arise in the future, we will undertake the necessary clean up operations and absorb all costs incurred in connection therewith. For the record, this includes the costs of any municipal crews and/or equipment commissioned by either ourselves or some responsible governmental regulatory authority to participate in such clean up operations.

(C) Performance Bond - Landscaping Program

We are prepared to post a performance bond to guarantee that the landscaping is completed in accordance with the scheme set out in our proposal.

(D) Oil Refineries - Burrard Inlet: Present/Future

We have already indicated it would, in our opinion, take approximately three years to complete the proposed refinery expansion project on our

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our present site. Shortages are developing in the supply of certain materials, e.g., steel, and if such shortages become critical then completion could very likely be delayed. It is conceivable, therefore, that a plant relocation of this magnitude would take substantially longer than our original estimate of five years. In the meantime, it is projected that the refining capacity in British Columbia could become very acute and parallel the critical supply situation of petroleum products being experienced in other parts of the world at present. Perhaps you might wish to obtain further clarification of this aspect of the subject from both the British Columbia Energy Commission and the National Energy Board. What we are proposing is that we be permitted now to proceed with an expansion on property, which is legally zoned for our type of use, incorporating at the same time technological advances for the further protection of the environment and the community as a whole. We cannot presume to speak for the other refiners in the area on the matter of future, possible expansions, but we would anticipate the same high standard of environmental considerations would be maintained in any such instances.

Our present location is very desirable from the point of view of availability of marine and rail shipping facilities; the close proximity to the pipeline for utilization of Canadian crude and for the orderly and economic supply of the lower mainland being the major concentration of the British Columbia market. Our proposed modernization and expansion proposal does not preclude the fact that a great majority of our existing plant together with basic supporting service facilities, representing a substantial investment will remain and continue in operation. Replacement cost of such facilities at a new location would represent enormous new capital investment in addition to the \$50 million now projected for the modernization and expansion. Certain legislative constraints, particularly with respect to the reserve placed on agricultural lands, and physical restrictions pertaining to the availability of large tracts of industrially zoned land for our use present horrendous problems when considering the suggestion of relocation for our type of industry in the lower mainland. Relocation outside this area in say a remote coastal area would present problems relating to availability of personnel as well as the procurement of goods, services, and expertise of outside contractors involved in the overall operation of a refinery.

In addition, relocation from the marketing area could require installation of pipelines to transfer the finished products. Several pipelines would be necessary to accomplish this as specific finished products cannot be transported in one pipeline, e.g., Motor Gasoline and Jet Fuel "A" or Motor Gasoline and Heavy Fuel Oil. The installation of such facilities would adversely affect the economics of alternate refinery locations and substantially increase the risk factor, from an environmental point of view, in the transportation of both crude oil and finished products.

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(E) Existing Process Facilities (20,000/24,000 barrels per day)

It is envisaged that upon completion of our refinery modernization and expansion project, several components of our existing refinery will continue in service either as at present or in some new capacity. A few examples are as follows:

- (A) Fluid Catalytic Cracker - Remains in service
- (B) Cooling Tower - Remains with addition of two new cells
- (C) Flare - Remains in service with the addition of a new low level flare
- (D) Pipelines - Remain in service
- (E) Tanks - Remain in service

It is planned to convert the old catalytic reformer to a diesel hydrodesulfurizer and replace the existing crude unit with a new, larger unit.

(F) Comparison Levels A & B - Proposed Provincial Standards

Promulgation of standards for the petroleum industry by the Provincial Pollution Control Board is expected imminently. This follows an inquiry conducted into the petroleum industry by provincial authorities in May 1972.

We have been advised that in all probability we will be required to meet a minimum of Level "B" objectives when the proposed objectives are adopted and become standards. We are not in a position to comment further on this matter at this time. However, we have acknowledged this advice in the section of our presentation to Council pertaining to "Air" (page 17) fully appreciating our future legal obligations in this regard.

(G) Federal vs. San Francisco Bay Area Pollution Control District Regulations

A comparison of the subject material is tabulated hereunder for your information.

With reference to the SO<sub>2</sub> levels as listed, the data which we have been supplying to Burnaby from our continuous SO<sub>2</sub> monitor shows that the air along the South boundary is currently meeting the listed levels. After expansion SO<sub>2</sub> emissions will be significantly reduced and this should ensure continued low levels in the area.

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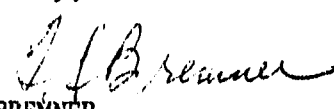
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Ambient Air Quality

	<u>Canada Federal Objectives</u>		<u>San Francisco Bay Area</u>
	<u>Max. Accept. Level</u>	<u>Max. Desir-able Level</u>	<u>Max. Permissible Level</u>
<u>SO<sub>2</sub> ug/m<sup>3</sup>* (PPM)**</u>			
Annual Arith. Mean	60(.02)	30(.01)	-
Max. 24 hr. conc.	300(.11)	150(.06)	(.04)
Max. 1 hr. conc.	900(.34)	450(.17)	(.5)
Max. 3 min. conc.	-	-	(.5)
<u>H<sub>2</sub>S PPM</u>			
Max. 1 hr. conc.	-	-	.03
Max. 3 min. conc.	-	-	.06
<u>PARTICULATE MATTER</u>			
<u>ug/m<sup>3</sup></u>			
Annual Geometric Mean	70	60	-
Max. 24 hr. conc.	120	-	-
<u>CARBON MONOXIDE ug/m<sup>3</sup></u>			
Max. 8 hr. conc.	15	6	-
Max. 1 hr. conc.	35	15	-
<u>PHOTOCHEMICAL OXIDANTS</u>			
<u>ug/m<sup>3</sup> (PPM)</u>			
Annual Arith. Mean	30(.015)	20(.01)	-
Max. 24 hr. conc.	50(.025)	30(.015)	-
Max. 1 hr. conc.	160(.08)	100(.05)	-

\*ug/m<sup>3</sup> - Micrograms per cubic meter  
 \*\*PPM - parts per million

Yours truly,  
  
 T. S. BREMNER

FGM:krw

A

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January 4, 1974

Mr. A. L. Parr,  
Director of Planning,  
The Corp. of the District of Burnaby,  
4949 Canada Way,  
Burnaby, B.C.  
V5G 1M2

Re: Proposed Chevron Refinery Expansion,  
Burnaby, B.C.

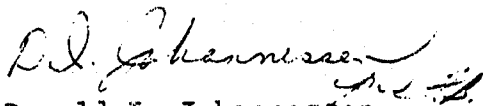
Dear Mr. Parr:

The British Columbia Energy Commission is not in a position, at this time, to suggest alternatives to expansion of present refineries on Burrard Inlet to meet future demands or to suggest alternative locations to which the refining industry might relocate if expansion in the Burrard Inlet area were not permitted.

Alternatives would require a great deal of study which we could do only upon the request of the Provincial Government.

We can give you the supply/demand figures to 1981 (see attached). These figures may differ slightly from those presented by others but the trend will be the same.

Yours very truly,

  
Donald I. Johannessen,  
Commissioner.

DIJ/fb  
Attachment

**B**

**MAJOR PRODUCTS SUPPLY/DEMAND PROJECTIONS - All numbers in MB/CD<sup>1</sup>**

**EXPLANATION OF ABBREVIATIONS USED IN THE ATTACHED TABLE**

1. Thousands of barrels per day (35 gal. bbls.)
2. Supply
3. Demand
4. Furnace oil
5. Diesel oil
6. Light fuel oil
7. Heavy fuel oil
8. Propane and Butane
9. Standard Oil of B.C.
10. 45,000 barrels per day

Product	1973		1975		1977		1979		1981	
	S <sup>2</sup>	D <sup>3</sup>	S	D	S	D	S	D	S	D
Gasoline	59.8	62.1	62.2	68.4	71.2	75.3	71.2	83.0	71.2	91.4
Jet Fuel	4.6	5.2	4.8	5.7	5.5	6.3	5.5	6.9	5.5	7.6
S/O <sup>4</sup>	20.0	20.4	20.8	22.5	23.8	24.7	23.8	27.3	23.8	30.0
D/O <sup>5</sup>	13.3	17.0	13.8	18.7	15.8	20.6	15.8	22.7	15.8	25.0
LFO <sup>6</sup>	4.0	4.2	4.2	4.6	4.8	5.1	4.8	5.6	4.8	6.2
HFO <sup>7</sup>	23.9	32.8	24.9	36.1	28.5	39.8	28.5	43.8	28.5	48.3
LPG <sup>8</sup>	4.5	6.2	4.7	6.8	5.4	7.5	5.4	8.3	5.4	9.1
Other	2.8	4.9	2.9	5.4	3.3	5.9	3.3	6.5	3.3	7.2
	132.9	152.8	138.3	168.2	158.3	185.2	158.3	204.1	158.3	224.8

Deficit                      19.9                      29.9                      26.9                      45.8                      66.5



**NOTES:**

- (a) 1973 demand is based on National Energy Board Median estimate.
- (b) Demand increase is assumed at 4.5% per year for all products on the above.
- (c) Some estimates vary from 3.5 to 6.5% for other studies.

1973 Capacity

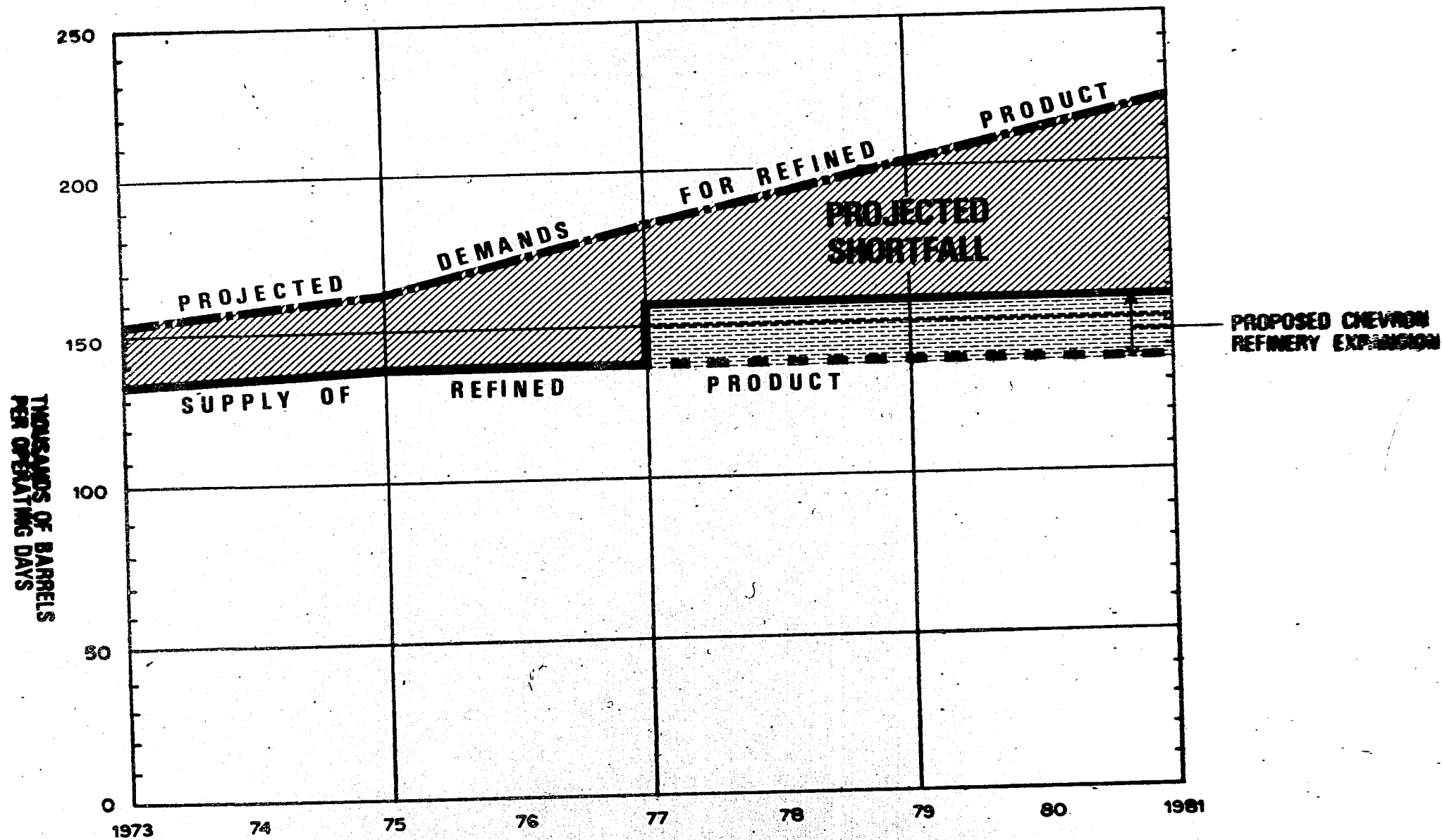
All Plants  
Debottle necked

SOBC<sup>9</sup>  
expands to  
45 M<sup>10</sup>

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# REFINED PETROLEUM PRODUCT PROJECTED SHORTFALL 1973 - 1981



SOURCE: FIGURES SUPPLIED BY  
BRITISH COLUMBIA ENERGY COMMISSION

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TABLE I - OBJECTIVES FOR PETROLEUM REFINERY AIR EMISSIONS

	LEVEL A	LEVEL B	LEVEL C	MONITORING
<u>OVERALL REFINERY</u>				
Sulphur Recovery, % (a)	99 <sup>+</sup>	99	94	Sulphur balance, continuous stack analyzer
Sulphur Dioxide, mg/M <sup>3</sup> (ppm)	830 (300)	(b)	(b)	Continuous stack analyzer
Sulphur Trioxide, mg/M <sup>3</sup> (gr/SCF)	25 (0.011)	50 (0.022)	100 (0.044)	Quarterly, collection and titration
Fluoride (as HF), mg/M <sup>3</sup> (ppm)	4.3 (6.4)	4.3 (6.4)	4.3 (6.4)	Quarterly, collection and specific ion electrode
<u>FCCU REGENERATOR</u>				
Particulate Solids, mg/M <sup>3</sup> (gr/SCF)	115 (0.050)	115 (0.050)	350 (0.300)	Quarterly, collection on filter, gravimetric
Hydrocarbons (as Hexane), mg/M <sup>3</sup> (ppm)	90 (25)	180 (50)	370 (100)	Quarterly, gas chromatograph
lbs/1000 bbls cracking feed	20	40	80	
Carbon Monoxide, mg/M <sup>3</sup> (ppm)	2400 (2000)	2400 (2000)	120,000 (100,000)	Continuous, infrared or gas chromatography
<u>STEAM PLANT</u>				
Particulate Solids, mg/M <sup>3</sup> (gr/SCF) (c)	150 (0.065)	200 (0.087)	300 (0.130)	Quarterly, collection on filter, gravimetric
Sulphur Dioxide, mg/M <sup>3</sup> (ppm)	830 (300)	1650 (600)	2800 (1000)	Calculated from fuel consumption and S content

- (a) Total Sulphur recovered from gaseous sulphur compounds originating from processing units but excluding sulphur compounds emitted from steam plant.
- (b) Emission concentration objectives are not set for Levels B and C, but must be such as to maintain ambient air quality objectives given in Table VII.
- (c) Corrected to 12% carbon dioxide.

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TABLE VII - AMBIENT AIR QUALITY OBJECTIVES FOR THE PETROLEUM AND CHEMICAL INDUSTRIES

	LEVEL A (a)	LEVEL B (a)	LEVEL C (a)	MONITORING
<u>Sulphur Dioxide</u>				
1 hour max.	450 (0.17)	900 (0.34)	1300 (0.5)	Continuous
24 hour max.	160 (0.06)	260 (0.10)	360 (0.14)	Continuous
Annual arithmetic mean	25 (0.01)	50 (0.02)	80 (0.03)	Continuous
<u>Hydrogen Sulphide</u>				
1 hour max.	7.5 (0.005)	45 (0.030)	45 (0.030)	Continuous
24 hour max.	-	7.5 (0.005)	7.5 (0.005)	Continuous
<u>Hydrocarbon (as Hexane)</u>				
3 hour max.	865 (0.24)	865 (0.24)	865 (0.24)	
<u>Suspended Particulates</u>				
24 hour max.	150	200	260	
Annual geometric mean	60	70	75	
<u>Dustfall</u>				
Residential, tons/sq. mi/mon	15	20	20	Monthly
Other, tons/sq. mi/mon	25	30	35	

(a) Concentrations given in micrograms per cubic metre (20°C, 760 mm Hg, dry basis), and in parentheses, ppm by volume except where noted.



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TABLE VIII - EFFLUENT QUALITY OBJECTIVES FOR PETROLEUM REFINERIES

Characteristic	Discharges to Marine Waters			Discharges to Fresh Waters			MONITORING
	LEVEL A	LEVEL B	LEVEL C (a)	LEVEL A	LEVEL B	LEVEL C (a)	
Oil, non-volatile, lbs/1000 Bbls. Crude (mg/l)	-	2.80	- (15)	-	2.80	- (15)	D.C., once per week (h)
Oil, total, lbs/1000 Bbls. Crude	1.15	-	-	0.58	-	-	D.C., once per week
BOD, 5-day, 20°C, lbs/1000 Bbls. Crude	2.30	8.0	8.0	2.30	8.0	8.0	COD or TOC once per wk., BOD checked against COD or TOC quarterly.
Phenols, lbs/1000 Bbls. Crude	0.023	0.06	0.2	0.023	0.06	0.2	Weekly grab
Sulphides and Mercaptans as S, lbs/1000 Bbls. Crude (mg/l)	0.011	0.02	- (1.0)	0.011	0.02	- (1.0)	Weekly grab
Ammonia, lbs/1000 Bbls Crude (mg/l)	0.576	1.87	- (15)	0.576	1.87	- (15)	D.C., once per week
Suspended Solids, mg/l (b)	20	20	30	20	20	30	D.C., once per week
Settleable Solids, mg/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	D.C., once per week
Floatable Solids	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Daily observation
Total Solids, mg/l	3000 (c)	3000 (c)	3000 (c)	1500	1500	2000	D.C., once per week
Cyanide, mg/l	N.D. (d)	N. D.	0.2	N. D.	N. D.	0.2	D.C., once per week
Chromium, mg/l, total	0.2	0.2	0.2	0.2	0.2	0.2	D.C., once per month
Lead, mg/l, total	0.2	0.2	0.2	0.2	0.2	0.2	D.C., once per month
Zinc, mg/l, total	0.2	0.2	0.3	0.2	0.2	0.2	D.C., once per month
Copper, mg/l, total	0.1	0.1	0.1	0.1	0.1	0.1	D.C., once per month
Nickel, mg/l, total	0.2	0.2	0.2	0.2	0.2	0.2	D.C., once per month
Phosphate (as P) mg/l	3.0	3.0	3.0	1.0	1.0	3.0	D.C., once per week
Dissolved Oxygen, mg/l	> 1.0	> 1.0	-	5.0	> 1.0	> 1.0	
pH	6.5-8.5	6.5-9.0	6.5-9.0	6.5-8.5	6.5-8.5	6.5-9.0	Continucus

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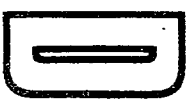


TABLE VIII Continued

Characteristic	Discharges to Marine Waters			Discharges to Fresh Waters			MONITORING
	LEVEL A	LEVEL B	LEVEL C (a)	LEVEL A	LEVEL B	LEVEL C (a)	
Temperature, °F Max.	90	90	90	90	90	90	Continuous
Turbidity	15	15	25	10	10	15	D.C., once per week
Toxicity (e)	75	50	5	100	75	5	Quarterly
Process Effluent Volume (f) IGPM/1000 BPD	8.0	13.0	-	8.0	13.0	-	

- (a) Numbers in parentheses represent concentrations in milligrams per litre.
- (b) Not applicable to discharges to exfiltration ponds.
- (c) Depends upon the nature of solids other than normal marine composition.
- (d) N. D. = Not Detectable.
- (e) 96 hour TLM static bioassay on salmonid species, expressed as per cent by volume of effluent in receiving water which is required to give 50% survival over 96 hours.
- (f) Not a restrictive objective. If effluent volume discharged is greater, concentrations must be reduced proportionately.
- (g) Daily composite sample is defined as a composite of a series of grab samples taken at 1 hour or shorter intervals over the normal daily operating period. Where monitoring is by continuous instrumentation, the daily average shall be the arithmetic mean of the characteristic concentration or value at hourly or more frequent intervals over the daily operating period.
- (h) D. C. = daily composite



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TABLE X - RECEIVING WATER QUALITY OBJECTIVES

<u>PARAMETER</u>	<u>MARINE WATERS</u>	<u>FRESH WATER</u>
Dissolved Oxygen	90% of Seasonal Value	90% of Seasonal Value
pH	No Change	No Change
Residual Chlorine	Not Detectable	Not Detectable
Turbidity, APHA UNITS	+ 5 Maximum	+ 5 Maximum
Settleable Solids	Negligible	Negligible
Floatable Solids	Negligible	Negligible
Dissolved Solids, mg/l	--	+ 100
Heavy Metals	No Measurable Change	No Measurable Change
Phenol mg/l	< 0.001	< 0.001
Toxicity	Below Detectable Limit	Below Detectable Limit
Temperature Increase, °F Maximum	+ 2	+ 2

Biological parameters which are not amenable to tabulation will also require consideration.



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TABLE I

<u>BURRARD INLET AREA INSTALLATIONS</u>	1973 TOTAL TAX PAID	LAND AREA GROSS (AC.)	APPROXIMATE LAND AREA IN USE (AC.)	1974 ASSESSMENT FOR GENERAL PURPOSES- LAND & IMPROVEMENTS ONLY
CHEVRON CANADA LTD.	\$ 423,203.46	136.3	73.4	\$ 8,470,385
SHELL CANADA LTD.	\$ 400,593.71	220.2	57.9	\$ 8,099,655
TRANS MOUNTAIN PIPELINE	\$ 161,256.22	15.4	9.0	\$ 4,639,140
TEXACO CANADA LIMITED	\$ 19,594.05	11.4	8.0	\$ 556,585
GULF OIL CANADA LTD.	\$ 54,268.97	65.0	20.0	\$ 2,173,575
-Subtotals-	\$1,058,916.41	448.3	168.3	\$23,939,340
<u>NON-WATERFRONT PLANTS</u>				
SHELL CANADA LTD.	\$ 124,577.06	109.8	40.0	\$ 1,526,710
TRANS MOUNTAIN PIPELINE	\$ 195,078.12	189.1	152.0	\$ 6,312,400
IMPERIAL OIL LTD.	\$ 75,559.03	29.7	15.0	\$ 2,295,050
PACIFIC 66 LTD.	\$ 9,019.46	4.0	4.0	\$ 265,065
-Subtotals-	\$ 404,233.67	332.6	211.0	\$10,399,225
TOTALS	\$1,463,150.08	780.9	379.3	\$34,338,565

(48.6%  
OF GROSS)

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PLANNING DEPARTMENT

V5G 1M2

December 28, 1973

National Energy Board,  
473 Albert Street,  
Ottawa, Canada. E1A 0E5

Attention: Mr. M. A. Crowe, Chairman

Dear Sir:

Re: Proposed Chevron Refinery Expansion  
Burnaby, B.C.

As you know, the Municipal Council has received a detailed proposal from Chevron Canada Limited in connection with the Company's desire to expand its present 20,000-24,000 BPOD refinery on Burrard Inlet to a capacity of 45,000 BPOD. The proposal has received a good deal of study at the staff level, and we understand that you have been provided with a copy of the Manager's Report and the report of our consultant, Dr. A. M. McIntyre of the B.C. Research Council, together with a copy of Chevron's proposal.

The topic has evoked considerable interest and requests for more detailed information, from members of Council, environmental and local community organizations, and individual residents of the area.

In giving consideration to Chevron's request for approval in principle, the Council is taking into serious account a variety of factors including environmental impact on land, air, and water, employment ramifications, fire, explosion, and spill hazards, tax revenue, the broad question of land use in terms of potential use of the waterfront for recreational or other purposes, and most generally, the desirability of allowing the proliferation of heavy industrial uses such as refineries in North Burnaby.

On January 14, 1974, a public meeting will be held to hear the views and further questions of interested groups and individuals. It is hoped that at that time, staff will have a report on those specific enquiries that have arisen to date, many of which are technical or local in nature.

The Council would, however, appreciate any comments or statements you may be able to give concerning the energy situation as it applies to the petroleum industry in this part of the world, the need for additional refining capacity in British Columbia to meet

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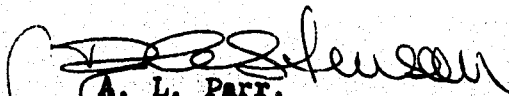
- 2 -

forecast market demands, and any alternatives you may see to expansion of present refineries on Burrard Inlet to meet such future demands. In particular, the Council would be interested in alternative locations to which the refining industry might relocate if expansion in the Burrard Inlet area were not permitted.

Receipt of your observations on these or any other facets of the matter at the earliest possible date would be very much appreciated, for presentation to the Council. If any further clarification or background material would assist in preparing your response, please do not hesitate to contact our Mr. D. G. Stenson at 604 - 299-7211, Local 322.

Thank you on behalf of Council for your prompt attention.

Yours truly,

  
A. L. Parr,  
DIRECTOR OF PLANNING.

*AW*  
LGS:cm  
cc. MANAGER.

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NATIONAL ENERGY BOARD  
OTTAWA, ONTARIO  
KIA OE5



OFFICE NATIONAL DE L'ÉNERGIE  
OTTAWA, ONTARIO  
KIA OE5

9 January 1974

File: 1233-2

The Corporation of the District  
of Burnaby,  
Municipal Hall,  
4949 Canada Way,  
Burnaby, British Columbia,  
V5G 1M2.

Attention: A.L. Parr, Director of Planning

Dear Sir:

I refer to your letter of 28 December, in reply to which I would say that the National Energy Board has for a considerable period been increasingly concerned over the shortage of oil refining capacity in the Province of British Columbia. The basis for this preoccupation, which, we believe to be shared by all the refining companies in the Province, was fully confirmed by a survey which we conducted last year.

In existing supply conditions, of course, the non-availability of additional capacity is seriously hampering efforts being made to meet the Province's product requirements.

Yours truly,

*J. G. Stahback*  
for M.A. Crowe,  
Chairman.

F

29. Re: Proposed Chevron Refinery Expansion Program Master Plan

Following is a report from the Director of Planning regarding a proposal by Chevron Canada Limited to expand and modernize its petroleum refinery facilities in North Burnaby.

Aldermen will find two booklets on the expansion proposal attached to their Agendas. These booklets were not attached to public Agendas because the supply was very limited. This is not to say that copies cannot be made when they are required.

There is a considerable volume of past report items available on this subject and these can be made available on request.

RECOMMENDATION:

THAT the proposal for expansion and modernization be approved in principle, contingent on the satisfaction of all those commitments respecting environmental matters and use compatibility, and subject to the fulfillment of all relevant Bylaw requirements and those specific topics mentioned under "Implementation" in the Director of Planning's report.

\* \* \* \* \*

PLANNING DEPARTMENT

SUBJECT: PROPOSED CHEVRON REFINERY EXPANSION PROGRAM MASTER PLAN

Since late 1971, Chevron Canada Limited has been engaged in the preparation of a proposal to be presented to the Municipal Council in connection with their long-range intentions for expansion of their North Burnaby petroleum refinery facilities. During this period Planning Department staff have been in close contact with Chevron with respect to those issues which are expected to be of particular interest to the Council, and have, with the authorization of Council, played a liaison role in involving government agencies, the Municipality's Consultant, and environmental control bodies which will have authority in dealing with emissions, safety, and other factors.

The Company's expansion proposal is now complete, and is being forwarded for the consideration of the Council.

SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS:

The proposal of Chevron Canada Limited, to expand its North Burnaby refinery and to institute pollution prevention and abatement measures to meet current and projected environmental quality standards as well as those of the Bay Area Air Pollution Control District, has been critically reviewed by staff and outside Consultants. It is considered that the expansion proposal has been carefully designed to minimize conflicts between the industry and the surrounding area, and that the installation of new systems and equipment will afford the opportunity to actually reduce certain present harmful effects, meeting or surpassing current and proposed standards.

It is being recommended that the Council give approval in principle to the Expansion Proposal, embodying all those commitments made with respect to environmental matters and to development in harmony with the local area, subject to the satisfaction of all by-law requirements and those specific topics mentioned under "Implementation" below.

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ITEM 29
MANAGER'S REPORT NO. 88
COUNCIL MEETING Nov. 26/73
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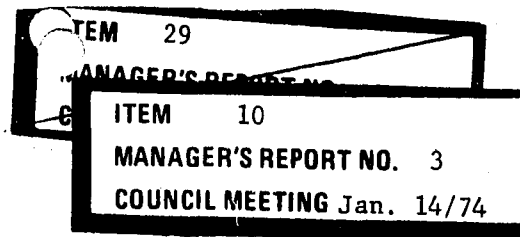
BACKGROUND:

The following represents a brief summary of the events and decisions that have led to the preparation of this proposal for Council's consideration:

1. On April 13, 1971, the initial report on Chevron's proposed modernization program was presented. The proposal conformed in all respects to the existing M3 (Heavy Industrial) zoning of the land, and the report to Council was prompted by a long-standing request of Council that it be advised of any proposed additional tankage installations at refineries within the Municipality. The proposal included construction of a rheniformer (necessary for the production of lead-free gasoline), light ends recovery facilities, a new flare tower, a CO steam power boiler, and minor additional tankage and related support facilities. The report was received and concurrence noted with respect to issuance of PPA.
2. On April 26, following further discussion on the matter, a comprehensive report on the proposal was requested by Council, prior to the issuance of PPA. Advice was sought at that time as to what means could be used to limit or prevent the expansion proposed.
3. Reports on the topic were dealt with in Council on July 12, 1971; included was a report by Dr.A.D.McIntyre and reports from the Planning Director and Solicitor as to obligations to issue permits subject to the by-laws, and certain measures to afford higher control standards were suggested. Council authorized issuance of Preliminary Plan Approval for the modernization project with the understanding that this should not be construed as tacitly approving any further expansion of Chevron's or any other Company's plant. It was also resolved that the Oil Companies in the municipality be notified that Council was "immediately proceeding with an investigation of ways and means to limit or confine any future expansion of the productive facilities in the refineries of the Companies."
4. Chevron Canada proceeded with certain elements of the modernization program (Light Ends Recovery and new flare), but requested that staging be allowed under the PPA in view of the uncertainty regarding expansion prospects. In particular, construction of the Rheniformer and CO Boiler was to be deferred inasmuch as these items were significant with respect to future plans to increase the plant's throughput capacity.
5. In due course, members of Council and senior staff visited refineries in California and local refineries in order to gain first-hand knowledge of the problems and the potential in the field of environmental control in modern oil refineries.
6. On November 15, 1971, Council rescinded the July 12 resolution pertaining to limiting expansion and substituted the following:

"That notice be given to the Oil Companies owning property in the Municipality that the Council is proceeding with an investigation of ways and means to set standards for aesthetic or visual pollution and control, and for the level and quality of emissions from the refineries of the Companies as well as possible enforcement procedures".

Simultaneously, the Municipal Manager was authorized to negotiate with Chevron the voluntary adoption of Bay Area Air Pollution Control District standards and the solution of visual pollution and aesthetic problems, and to engage Dr.A.D.McIntyre of the B.C.Research Council to assist, on a continuing basis, on matters relating to pollution standards and control.



7. The Planning Department reported on May 29, 1972, regarding the progress to date, and the direction of studies concerning the proposed expansion, and the planning/fire protection/environmental control considerations being evaluated.
8. Since that time, a program of consultation with environmental control authorities at all levels of government, with Dr. McIntyre, representatives of the Canadian Pacific Railway, B.C. Hydro, and the National Harbours Board, has been carried out, as Chevron has supplied specifics on its master plan proposal for expansion of the North Burnaby Refinery. An initial submission of the proposal on February 8 and 9, 1972, had left many questions unanswered, and efforts in latter months have been directed toward preparing a submission in which the major question areas are resolved.

EXPANSION PROPOSAL:

Accompanying are copies of the Expansion Proposal being advanced by Chevron Canada Limited at this time. The contents should be self-explanatory insofar as the Company's development intentions and its commitments to standards and environmental controls are concerned. The general format of the presentation has arisen from consultation with staff as to specific areas of concern, and the content with respect to emissions, air quality, water quality, noise abatement and control, and fire protection has been developed with the assistance and comments of those bodies which currently are, or are now proposed to be, the regulating authorities in the respective areas.

Included in the submission is a map, (Drawing No. GT-R-24876-4) showing the proposed land use of the refinery property. This drawing indicates, by symbols and notation, the existing facilities which are to remain under the proposal, together with those which form part of the expansion package. Moreover, where additional facilities are foreseen beyond the expansion now being proposed, these elements are indicated in a broken outline. We are advised by Company officials that they do not at this time have any intentions for expansion of major facilities beyond those represented on this plan.

DISCUSSION:

1. Land Use Concept

The lands within the refinery and tank farm complex are zoned M3 Heavy Industrial District and M1 Manufacturing District, categories which permit the present use. The bulk of the lands adjacent are zoned residentially (R2, R3, and R5), and Park and Public Use District P3. Our efforts in discussion with Chevron have been directed toward achieving the maximum compatibility between both existing and proposed installations and surrounding land uses. Certain particulars of the relationship between the refinery and the adjacent area are discussed in further detail below, with respect to visual characteristics, access and circulation, access to the waterfront, and the like.

The presence of the oil refineries and other heavy industrial plants on the south shore of Burrard Inlet in Burnaby dates back many years, to 1935 in the case of the subject refinery. Without doubt, this presence has had an impact on development patterns in North Burnaby, and some conflict has been manifest over the years, mainly with respect to visual problems, air pollution, and noise. Council has, on at least one occasion, considered prohibiting expansion of the oil refineries' productive facilities, but as stated in the Manager's Report, Item #42, July 12, 1971, "... it should be recognized that should the Municipality impose a blanket restriction that would limit all refineries to their present output, it could, for example:

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- 1) terminate the economic feasibility of Burnaby locations for the industry,
- 2) jeopardize past investments, and
- 3) invalidate reasonable expectations which were legitimately assumed at the time of investment."

It is clear that the adverse environmental effects issuing from a small but poorly-equipped and poorly-operated plant may well be more objectionable than those from a superior plant regardless of relative throughput capacity. In effect, a program of modernization and expansion may provide an opportunity to achieve improvements in the overall situation through the use of modern technology and imposition of up-to-date controls. The approach therefore has been to seek standards of performance which will reflect the legitimate best interests of the rest of the community, and to require that any proposed plant expansion adhere to these positive improvement standards.

In general, achieving maximum compatibility involves minimizing the conflicts associated with unsightliness, emissions to the atmosphere, water effluents, unsightliness, noise characteristics, and the possibility of fire or explosion hazard to the surrounding regions. One of the problems recognized from the outset has been the difficulty in quantifying these parameters so as to establish a realistic standard of tolerance in these rather subjective areas.

Emissions to the atmosphere and discharges to bodies of water are now, or are soon to be controlled by agencies of the senior governments in accordance with technologically-derived quality standards, and the Company has committed itself to meeting the performance standards required by the various agencies when and as they are promulgated, as well as meeting the Bay Area Air Pollution Control District air quality standards as a "minimum" level of quality. Noise characteristics are now controlled in this Municipality by the Burnaby Noise or Sound Abatement By-law 1972, Amendment By-law #1, 1973, wherein provision is made for measurement of acoustic output and for enforcement of control as to maximum acceptable levels. It is evident from the Consultant's report that the overall acoustic environment attributable to refinery operations in this plant will be significantly improved with the installation of new equipment and modification of existing equipment proposed as part of the expansion program.

As to visual aspects, an effort has been made to provide for improvements to the appearance of the existing plant (through removal of certain offending structures, incorporation of a subtle colour scheme in a repainting program, the landscaping proposal, and screening/buffering), and to control the location, size, and character of proposed new structures so as to achieve visual order and to interfere as little as possible with existing views from normal vantage points within the surrounding areas.

Patterns of access and vehicular circulation within the Municipal street system would be little changed as a result of the expansion being proposed. Significant changes could result from any major decisions on the Municipal road system in the vicinity of the refinery, but the situation as proposed appears to be adaptable to any new facilities presently contemplated. Essentially, the plant is dependent on access from the south via Willingdon Avenue and either Penzance Drive or Eton Street/Rosser Avenue, for most purposes.

Public access to the waterfront has been considered, and the Chevron proposal contains an offer to lease to the Municipality approximately one-half of the area of the Company's 5.7 acre parcel adjacent to Confederation Park for such public purposes. This topic is discussed in further detail below.

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Potential hazard to the surrounding areas with respect to fire or explosion has been carefully studied by the appropriate fire prevention authorities, and improvements are to be made both in the plant design (inherent benefits) and in the provision of superior fire-fighting and containment facilities.

2. Boundary Definition:

Discussions have taken place over past years concerning the development of more logical site boundaries for the Chevron Refinery, respecting patterns of land ownership, redundant road allowances, and projected road alignments at the site perimeter. A major land exchange between the Corporation and the oil company has been foreseen, to establish this more rational boundary, and to develop an effective buffer zone between the industrial use and adjacent residential uses.

The actual location of the ultimate boundary adjacent to Area 1, the westerly portion of the plant, is directly related to the alignment for the proposed Scenic Drive route, and as such, is dependent on future decisions by Council with respect to development of the road. Although a Scenic Drive route has been contemplated for some years, it has had a low priority rating in road planning, and no firm decisions have been made in its regard. Nothing in the current proposal would tend to precipitate a demand for the road, but it has been considered as a future possibility that must be protected at this time in establishing realistic boundaries.

It is proposed that a comprehensive land exchange proposal be developed and implemented as a part of any redevelopment or expansion package, with the projected Scenic Drive alignment as currently plotted providing the basic constraints in establishing boundaries, extent of road closures, and the like. (It should be noted that such a major land exchange has been contemplated for some years, and should be effected regardless of plant expansion or otherwise.)

Chevron Canada has been engaged in a program of acquiring property in the vicinity of its tank farm installation as a means toward creating an effective buffer between itself and its residential neighbours, and portions of the properties thus acquired could figure in an eventual exchange for abandoned roads and portions of Municipal land lying north of the proposed boundary. Residual portions of properties lying south of any future road in the Scenic Drive alignment, should Council decide in favour of such at any time, would be used to create a landscaped buffer between the residential neighbourhood and, not only the refinery, but also the road itself.

Of particular significance from a short-range view, in terms of Chevron's current proposal, is the closure of portions of Carlton Avenue and Willingdon Avenue. The former would be necessary to provide for expansion of a row of large floating roof storage tanks westward into the Company-owned Block 34, and the latter is desired to effect a better measure of control and opportunity for landscaping at the principal entry to the refinery's office area near Willingdon and Eton Street.

In connection with the redefinition of the site boundaries in the vicinity of Block 34, it is noted that a rezoning of a portion of land north of the proposed "ultimate" boundary from a residential "R" category to some other suitable category, will be necessary to provide for compliance of two proposed new tanks and one existing, non-conforming tank. This matter involves the mandatory 200 foot minimum setback of petroleum storage facilities from the A2, R and RM Districts, and an adjustment of the boundary will more closely reflect the intended uses of the land in view of the proposed site boundary redefinition.

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The attached sketch #1 indicates the present refinery site in Area 1 and also what is proposed as the ultimate boundary of the site under the current proposal. Such a boundary would be reinforced by and, in fact, form the basis of the perimeter screening elements envisioned in the landscape plans.

3. Access and Circulation:

As mentioned in (1) above, the principal means of vehicular access to the industrial sites would remain largely unchanged under the current proposal.

Tank truck loading access is to be gained in the present fashion via Eton and Rosser Streets, and LPG (liquified petroleum gas) loading via Willingdon Avenue. Access to #2 Area remains via Penzance Drive. A new access road from Penzance Drive to the proposed new electrical substation in Area #2 is to be constructed, to allow unimpeded access for B.C. Hydro crews in any emergency.

Access to the Burrard Inlet waterfront has been a longstanding matter of concern, and is one of growing importance to the citizens of the Greater Vancouver area as the potential of the waterfront as a source of interest and recreation is recognized. To date, closure of the Willingdon Avenue street end north of Eton Street has not been favoured, as it has provided the only legal corridor between Chevron's holdings in this area. It has not been suitable for safe or convenient public access however, due to terrain and the industrial activity in the area. There is, however, a natural ravine running approximately north and south through the Chevron-owned parcel east of Willingdon Avenue proximate to Confederation Park, which affords the possibility of a most suitable pathway to the area of the waterfront and which contains desirable natural features.

This property has been proposed for acquisition under the Parks Acquisition Program. However, the current program states the following in connection with this property:

"Property proposed for oil refinery expansion. Recent negotiations would suggest that the easterly portion of the parcel can be obtained for park use through a long-term lease agreement. The expenditure of park acquisition funds may therefore be unnecessary."

The Chevron proposal, on page 2 of the Section entitled "Water Quality" contains a proposal to lease the easterly portion of this 5.7 acre parcel to the Municipality for park purposes for 99 years for the nominal sum of \$1.00. Your staff (Planning and Parks and Recreation Departments) have examined this offer, and would recommend acceptance.

It should be noted that the existence of the Canadian Pacific Railway along the south shore of the Inlet presents a major problem in providing safe public access to the actual water's edge. The provision of safe beach access for pedestrians at this or any other point will require a grade separation, and this is not being proposed at this time. What the proposed lease arrangement achieves is the use of approximately one-half of the parcel for park purposes in conjunction with Confederation Park abutting, and the provision of a suitable route for development of a pathway to the region of the waterfront.

4. Fire Prevention and Fire Fighting Program

The proposal contains a brief section on Fire Protection. This topic has been discussed in detail with authorities of the Provincial Fire Marshal's Office and the Burnaby Fire Department's Fire Prevention Office. Agreement has been reached on the general provisions and practices to be followed (as recommended by both the American Petroleum Institute and the National Fire Protection Association) and on specifics related to actual devices and

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methods in connection with facilities proposed in the expansion plans. Certain features of the proposal, including removal of all LPG storage from the tank farm area to an isolated location and provision of the new LPG loading facility, are a direct result of fire safety considerations.

Both fire protection authorities mentioned have expressed their general satisfaction with the proposal, subject to specific details that have been discussed and agreed to by the Company.

5. Construction:

A detailed description of the actual refinery elements to be constructed is included in Chevron's submission, including process plant, tankage, loading facilities, pollution prevention facilities, support buildings, and the like. The location of new structures has been the subject of considerable discussion, and the plans as presented represent what is considered to be the most satisfactory arrangement that can be achieved, from an aesthetic or siting point of view.

The construction of additional tankage has always been a matter of major concern, in view of the unsatisfactory relationship to surrounding residential areas observed by some older tanks. The installation of an in-line blender is proposed as part of the expansion program, and we are advised that this device will reduce the need for additional tank storage by 300,000 to 500,000 barrels below that which would otherwise be required to support a refinery of 45,000 BPOD. The new tankage that is proposed is shown on the plans accompanying the submission, and includes 3 new major tanks plus a sour water storage tank at this time, with provision for 8 additional tanks in the ultimate layout. The tanks are situated in locations that are the least likely to be visible from or offensive to the surrounding areas, within the constraints imposed by terrain and sub-surface geology. Moreover, certain existing tanks in the present tank field are to become redundant under this proposal (including the horizontal propane cylinders), and are to be removed.

All new process facilities are located within the easterly area (Area #2) as shown on the plans. The Hydro sub-station has been located in the most satisfactory location possible, given the need for direct access from the perimeter of the site, stable soil conditions, and the like, and is to be screened from Penzance Drive by careful preservation of existing growth.

The proposed facilities north of the CPR Right-of-way have been examined by both the National Harbours Board and the CPR. Both groups have expressed their approval in principle with regard to the work proposed (foreshore basin and rail car loading area) subject to certain stipulations that have been accepted by the Company.

Concerning construction scheduling, we are advised that if Council grants approval in principle, the Company will proceed directly to the next stage of preparing detailed engineering design and working drawings for approval and construction. It has been stated that the program will require approximately three years to complete, but that it will be handled on a phased basis with certain pollution-control facilities in the early stages.

6. Environmental Aspects

(a) Visual:

Major industrial installations of this type characteristically present special aesthetic problems that are not common to most other uses in the community. By its nature, the bulk of a petroleum refinery's equipment must be out-

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doors and is generally bulky and complex in form. Achieving visual acceptability is therefore often difficult, and requires a combination of design and planning treatments. The principal means available seem to be careful siting and massing, optimum setbacks, making use of advantageous elevation differences, introduction of screening elements or preservation of existing natural screening, enclosure, and "cosmetic" treatment.

The proposed Land Use Scheme has been discussed in some detail with the Company during its development stages, and the proposal for new installations reflects these means within the limits of site areas available, physical site conditions, and operational practicality. The plans are rather schematic at this point, as detailed engineering design has not been done, but the basic layout and understandings received concerning physical treatment of proposed structures reflect a suitable handling of the problems. An attempt is made in the planning of new tankage, to promote a degree of visual "order" in the major elements, and setbacks and retention of natural growth areas are designed to provide natural screen buffers where possible.

With respect to the existing facilities, the Company has been engaged in a program of improving "housekeeping" and maintenance and has made good progress in a painting program involving both storage tanks and major columns and structures in the process area. We are advised that the painting improvements, using two low-key earth tone colours, are to be continued on the existing and proposed new facilities.

A basic landscaping concept has been presented which provides for tree planting in belts and clusters within the project itself as well as along the perimeters. This plan reflects a promising approach to the problem, and will require further, more detailed development prior to approvals, should agreement in principle be given to the proposal.

(b) Water:

Matters concerning the standards of air and water quality to which the oil company pledges itself in its submission, have been carefully scrutinized by experts from the appropriate agencies of the senior governments, which regulate or are proposed to regulate emissions.

In the case of water quality, consultations were held with the Greater Vancouver Regional District, the Pollution Control Branch, and Environment Canada. Copies of pertinent correspondence received from these authorities relative to this topic are attached for your reference. The text of Chevron's submission contains detailed explanations of the facilities proposed to ensure the required high standard of water quality with respect to both process and run-off waters.

The refinery is presently discharging liquid wastes in compliance with a Provisional Permit issued by the Pollution Control Branch, and will, along with all other industrial permit holders, be obliged to observe the standards imposed both now and in the future by this authority. The response received from the District Manager of the P.C.B. indicates that the current specific proposal appears to be in accordance with basic objectives for pollution control insofar as effluent discharges are concerned.

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Environment Canada is currently in the process of developing liquid effluent regulations for the petroleum industry. These regulations are presently in the late stages of development. On the basis of data supplied by the oil company, the Regional Director for the Pacific Region has indicated his recommendation for approval in principle, subject to two provisions related to the forthcoming Federal regulations. Chevron has verified its commitment to comply with these regulations in all respects once they are promulgated.

The Director of Operations for the G.V.R.D. has indicated that there appears to be no problem as far as water discharges are concerned. He informs us that the Company is aware of the GVSDD requirements and will meet them.

It is noted that the possibility exists that liquid effluents may be discharged to the sanitary sewer system, subject to meeting the requirements of the GVSDD and those of the Environmental Protection Service, including biological treatment either at the refinery source or at the sewage treatment plant. As explained in the Proposal, provision is being made in the expansion plans for meeting the standards required, whether by direct discharge of treated effluent to the Inlet or by discharge to the sewer system.

It is understood that the onus is on the Company to monitor discharges and environmental quality as required by the regulating agency having control, and to periodically provide data reports on the results for evaluation.

(c) Air:

The matter of air quality as it is affected by this refinery's operations has likewise been the subject of considerable technical scrutiny by both the government agencies regulating emissions to the atmosphere and also by the Consultant engaged by the Municipality to report on the topic, Dr.A.D.McIntyre of the Division of Applied Chemistry, the B.C.Research Council. Air quality is a topic that receives a great deal of public attention and concern, as the effects of many common air pollutants are perceptible even at considerable distances, although other polluting agents are not commonly discernible to the eye or human nose.

Dr.McIntyre has previously reported (1971) that the Chevron refinery does not at present contribute significantly to impaired air quality in North Burnaby during normal operations. After examination of the proposal and determination of the probable emissions, our Consultant concludes that sharp reductions in the quantities of major air emissions are to be expected as a result of the modernization/expansion program; substantial reductions in other materials are also expected, in spite of the increased capacity, and only the quantity of nitrogen oxides is expected to increase (it is stated that this increased emission is not expected to produce any adverse environmental effects). A copy of Dr.McIntyre's report is attached.

The Federal Clean Air Act includes reference to National Air Quality Objectives, outlining three levels of air quality objectives: "desirable", "acceptable", and "tolerable". Environment Canada has stated that Chevron should meet the maximum "desirable" limits of these National Air Quality Objectives; the oil company in its proposal acknowledges these objectives and commits itself to meeting these objectives, together with the standards established by the Pollution Control Branch, once promulgated.

The Pollution Control Branch advises that air emissions control will be administered by the Greater Vancouver Regional District. The Company has been advised that they will in all likelihood be obliged to satisfy a minimum of Level "B" objectives of the P.C.B. guidelines for emissions from petroleum refineries once the proposed objectives are adopted. The Director of Operations for the GVRD advises that he is unable to state officially that the proposal is acceptable, inasmuch as he cannot pre-commit the issuance of a permit until an application has been received and objectors have had an opportunity to present their views. However, as mentioned, the Company has knowledge of the proposed guidelines and has pledged itself to meeting the requirements once promulgated.

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A certain amount of technical disagreement persists in respect to the measures proposed to control SO<sub>x</sub> emissions to the atmosphere. As outlined in the Proposal, a hydrogen sulphide recovery unit coupled with a sulphur plant is to be installed to make possible the conversion of sulphur compounds to elemental sulphur, reducing discharge of SO<sub>2</sub> to the atmosphere. Representatives of both Environment Canada and the Bay Area Pollution Control District have indicated that the operation of a tail gas plant in conjunction with the sulphur plant may be necessary to assure on-site performance fully in compliance with the standards, although the Company contends that its proposal should be adequate to meet ground-level concentrations without the addition of the tail gas treating facility.

In any event, Chevron Canada remains committed to meeting the standards of any and all local overriding authorities as well as voluntarily meeting the standards established by the Bay Area Air Pollution Control District, Regulations 2 and 3. These standards are among the most stringent comprehensive air quality regulations in force today, and the Company has given its undertaking as of December 10, 1971, to meet these requirements as a minimum standard of control or any local regulations, whichever is the more stringent.

Moreover, Chevron has subsequently agreed in writing to meet also those amendments to the Bay Area standards which have come into effect since 1971 - specifically, amendments to Regulation 2, Division 14 (Control standards respecting the emission of nitrogen oxides) and Regulation 2, Division 15 (Control standards respecting the emission of odorous substances). Effectively, therefore, the Company has agreed to satisfy the current Bay Area regulations, but does not commit itself to necessarily comply with changes that may be made in the future.

Once again, the onus is basically on the Company to undertake whatever monitoring and reporting may be necessary to demonstrate compliance with the pertinent control standards, and to make whatever operating or capital improvements may be necessary to preserve compliance.

Pertinent correspondence relating to air quality is attached.

(d) Noise:

As reported in earlier reports on the refinery expansion proposal, the prospects of observing the standards set out in Burnaby's Noise Abatement By-law have been a matter of great concern to the Company during the preparation of its proposal. The acoustic consultants retained by Chevron, conducted intensive studies during a period of progressive plant shutdown in early 1972, which permitted the identification and measurement of individual noise sources within the existing plant, the determination of background or ambient noise levels, and the preparation of a statement on abatement measures that could be implemented through modernization/expansion, together with an estimate of

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anticipated acoustic performance of the expanded facility. Moreover, the impact of noise from Chevron refinery sources in the community was related to the noise levels at the boundaries of the site, where measurement is to occur under the provisions of the By-law.

The conclusions are clearly stated in the Proposal: in summary, the work being undertaken in conjunction with the proposed modernization and expansion provide the opportunity to make improvements in acoustic performance and so to decrease the net noise output from the expanded facility below the level of the present, and so achieve compliance with the current 60 dbA criterion.

According to the Consultant however, it is questionable whether the future level of 55 dbA can be obtained without resorting to drastic "brute force" measures such as the construction of massive continuous walls -- largely as a result of the unfavourable terrain condition. It is noted that the level at the nearest affected residences will be considerably below the future levels prescribed and will in fact approach the level of background noise - however, as the By-law prescribes the method of measurement effectively at the property line, technical compliance may be questionable even though levels at nearby residences are quite acceptable. The introduction of additional tree planting or like measures on the upland slopes beyond the refinery boundaries would neither improve the acoustic environment at the residences, nor contribute to achieving technical compliance.

The proposed abatement treatment is said to reflect the best performance obtainable at the present "state of the art". However, the Company's proposal commits it to pursuing "a course of action consistent with available technology and the state of the art designed to reduce noise levels for the benefit of our employees and neighbours in particular, and also for the purpose of achieving total compliance with the future provisions now prescribed in the Burnaby Noise By-law".

7. Scheduling:

This topic is dealt with above, under the heading "Construction".

8. Long Range Overview:

To some extent, this topic has been dealt with in the discussion of Land Use Concept. The role of major industrial users in the future of North Burnaby is a topic with which Council has previously dealt, and which can only be decided by a policy decision of Council. From an overall planning point of view, it is possible for industry to live in a harmonious relationship with other land users provided that high standards prevail with respect to buffering, control of emissions, and, in general, elimination of sources of interference from each user upon the other.

The present proposal represents a substantial additional capital investment in a major heavy industry in Burnaby, and approval of such may be taken to be an indication of the continuing acceptance of such users. On the other hand, the proposal offers certain positive features designed to eliminate some of the historical problems associated with such uses and their neighbours, and may be seen as a step toward achieving the kind of harmony necessary for the successful coexistence of such users.

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9. Implementation:

Chevron Canada Limited are requesting approval in principle of the proposal in order that they may prepare the material necessary for obtaining PPA and Building Permits to allow the construction of their expansion project and related plant improvements. Should this request be granted, the following would also be required to implement the proposal:

- (a) The preparation and execution of a land exchange with the Municipality, possibly including acquisition by Chevron of certain additional properties, so as to create the ultimate consolidated property as envisaged.
- (b) The cancellation and vesting of title to certain redundant portions of road allowance in order to accomplish (a).
- (c) The furnishing of easements and/or relocation of services associated with (b).
- (d) The rezoning of a portion of land within the ultimate site boundary in the vicinity of Block 34 to an appropriate category so as to reflect a rational relationship of zoning to use, preferably using the M5 category to achieve suitable standards and positive control of the nature of any future facilities.
- (e) Final specific satisfaction of the requirements of all environmental control regulations that may be promulgated or in any event in accord with the commitments expressed in the Proposal, specifically including the control of sulphur dioxide emissions through installation of a tail gas plant should this be required, together with all other aspects.
- (f) The pursuit of a fully detailed suitable plan of development for all aspects of the proposed expansion, reflecting all those concerns expressed in foregoing reports on the matter, and
- (g) Execution of a suitable long-term lease of approximately one-half of the 5.7 acre parcel east of Willingdon Avenue for park purposes at a nominal sum of \$1.00. It should be borne in mind that rezoning to the P3 Park and Public Use District category would be involved.

RECOMMENDATION:

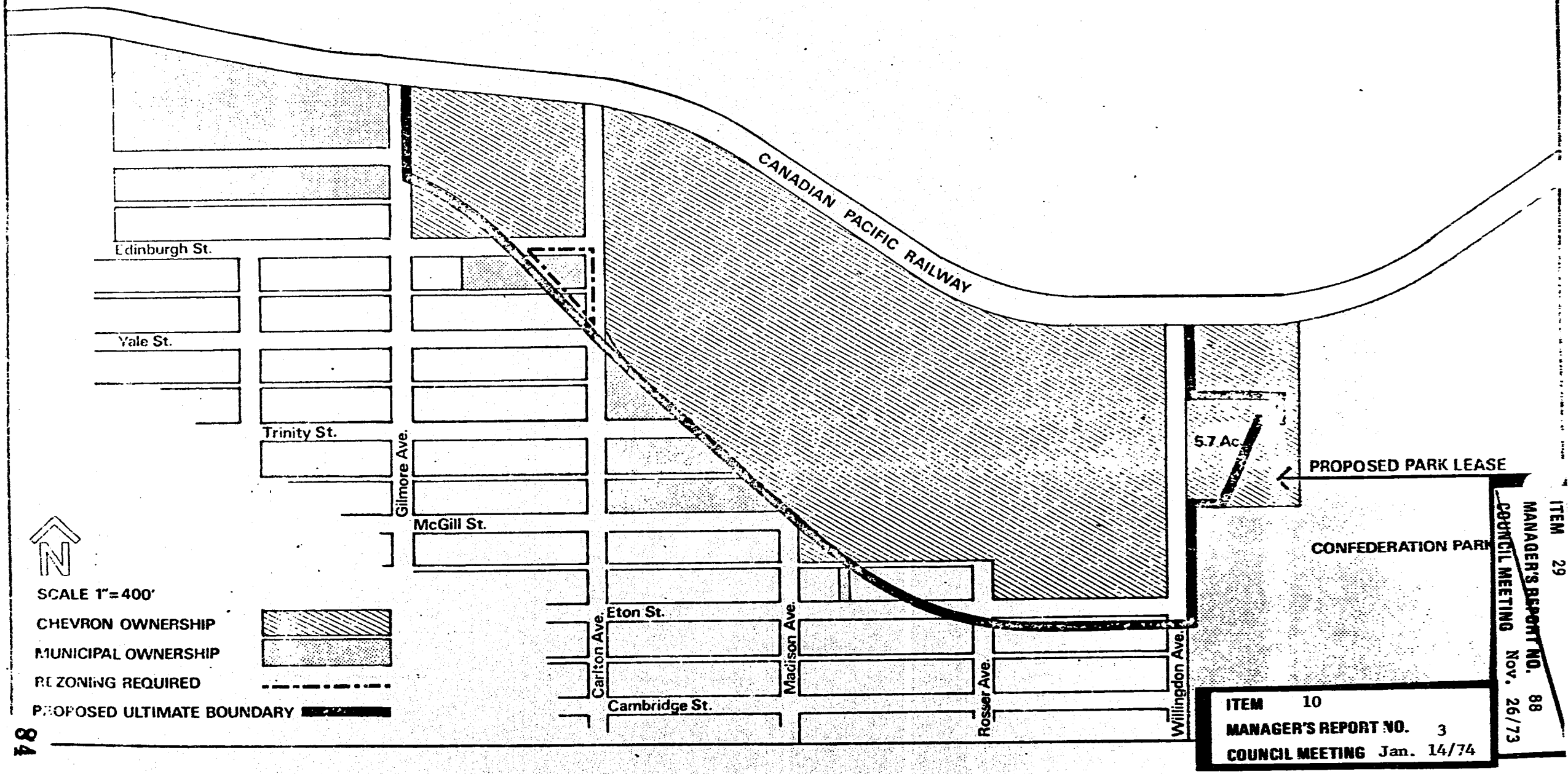
It is recommended THAT the Proposal for expansion and modernization be approved in principle, contingent on the satisfaction of all those commitments respecting environmental matters and use compatibility, and subject to the fulfillment of all relevant By-law requirements and those specific topics mentioned under "Implementation" above.

Respectfully submitted,

  
A. L. Parr,  
DIRECTOR OF PLANNING

DGS:ea  
Attchmts.  
c.c. Municipal Engineer ( )  
Chief Public Health Inspector ( )

**SKETCH 1**



SCALE 1"=400'

CHEVRON OWNERSHIP

MUNICIPAL OWNERSHIP

RE ZONING REQUIRED

PROPOSED ULTIMATE BOUNDARY

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DEPT. FILE NO. 0262100-PE 447

LOCAL FILE NO.

Telephone: 521-9641 Loc 279

OFFICE OF THE DISTRICT MANAGER  
DEPARTMENT OF LANDS, FORESTS, AND WATER RESOURCES  
WATER RESOURCES SERVICE  
POLLUTION CONTROL BRANCH

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313 - Sixth Street, New Westminster, BRITISH COLUMBIA

April 4, 1973

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The Corporation of the District of Burnaby,  
4949 Canada Way,  
Burnaby 2, B. C.

Attention: Mr. A. L. Parr,  
Director of Planning

Dear Sirs:

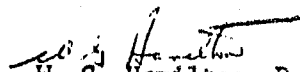
re: Chevron Refinery - Proposed Expansion

The Report "Expansion Proposed - Burnaby Refinery" dated September 29, 1972, and submitted to the Pollution Control Branch in Victoria by letter dated 27 February, 1973, has been referred to this office for reply. Those sections of the report relevant to the Pollution Control Act, 1967 have been reviewed:

1. Area I discharges to Burrard Inlet are primarily storm waters from which residual oils washed from the tank farm area have been removed. We can foresee no problems resulting from the proposed discharge(s). The discharges will be subject to further review following finalization of the "Objectives for the Petroleum and Chemical Industries" which are currently being prepared by the Branch.
2. Area II discharges arising from the refinery area and those contaminated wastes diverted from Area I, when discharged to the community sewerage system will become the responsibility of the authority owning the system. Pending connection to the sewer, the discharge must meet conditions of Provisional Permit PE 447-P and/or any amendments thereto.
3. Air emissions control will be administered by the Greater Vancouver Regional District. It has been pointed out to Chevron Ltd. that they will in all probability, be required to meet a minimum of Level "B" objectives when the proposed objectives are adopted.

The refinery expansion proposal appears to have been promulgated with due consideration for, and in accordance with basic objectives for pollution control insofar as effluent discharges are concerned.

Yours truly,

  
W. G. Hamilton, P. Eng.  
District Manager.

WGH/fa

cc: Chevron Canada Ltd., Attention: Mr. Jim Robinson  
Chief - Industrial Division





Greater Vancouver Regional District

2294 WEST TENTH AVENUE VANCOUVER 9, BRITISH COLUMBIA TELEPHONE 731-1155

Please refer to our file number:

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March 30th, 1973

Confidential

Mr. A.L. Parr,  
Director of Planning,  
District of Burnaby,  
Municipal Hall,  
4949 Canada Way,  
Burnaby 2, B.C.

Dear Mr. Parr;      Re: Chevron Refinery - Proposed Expansion

In reply to your letter of February 27, 1973 I advise that we have met with your Mr. Armstrong and Chevron's Mr. Moore to discuss air and water emissions from the proposed expansion of the Chevron Refinery.

As far as the water discharges are concerned there does not appear to be a problem. The Chevron people are aware of our requirements and will meet them.

As far as air is concerned, we cannot state officially that the proposal is acceptable. In administering the Provincial Pollution Control Act, we cannot pre-commit the issuance of a permit until an application has been received and objectors have had an opportunity to present their views. In any case, a permit would only be issued in general conformance with Provincial guidelines which we expect will be issued shortly. Chevron has a draft copy of these guidelines and we have explained how they will affect the issuing of a permit.

Yours truly,

F.R. Bunnell  
Director of Operations

FRB/ebc



Environment Canada      Environnement Canada  
 Environmental Protection      Protection de l'Environnement  
 1090 West Pender Street,  
 Vancouver 1, B. C.

ITEM 29  
 MANAGER'S REPORT NO. 88  
 COUNCIL MEETING Nov. 26/73

ITEM 10  
 MANAGER'S REPORT NO. 3  
 COUNCIL MEETING Jan. 14/74

July 11, 1973

Mr. A. L. Parr,  
 Director of Planning,  
 The Corporation of the District  
 of Burnaby,  
 4949 Canada Way,  
 Burnaby 2, B. C.

Your file    Votre référence  
 Our file    Notre référence  
 4860-5/18.0.1

Dear Mr. Parr:

Mr. J. A. Robinson of Chevron Canada Ltd. has provided us with a copy of their revised proposal regarding the expansion of their Burnaby refinery. We wish to take this opportunity to comment on the water, air and noise pollution control aspects of the proposed expansion.

We would recommend approval in principle of this expansion subject to the following provisions:

Water:

1. With respect to the stormwater discharge from Area I, we do not feel there is sufficient data to determine whether this discharge will be in compliance with the forthcoming federal regulations requiring that the oil discharged not exceed 1.0 lbs. per 10,000 gallons of stormwater discharged (i.e. 10 mg/l). The oil analysis is to be performed using the technique defined in the 13th edition of "Standard Methods for the Examination of Water & Wastewater." (Section 137) using petroleum ether as the solvent. Since the treatment facilities for Area I discussed in the Chevron report have been installed and are functional, we feel that Chevron should be required to study this discharge to determine whether they will be able to comply with the above regulation using the existing facilities or whether modifications and improvements will be necessary in order to assure compliance. If Chevron can substantiate their ability to meet the above mentioned oil discharge requirements employing the existing facilities, we would be prepared to withdraw this provision.

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EP-1002

2. We have noted in Table I page 34 of the Chevron report that in the case where the municipality provides the primary and secondary treatment facilities the quantity of ammonia to be discharged to the municipal sewer system is not defined. Our forthcoming refinery regulations will require that the ammonia discharge from a refinery not exceed 3.6 lbs. of ammonia per 1000 barrels of crude oil processed. In the case of the expanded Chevron refinery this would be 162 lbs. ammonia per day. We have noted that Chevron intend to install an ammonia stripper to reduce the ammonia discharge in their refinery liquid effluent. We believe that Chevron intend to comply with the above mentioned requirement. However, we would suggest that Chevron verify in writing their intention of complying with this requirement.

Air:

1. Chevron should meet the maximum desirable limits of the National Air Quality Objectives.
2. Chevron should meet at least the Level B objectives of the 1973 B.C. Pollution Control Branch guidelines for emissions from petroleum refineries.
3. The sulphur dioxide emissions from the expanded refinery should be reduced by the installation and operation of a sulphur plant and the tail gas plant with a 99% sulphur removal efficiency.

Noise:

1. The acceptable or recommended noise emissions limit for industrial installations varies considerably from area to area. Permitted limits depend on a number of social and economic factors, some of which are of a local nature. In view of the above, we are not at present in a position to define acceptable noise emission limits for the Chevron refinery. However, we feel that it is not unreasonable that the Burnaby 1978 limit of 55 dB(A) be applied to the expanded Chevron Refinery.

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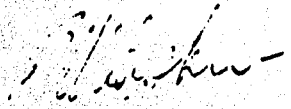
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We understand that we will be able to review and comment on the detailed refinery expansion plans as soon as they are developed.

We wish to thank you for your advice on this matter and if we can be of any further assistance, please call on us.

Yours truly,

  
Robert E. McLaren,  
Regional Director, Pacific Region.

Chevron



T.S. Bremner  
Vice-President & Refinery Manager

**Chevron Canada Ltd.**

Head Office: 355 Burrard Street, Vancouver 1, B.C.  
Refinery: 355 North Willingdon Avenue, Burnaby 2, B.C.

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July 23, 1973

File: 300.212

Mr. A. L. Parr  
Director of Planning  
The Corporation of the District of Burnaby  
Municipal Hall  
4949 Canada Way  
Burnaby 2, B.C.

RE: Chevron Refinery - Proposed Expansion

Dear Sir:

We refer to the letter dated July 11, 1973 addressed to you from Mr. Robert E. McLaren, Regional Director, Pacific Region, Environment Canada, respecting the subject matter.

In our Expansion Proposal Presentation dated June 11, 1973 to Burnaby Council, we attempted to identify the various areas of environmental concern and to point out it was our belief every reasonable precaution had been taken by us to provide for the environmental protection of the community.

With particular reference to the points raised by Environment Canada in respect to liquid discharges, we can reiterate that provision will be made in our proposed refinery expansion for treatment facilities in order to assure the refinery discharges will be in compliance with the forthcoming federal regulations as they are promulgated. This will, of course specifically include the reference by Environment Canada to the discharge of storm water from Area I and the discharge of ammonia from the Process Area (Area II) of the refinery. In this connection, a co-operative test program has been arranged with Environment Canada to verify liquid testing procedures in so far as Area I is concerned.

We trust this amplification will serve to clarify our earlier position in this regard.

Yours truly,

*T.S. Bremner*  
T. S. BREMNER

Office of  
the Superintendent

**CPRail**

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601 West Cordova St.  
Vancouver 2, B.C.  
April 5, 1973

File: CAS.40.349

The Corporation of the District of Burnaby  
Municipal Hall  
4949 Canada Way  
Burnaby 2, B.C.

Attention: A.L. Parr  
Director of Planning

Dear Sir:

Please refer to your letter of February 27, 1973 concerning proposed expansion of Chevron Refinery in Burnaby.

As my Division Engineer, Mr. W. C. Liddell discussed with Mr. Fred Moore of Chevron recently, C.P. Rail has no objection in principle to Chevron's plans. C.P. Rail of course will be vitally interested in trackage design as well as any detailed plans which might affect the trackage in this area.

Yours truly,



A. E. Hilling  
Superintendent

cc: Mr. Fred Moore  
Chevron Canada Ltd.

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NATIONAL HARBOURS BOARD  
PORT OF VANCOUVER



CONSEIL DES PORTS NATIONAUX  
PORT DE VANCOUVER

April 4, 1973

FOOT OF DUNLEVY AVENUE  
VANCOUVER 4, B.C.

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The Corporation of the District  
of Burnaby  
Municipal Hall  
4949 Canada Way  
Burnaby 2, B. C.

Attention: Mr. A. L. Parr  
Director of Planning

Dear Sirs:

Re: Chevron Refinery - Proposed Expansion

With yours of February 27th last, you requested our comments and observations with respect to the proposed expansion of the Chevron Refinery in Burnaby.

While we are not in a position to comment generally on the total proposal, we do wish to apprise you of our attitudes and observations with the proposed development, on the foreshore, in particular the "Foreshore Basin".

The following comments as expressed by our Harbour Master adequately sums up the Port Authority's views in this regard:

"Although we do not agree in principle to the construction of such a basin on the foreshore — we consider that it should be south of the railroad tracks — if there is no alternative site and the Refinery Engineers assure us there is not, then we feel loathe to obstruct anything which will improve the minimum pollution prevention precaution presently in effect."

We are also pleased that some precautions will be taken in the outfall area to the east of the dock, to ensure that any spill or leak that may occur from the proposed pipelines, could be contained rather than being allowed to flow into Burrard Inlet.

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of Burnaby  
Burnaby 2, B. C.  
April 4, 1973

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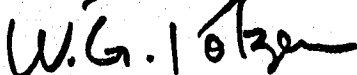
In summary, while we agree in principle to the proposal as it pertains to the foreshore, certain conditions with respect to the construction of the works, will necessarily be stipulated by the Board.

While these conditions may not be relevant at this particular time we wish to list them regardless, such that the Chevron people and the Planning Department may absorb same in relation to the present proposal.

1. That the fill on the outside of the foreshore basin should extend a minimum of 100' north and west of the Basin and that the level of same should be sloped up to within a minimum of 2' from the coping. This fill should be landscaped and treated as a continuation of the beach line.
2. The level in the Basin should be controlled to ensure that no overflow occurs before the source of the inward flow is controlled.
3. Suitable baffles should be installed at the Basin outflow to ensure that water emission is of a purity that meets the requirements of the Department of the Environment and the Department of Fisheries.
4. The walls of the Basin should be constructed of an impervious material.

We thank you for the consideration to comment and observe at this initial stage, and would appreciate receiving your advice with respect to Council's decision next month.

Yours very truly,



W. G. Polzen  
Assistant Manager, Real Estate

WGP:bh

cc: Mr. Fred Moore  
Chevron Canada Limited



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31. Re: Proposed Chevron Refinery Expansion Program

The following report from the Director of Planning contains clarification on two aspects of the proposal by Chevron Canada Limited to modernize its petroleum refinery facilities in North Burnaby.

RECOMMENDATIONS:

THAT copies of this report be sent to those individuals and organizations which have expressed interest in the matter; and

THAT it be agreed that Chevron Canada Limited will pay any costs involved in the retention of a consultant to analyze and check monitor data to verify compliance with the appropriate standards during any "interim period" which might develop.

\* \* \* \* \*

PLANNING DEPARTMENT  
DECEMBER 7, 1973

SUBJECT: PROPOSED CHEVRON REFINERY EXPANSION PROGRAM  
MASTER PLAN

BACKGROUND

On November 26 a report accompanying Chevron Canada Limited's expansion proposal was presented to the Municipal Council for consideration. Discussion on the topic was deferred until the meeting of December 10 to allow time for thorough examination of the material by the members of Council, and in the interim, pertinent background material has been made available to individuals and citizen groups in the area who have expressed interest.

The following information pertains to two specific aspects of the matter under consideration on which further clarification might be helpful.

A. Oil Spill Protection and Procedures

Your staff have requested explicit information from the oil company concerning measures and practices designed to prevent oil spills from sources both on the land and from marine loading operations, and concerning contingency procedures and equipment or materials maintained to deal with possible emergencies. In view of the terrain and the susceptibility of adjacent Burrard Inlet waters to damage from such upsets, this is felt to be a matter of grave concern and a high degree of protection to ensure against such tragedy must be observed.

The attached correspondence dated December 5, 1973 has been received from Mr. T. S. Bremner, Vice-President and Refinery Manager in response to our enquiry. The contents express the Company's concern regarding the matter, and outline the physical safeguards proposed as part of the expansion project together with procedures presently in effect and contingency plans to deal with spills at the Chevron Refinery, including reference to the Burrard Inlet Oil Spill Co-Operative Plan.

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Summarized briefly, the surface runoff water in Areas I and II, and hence any spilled oil or product, is impounded by a system of earthen berms and channels which divert the liquid to collection points. From these points, the material is processed through a two-stage de-oiling system before discharge to the Inlet. The section entitled "Water Quality" in Chevron's proposal elaborates on the process and the new equipment to be installed, and describes the proposed 30,000 barrel foreshore basin intended as a final point for removal of traces of oil in the discharge from Area I as well as the pipeline interceptor/holding pond/sensor system proposed to safeguard against damage from pipeline leaks in the Confederation Park Area.

The correspondence also deals with the regulations which are complied with during transfer of oil products at the company wharf. As noted in the expansion proposal, the Company no longer operates coastal tankers, but rather uses barges for marine transport; hence there is no ballast water problem. A copy of the prescribed procedures is attached for reference.

The Oil Spill Contingency Plans are outlined briefly in Mr. Bremner's letter. The attachment to which reference is made runs to some 48 pages, including both Instruction #300 (Chevron Burnaby Refinery Oil Spill Contingency Plan) and Instruction #301 (Burrard Inlet Oil Spill Co-Operative). Owing to the length of the material, it has been reproduced as an attachment only to the Council members' copies of this report; however, copies can be made available to members of the public on request at the Planning Department. The information describes in detail the established procedures, the roles and responsibilities of specific refinery personnel in dealing with a spill situation, the materials and equipment kept on hand at the refinery, and the outside resources that are available (both private companies and the other participating members of the Oil Spill Co-Operative -- Gulf Oil Canada Limited, Imperial Oil Enterprises Limited, Shell Canada Limited, and Texaco Canada Limited).

From the information provided by the Company, it is evident that physical measures exist and are proposed to be improved in the expansion program, for preventing land-based spills from reaching tidewater, and that procedures have been established for dealing with emergency situations.

B. Status of 'Local' Environmental Control Regulations and Monitoring

Some explanatory notes on the present status of the air and water quality standards for petroleum refineries being prepared by the Provincial and Federal Governments are given for the information of Council.

The Pollution Control Branch in Victoria has submitted to the Pollution Control Board for adoption what it expects to be the final draft of its "Provincial Petroleum and Chemical Industry Objectives". Senior personnel in the agency indicated that adoption or final amendment and adoption by the Board is expected imminently, possibly within a matter of weeks. The Greater Vancouver Regional District is to be the permitting and enforcement authority, and it is still expected that compliance with Level "B" standards will be required in the case of the Chevron refinery. Under these proposed standards for air and water quality, the Company will be expected to conduct a monitoring program using methods approved by the Pollution Control Branch, and to provide complete test data and flow measurements to the permitting authority on a regular periodic basis (four or six times yearly). The Branch maintains a staff of inspectors and equipment and is to verify the submitted data on a spot check basis to ensure continuing compliance with the terms of the permit as issued.

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The Federal regulations concerning liquid effluents from refineries have now been established and published (Canada Gazette, November 3, 1973). These standards take the form of regulations as they affect new refineries, and guidelines as they are applied to existing plants. The Chevron Burnaby refinery will be expected to satisfy the latter, and the Company has agreed in its submission to make provision in its expansion for treatment facilities "in order that the refinery liquid effluent will meet senior government requirements prior to final discharge to... Burrard Inlet" if effluents are in fact discharged to that body of water. Again, the Department of the Environment will require periodic data reports to be submitted by the Company to verify compliance, and these data will be checked periodically by Government monitoring at the plant.

At present, Federal regulations respecting air quality standard appear to be some time from completion, and no definite information is available.

At the moment, there are indications that the Provincial controls concerning water quality will be generally more stringent than the Federal guidelines, and hence will take precedence. Control will be effected through the permit system as indicated above.


Concerning air quality standards, it is not known at this time whether the Provincial objectives in specific will be higher than the Bay Area Air Pollution Control District standards, or the reverse. In any event, it will be recalled that Chevron is committed to meet the local or Bay Area standards, whichever is the more restrictive. In order to ensure that a suitable monitoring program is carried out during a possible interim period which might occur if the expanded plant, subject to approval, were to be "on stream" prior to the monitoring services of the regulating agencies becoming operational, it is recommended that the Company be required to make provision for bearing the cost of retaining a competent consultant to analyze and check data to ensure compliance. We understand that the B.C. Research Council and at least one local engineering/analysis firm are equipped and experienced to handle this type of commission.

RECOMMENDATION

It is recommended that:

- a) the foregoing be received by Council for information,
- b) copies of this report be sent to those individuals and organizations which have expressed interest in the matter, and
- c) that it be agreed that Chevron Canada Limited will pay any costs involved in the retention of a consultant to analyze and check monitor data to verify compliance with the appropriate standards during any "interim period" which might develop.

Respectfully submitted,

  
A. L. Parr,  
DIRECTOR OF PLANNING.

*ALP*  
DGS:cm

Attach.

Chevron



T.S. Bremner  
Vice-President & Refinery Manager

**Chevron Canada Ltd.**

Head Office: 355 Burrard Street, Vancouver 1, B.C.  
Refinery: 355 North Willingdon Avenue, Burnaby 2, B.C.

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December 5, 1973

File: 300.212

Mr. A. L. Parr  
Director of Planning  
The Corporation of the District of Burnaby  
Municipal Hall  
4949 Canada Way  
Burnaby 2, B. C.

Dear Sir:

Re: Proposed Burnaby Refinery Expansion

We wish to acknowledge your letter of November 28, 1973, respecting precautionary measures and contingency plans available to safeguard against possible oil spill mishaps at the Burnaby Refinery.

Perhaps the best way to treat this subject is to briefly summarize the material contained in our presentation submitted to Council on November 26, 1973, review the matter of the loading and unloading of marine vessels at our wharf, and comment on the salient points of current oil spill contingency plans.

(A) Expansion and Modernization Presentation

The matter of oil spills or leaks is covered in the "Water Section" of our Presentation.

Specifically we propose -

- installation of underground drain tile on the north side of the pipeway that connects the two sections of the refinery (Area 1 being the tank farm and Area 2 the process section.)
- construction of a holding pond containing an infra-red oil sensor in a portion of the 5.7 acre parcel immediately east of Willingdon Avenue.

Should a leak ever develop in the pipeway, these facilities would place us in an excellent position to control the situation and minimize any risk of oil spreading into Burrard Inlet.

... 2.

Mr. A. L. Parr

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- construction of a basin on the foreshore of Burrard Inlet immediately to the west to our wharf.

This basin will be a safeguard against the discharge of oily water into Burrard Inlet in the event of an upset in our two stage deoiling system. In addition, it will provide a secondary line of defence against the possibility of oil entering Burrard Inlet from the upland. Our first line of defence of course is the earthen berm fire walls that are now in place in the tank farm. Such facilities form an integral part of tank installations.

This summarizes both the present and proposed measures designed to minimize the event of an oil spill or leak at the refinery.

(B) Loading and Unloading of Marine Vessels

Attached is a copy of Company Form No. Mfg. 5017 pertaining to Oil Pollution Prevention Regulations issued pursuant to the Canada Shipping Act. These regulations are complied with during transfer of products at our wharf. Either the Ship's Officer in Charge or Bargeman as well as either the Shore Supervisor or First Operator sign the form to verify compliance with the prescribed procedures.

Nine of the ten coastal barges receiving product at our dock are equipped with spill plates to guard against spillage into Burrard Inlet. The plate consists of a steel shield approximately 18" high affixed to the perimeter of each barge. The remaining barge will be also equipped with this protection by the end of the year.

(C) Oil Spills Contingency Plans

- (1) Attached Refinery Instruction #300 comprising some 27 pages is the oil spill contingency plan in effect at the refinery. Its purpose is -
  - (i) To establish an organization for the containment and clean up of an oil spill.
  - (ii) List company equipment available and its location.
  - (iii) List sources of rental equipment, supplies and contractors.

A complete inventory of equipment and materials available at the refinery together with the names, telephone numbers of outside emergency service contracts forms an integral part of the plan. Our equipment includes a 25 ft. Sea truck powered barge, 2200 ft. of boom, skimmer, etc.

A continuing on-the-job training program is an integral part of this Plan.

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Mr. A. L. Parr

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- (2) Attached Refinery Instruction #301 is a copy of the Burrard Inlet Oil Spill Co-Operative Plan. The purpose of this plan is to provide an inventory of oil spill equipment available at refineries and marketing terminals on Burrard Inlet and list of contact personnel.

We trust this explanation together with the above attachments will document both our concern and courses of action on this important subject.

Yours truly,

*T. S. Bremner*  
T. S. BREMNER

Attach.

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CHEVRON CANADA LTD.  
BURNABY REFINERY

OIL POLLUTION PREVENTION - CANADA SHIPPING ACT

Every tanker and loading or unloading facility in Canada must comply with the Canada Shipping Act - Oil Pollution Prevention Regulations dated September 21st, 1971.

The owner of the loading or unloading facility must appoint a person to be in charge of that facility as shore supervisor, who, together with the officer in charge of the operation on board ship, must ensure that:

- a) Blank flanges are TIGHTLY fitted to all cargo and bunker manifolds not in use.
- b) All overboard discharges are tightly closed and sealed.
- c) All deck scuppers are tightly plugged on all decks where a cargo or bunker spill could occur.
- d) Drip trays and an adequate supply of saw dust are in position at the manifold and hose connections.
- e) The flexible hoses in use are adequately supported and protected against damage from ship movement.

The shore supervisor and ship's officer in charge of the operation shall establish between them the procedure to be followed and the limitations to be imposed with regard to:

- a) The Signals for Standby to Start; Start; Reduce the Flow Rate; Standby to Stop; Stopping; Emergency Stopping.
- b) The maximum allowable pressure and flow rate.
- c) The time required to stop.
- d) The tank topping period.
- e) Giving at least 15 minutes notice of intention to stop.

The shore supervisor and ship's officer in charge will ensure that their own respective facilities are adequately and suitably manned with personnel fully familiar with the preceding requirements and procedures who will ensure compliance with such requirements and procedures throughout the transfer operation, and who will further ensure that:

- a) The vessel remains properly moored alongside.
- b) Valves are not closed against the liquid flow pressure.
- c) The transfer rate is reduced when topping tanks.
- d) Close attention is paid to the liquid level in the tanks.
- e) The operation stops if a leak develops.
- f) No tank cleaning or gas freeing operations are carried out.
- g) No ballast is pumped overboard.

Nothing in the above shall, in the event of any emergency related to this transfer operation, prevent:

- a) The Master of the ship
- b) The Officer in charge of the transfer operation for the ship or
- c) The person in charge of the transfer operation at the
  - i) loading facility, or
  - ii) the unloading facility

from taking the most effective action that, in his opinion, is necessary to rectify or minimize the condition that caused the emergency.

The preceding regulations, conditions and procedures being met and understood, my facility is ready for the transfer to begin.

Signature \_\_\_\_\_ Ship's Officer in Charge or Bargeman      Signature \_\_\_\_\_ Shore Supervisor or First Operator

This form to be retained and filed in the Refinery Office.

SHIP \_\_\_\_\_ PORT \_\_\_\_\_ STANOVAN \_\_\_\_\_

DATE \_\_\_\_\_ MFG 5017-12/72-50

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1. Provide a copy of the attached form with each GO-244 for marine shipment.
2. Prior to commencement of loading or unloading the Area 1 First Operator will review items listed on the attached form personally and will assure himself that the Serviceman and Bargeman understand all aspects of the transfer to be made. Refer to Operating Standards as follows:  
  
3012 Stanovan Dock  
3100 Loading & Discharging Bulk Cargoes  
3102 Sampling Vessels and Barges  
3103 Use of Cargo Hoses  
3171 Handling Bulk Cargo Imports
3. Obtain the signature of the Bargeman and Serviceman prior to commencement of loading.
4. Do not commence loading or unloading until First Operator is satisfied that all equipment is in readiness.
5. Ensure that all overboard discharge points are plugged.
6. Ensure that adequate visibility of the liquid level in vessel tanks is possible. This may require movement of equipment carried on the deck of some Barges.



EMK.

BURNABY REFINERY

REFINERY INSTRUCTION #300  
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OIL SPILL CONTINGENCY PLAN

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**GENERAL:**

The purpose of the instruction is:

1. To establish an organization for the containment and clean up of an oil spill.
2. List company equipment available and its location.
3. List sources of rental equipment, supplies and contractors.

It is most important that each person in the organization recognize:

1. His role in the overall effort.
2. That he is obligated to prepare himself for this role.

No specific instructions can be laid down to cover all situations - however, two points are worthy of mention:

1. The first consideration must be containment.
2. The second is that time is of the essence.

**DEFINITIONS:**

Minor Spill - one that can be handled by the personnel on hand.  
Major Spill - all other spills.

From the above definitions it must be recognized that a minor spill on #2 shift - Monday to Friday - might well become a major spill on any other shift.

**REPORTING:**

Any employee noticing or being advised by an outside phone call of a spill should immediately notify the Shift Foreman. The Shift Foreman carries a radio at all times and can be reached immediately by dialing 4 on any telephone. See Refinery Instruction 115, Page 6 Phone Patch.

Upon being notified of an oil spill - Shift Foreman will delegate 1 operator to remain at Pump House and proceed to the site of the spill. Shift Foreman assesses spill, including hazards created by the same, and determines if it is minor or major and initiates action. He is in charge until relieved. Notification of a suspected crude line leak between Area 2 and Burnaby Mountain may be by a phone call to the FCC Unit or to the refinery switchboard.

**AREA #1  
OPERATORS:**

The delegated operator will advise other area 1 operators (including tank car loading, lube, LPG and Asphalt Plant) to shut down operations, clear all such vehicles from the yard and proceed as directed by the Shift Foreman to assist in containment.

**NOTIFYING  
NATIONAL  
HARBOURS  
BOARD**

Should there be any oil on the inlet or any hazard to the public, the Shift Foreman (or his delegate) will notify the National Harbours Board at:

Days - 255-3565  
Any other time - 255-3568

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OIL SPILL CONTINGENCY PLAN

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As necessary, he will also notify:

1. Canadian Pacific Railway (Chief Train Dispatcher)
  - Days - 681-2212, Local 407
  - Any other time - 681-2234, Local 32
2. Burnaby Fire Department - 291-1234
3. RCMP - 291-7131
4. Department of Commercial Transport
  - Oil spills caused by crude or jet pipeline rupture require \*  
notification of the Department of Commercial Transport at:
  - Days - 437-8691
  - Any other time - 434-3074 (A. W. Turnball) \*
  - or - 929 2674 (R. Mester) \*
5. W. P. Anderson - 681-2641 (Home) \*
6. Environment Canada
  - Oil Spills Emergency - 666-6100 \*
  - Oil spills outside of refinery property including creeks,  
lakes and Burrard Inlet require notification. \*
7. Trans Mountain Pipeline Dispatcher 876-6711 \*
- Oil spills involving crude or jet lines.

ORGANIZATION (A) MINOR SPILL

1) NORMAL WORKING DAYS

SHIFT  
FOREMAN

Shift Foreman

Initiates a check of all refinery effluents, pipeline insulating flanges, the interconnecting pipeway and the dock lines if source of spill is unknown.

- Starts containment and clean up
- Directs operation until relieved by Operating Foreman.

Crude Pipeline

- Initiates a patrol of the crude line and contacts Trans Mountain Dispatcher.
- Initiates termination of a crude receipt as necessary.
- See further details in Appendix.

DELEGATED  
OPERATOR

Delegated Operator

Calls Operating Foreman for Area 1 and Area 2, Maintenance Foreman, and Switchboard Operator.

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ORGANIZATION (A) MINOR SPILLS, cont'd.

OPERATING  
FOREMAN

Operating Foreman

- On arrival at the site directs containment and cleanup.
- Reports situation to the Refinery Accountant by phone or radio and advises R. E. Gray of assistance required.

SWITCHBOARD  
OPERATOR

Switchboard Operator

- Operator contacts and alerts T. S. Bremner, R. E. Gray, J. A. Robinson, E. M. Kura, P. K. Beynon, and G. Welburn, giving all available details.

MAINTENANCE  
FOREMAN

Maintenance Foreman

- Obtains a radio and goes to site of the spill. Reports to Shift Foreman or Operating Foreman.

WAREHOUSE  
SUPERVISOR

Warehouse Supervisor

- Shut down Warehouse operation and clear all trucks to leave the yard. Have all Warehouse personnel available to start clean up and man the Chevron Boomer. Refer to Operating Standard 3104 "Chevron Boomer Operation".

REFINERY  
ACCOUNTANT

Refinery Accountant

- Posts a guard at the Area 1 main gate to advise truckers that all loading has been shut down and to control traffic.
- Mans local 225 at all times to establish a message centre as per Refinery Instruction #13.
- Advises W. P. Anderson.

2) OFF SHIFTS AND WEEKENDS

SHIFT  
FOREMAN

Shift Foreman

- Checks refinery effluents, etc., if source unknown.
- Starts containment and cleanup.
- Calls National Harbours Board - 255-3568.
- Initiates call out of personnel.
- Notifies other agencies as per page (2) \*
- Directs containment and clean up
- After, writes up report GO-140.

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ORGANIZATION (B) MAJOR SPILL1) NORMAL WORKING DAYSSHIFT  
FOREMANShift Foreman

Upon receipt of an oil spill report of known origin proceed as follows:

1. Delegates one operator to remain at the pumphouse and follow procedures outlined under "DELEGATED OPERATOR" below.
2. Advises Switchboard and both Operating Foremen by radio, giving all available details. Requests that other agencies be called if necessary (per page 1 and 2) \*
3. Proceeds to scene to assess the spill and initiate containment. Reports the situation to the base station by radio.

Upon receipt of a spill report of unknown origin proceed as follows:

1. Initiates an immediate check of all refinery effluents including:
  - a) API Separators
  - b) Dock risers and lines
  - c) Firewall Drains
  - d) Interconnecting Pipeway
  - e) Insulating Flanges
  - f) Ditches and creeks in the area
  - g) Process units, foul sewer and cooling tower
  - h) Municipal Sewers at Willingdon & Carleton Avenues
  - i) Crude and Jet pipeline operation
2. Reports all findings to the message centre at Local 225.
3. Delegates one operator to remain at the pump house. Delegates other Area 1 Operators to shutdown all transfers including marine and tank car loadings. Delegates Area 1 operators to check refinery effluent points.
4. Delegates Crude Unit Operator to check the Area 2 separator effluent including any slick on the inlet and Crude Unit first operator to review crude line operation with Trans Mountain Dispatcher. Jet Fuel pipeline operation to Vancouver Airport should also be reviewed with the Trans Mountain Dispatcher.
5. Advises Switchboard to follow alerting procedure for major spill.
6. Proceeds to the scene and reports findings to the message centre at Local 225.
7. Initiates containment.

DELEGATED  
OPERATORDelegated Operator

1. Contacts other Area 1 operators to shutdown all transfers including marine and tank car loadings. Advises Area 1 operators to take direction from Shift Foreman re: spill containment.

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ORGANIZATION (B) MAJOR SPILLS cont'd.

OPERATING  
FOREMEN

Operating Foreman - Area 1  
Reviews Area 1 operations to ensure orderly shutdown then contacts shift foreman by radio to determine the status of the spill or effluents check. Proceeds to spill site if in Area 1 or on pipelines.

Operating Foreman - Area 2  
Reviews all Area 2 operations then contacts Shift Foreman by radio to determine status of spill or effluents check. Proceeds to site of spill if in Area 2.

Assumes Operating Foreman normal duties for both Areas if Area 1 Operating Foreman is required to leave the plant.

Calls out off shift Shift Foreman as necessary to continue refinery operations.

WAREHOUSE  
SUPERVISOR

Warehouse Supervisor  
Shuts down operations, clears all trucks from the yard. Has all personnel available to start clean up. Mans the Chevron Boomer and prepares it for duty using designated Warehouse personnel. Refer to Operating Standard 3104.

MAINTENANCE  
FOREMAN

Maintenance Foreman  
Shuts down non-emergency maintenance work and reports to Shift Foreman. Assembles maintenance crew at Area 1 and Area 2 shops.

ALL AREA 1  
PERSONNEL

All Area 1 Personnel  
Personnel not designated under Refinery Instruction #13 report to warehouse to await instructions. Personnel designated under Refinery Instruction #13 will assume posts as designated by this instruction.

CONTAINMENT &  
CLEAN UP

CONTAINMENT & CLEAN UP

Public Relations as per Refinery Instruction #13.

- Contact Advisor - J. A. Robinson
- Handles Public Relations in W. P. Anderson's absence.
  - Contacts regulatory bodies
  - Brings in consultants as required.

J. C. Wright - J. Montemurro

- Deal with interested outside groups, supply materials to them for clean up purposes.

OUTER  
DEFENCE

Outer Defence - E. M. Kura, J. A. Campbell, P. K. Beynon, R. D. Bradbury.

- Responsible for area outside of immediate dock area. Protective booming, clean up, etc.

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ORGANIZATION (F) MAJOR SPILLS cont'd

**OUTER DEFENCE** Outer Defence - E. M. Kura, J. A. Campbell, P. K. Beynon, R. D. Bradbury.  
- Responsible for area outside of immediate dock area. Protective booming, clean up, etc.

**SURVEILLANCE** Surveillance - J. A. Brock, G. C. Mason, D. Reid  
- Responsible for mapping of oil locations, predictions of where oil will move. Use photos, field reports, etc. to map.

**DISPOSAL** Disposal - D. Fraser (alt. J. S. C. Dunn)  
- Responsible for intermediate storage and final disposal of all solid waste materials.

**TRANSPORT** Transport - J. W. Kennedy (alt. M. J. Robertson)  
- Responsible for all required transport equipment-boats, trucks, cars, planes, etc.

**INNER DEFENCE** Inner Defence - T. L. Miletich, R. T. Green (alt. E. M. Kura)  
- Responsible for booming and clean up of area around dock.

**MAINTENANCE** Maintenance - R. C. Freyman (alt. R. G. Cameron)  
- Responsible for design, construction and maintenance of equipment and provision of labour pool.

**FIELD SUPERINTENDENT** Field Superintendent - R. E. Gray (alt. T. L. Miletich)  
- Coordinates field efforts to effect maximum efficiency from available men, materials and equipment. Recommends what additional (or reduction of) effort is required.

**EXPEDITER** Expediter - R. G. Cameron (alt. D. R. Lewis)  
- Responsible for arranging for supply of equipment and materials.

2) NIGHTS, HOLIDAYS AND WEEKENDS

**SHIFT FOREMAN**

Shift Foreman

Upon receipt of an oil spill report of known origin proceeds as follows:

1. Delegates one operator to remain at the pump house and follow procedures outlined under "DELEGATED OPERATOR".
2. Advises the Delegated Operator giving all available details. Requests that the following be called if necessary:

Fire call out lists 1 to 6  
Other agencies per page 1 and 2

3. Proceeds to scene to assess the spill and initiate containment.

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ORGANIZATION (B) MAJOR SPILLS cont'd

Remaining personnel assume positions spelled out under Normal Working Days upon arrival at Refinery.

Upon receipt of a spill report of unknown origin proceed as follows:

1. Initiates an immediate check of all refinery effluents including:
  - a) API Separators
  - b) Dock risers and lines
  - c) Firewall Drains
  - d) Interconnecting pipeway
  - e) Insulating Flanges
  - f) Ditches and creeks in the area
  - g) Process units, foul sewer and cooling tower.
  - h) Municipal sewers at Willingdon and Carleton Avenues
  - i) Crude and Jet pipeline operation.
2. Advises Supervisor on call.
3. Delegates an operator to remain at the pumphouse. Delegates other Area 1 operators to shut down all transfers including marine and tank car loadings. Delegates Area 1 operators to check refinery effluent points.
4. Delegates Crude Unit Operator to check the Area 2 separator effluent including any slick on the the inlet, and Crude Unit first operator to review crude line operation with Transmountain Dispatcher.
5. Advises Delegated Operator to follow alerting procedure for a major spill if company facilities are involved. Requests that other agencies be called if necessary (per page 1 and 2).
6. Keeps supervisor on call advised of findings and seeks direction if Company facilities are not involved.

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REFINERY  
OPERATION

In all cases where this contingency plan is put into effect, the Area 2 Operating Foreman will assume normal duties of the operating foreman for both Area 1 and Area 2. Off duty Shift Foremen should be called in as necessary to provide adequate coverage in each operating area.

CHEVRON  
BOOMER

Personnel using the Chevron Boomer must ensure that a portable radio is aboard prior to leaving the boathouse. A radio is maintained at the warehouse for this use.

## COMMUNICATIONS

It is essential that those assigned to Outer Defence and to Surveillance report in to the Accounting Supervisor by radio or telephone at least once per hour in order that an accurate assessment of the spill area can be made.

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ORGANIZATION (B) MAJOR SPILLS cont'd.

DISPERSANTS

Use of chemical dispersants should be avoided due to their possible toxic effect on wildlife. They should be used sparingly when in the judgment of the Supervisor on the scene they are required to minimize a hazard to life and/or property. Refer to the Federal Guidelines attached to Refinery Instruction 301.

CONTAINMENT

The available boom and log booms should be used as the first method of control. The best use of a boom is at an angle less than 90° to the current direction.

Use of hay or peat moss should also be considered for containment.

PIPELINE SPILLS - 12" CRUDE LINE FROM TRANS-MOUNTAIN TANK FARM TO REFINERY

DESCRIPTION  
OF THE  
SYSTEM

The crude supply line to the Trans-Mountain Tank Farm is a 12" line, owned and operated by Standard Oil Company of British Columbia Limited. In the Trans Mountain Tank Farm the line ends in a scraper trap manifold which is operated by SOBC Personnel. Connected to this trap manifold is a 10" gate valve owned and operated by Trans-Mountain Oil Pipeline Co. which connects the crude supply line to the Trans-Mountain Burnaby terminal manifold.

At the entrance into the refinery property at Penzance Drive, there is also a scraper trap manifold. From this point the line is connected with an 8" valve on each of the crude tanks, 1002 and 1003.

The capacity of the 12" line from the scraper trap at the Trans-Mountain Tank Farm to the scraper trap at the refinery is 3370 barrels.

The capacity of the 10" and 12" lines within the refinery to the Crude tanks is 74 barrels. The route of the crude line from Trans-Mountain Tank to the refinery is shown on Attachment #3.

REPORTING

1. Any employee detecting or receiving a report of a leak in the line will immediately notify the Shift Foreman. The Shift Foreman will follow the procedure on Page 1 of this instruction.
2. If a crude oil delivery is in progress, and a leak is detected by the procedure given in Operating Standard 9401, Trans Mountain Tank Farm is to be phoned immediately (298-4737) to stop the delivery and block the line at the Tank Farm. The valve at the receiving crude tank is to remain open.
3. If a crude oil delivery is not in progress, Trans-Mountain Tank Farm (298-4737) is to be instructed to ensure the line is blocked in.



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PIPELINE SPILLS, 12" CRUDE LINE FROM TRANS-MOUNTAIN cont'd.

- LOCATING LEAK** If the location of the leak is unknown, the Shift Foreman will delegate a man to patrol the pipeline route to locate the leak. This man is to carry a radio and immediately inform the Shift Foreman of any evidence of a leak.
- ORGANIZATION** The organization for control and clean up of a leak in the crude line will be similar to that for controlling an oil spill as outlined earlier in this instruction. However, the following modifications are to be followed:
1. A "Minor Spill" procedure is to be followed if the line can be repaired by installing a clamp and the cleanup can be handled by the available personnel.
  2. A "Major Spill" procedure is to be followed if enough oil has escaped to cause a potential threat to the surrounding land, property or water drainage systems, or if the leak cannot be stopped by clamping.
- INNER DEFENCE** 3. The Inner Defence Group is responsible for containment and clean up around the leak.
- OUTER DEFENCE** 4. The Outer Defence Group is responsible for stopping oil from reaching Burnaby Lake, Still Creek, or Burrard Inlet as the case may be.
- OTHER GROUPS** 5. All other groups are to assume similar duties to those outlined previously (see Attachment #2).
- PROTECTIVE EQUIPMENT** All employees working with or around crude oil must be wearing protective clothing and Scott Air Pacs. Refer to Attachment #1 for a list of equipment available and storage locations. In addition to this equipment a supply of clamps and tools are to be kept in tool boxes on the pumper's truck in Area 1 and the Operating Foreman's truck in Area 2, as well as in the Area 2 Stores.
- CLEAN UP EQUIPMENT**
- Preventive Measures  
Certain procedures, if adhered to, will reduce the probability of a problem resulting from a line rupture or leak. These are as follows:
1. Crude receipt check gauges as outlined in O.S. 9401.
  2. Routine inspection of the line route and its cathodic protection.
  3. Adequate inspection and surveillance of outside work around line.
- ROUTINE INSPECTION** A weekly inspection of the line route is to be made by one member of the Surveillance Group. He will carry a radio and immediately report any evidence of leaking crude oil. The area covered should include drainage area to the north and south of the line as well as the line route itself.
- OUTSIDE WORK** Various outside organizations (Burnaby Municipality, B.C. Hydro, B.C. Tel) will occasionally be working around the crude line. SOBC will be informed and will approve any such work. He will inform

OIL SPILL CONTINGENCY PLANPIPELINE SPILLS, 12" CRUDE LINE FROM TRANSMOUNTAIN cont'd.

the workers on site where the crude line is and ensure that line damage as a result of digging, etc., will not occur. The SOBC inspector will have on hand a Scott Air Pac, a 12" clamp, and the necessary equipment to install the clamp if required, and will carry a radio. If a leak occurs, the inspector will stop the operation, clear the area and radio the report to Area #1 Operating Foreman. The inspector is in charge until relieved and will determine the immediate course of action according to the situation.

AREA 1  
EMPLOYEES

Any employee noticing an oil slick originating at the Willingdon Avenue Sewer Outfall should immediately notify the Shift Foreman. Oil in this sewer could very likely be caused by a leak in the crude supply line, somewhere along Gamma Avenue.

INFORMATION  
AVAILABLE

Sewer locations and land drainage patterns relevant to the crude supply line are available in the Plant 70 drawer in the drawing file room opposite Room 102, Shift Foreman, Pumphouse and Refinery Offices. The ultimate drainage areas are: Burrard Inlet, Still Creek, Burnaby Lake and the Fraser River/Brunette Creek outfall at the foot of Braid Street, New Westminster. Information about additional storm sewer installations and sanitary sewer modifications should be obtained from the Engineering Department, Burnaby Municipality on a yearly basis.

PIPELINE SPILLS - INTERCONNECTING PIPEWAY

## DESCRIPTION

The pipeline system is composed of 14 product and slop rundown lines plus 1 x 400 PSIG steam line. Approximately 1200 feet of each line is cathodically protected and buried in a pipeline easement which runs through Confederation Park. LPG lines are sleeved and oil filled at road and dyke crossings. Each line is equipped with a 3/4 inch bleeder located at the Area 2 west plot limit. Aluminum splash guards are installed over the insulating flanges at each end of the buried section. A drainage ditch running from the Area 2 insulating flanges to the Area 2 main firewall basin protects surrounding property from oil damage in the event of a flange failure.

Area 2 Block Valves for isolation of these lines are located at process unit and boiler house plot limits. In addition, block valves on the HGO and butane lines are located in the pipeway adjacent to the crude unit plot limit and on the slop line adjacent to the separator.

Area 1 Block Valves for isolation of these lines are located as follows:

- a) On Interconnecting Pipeway, North of 41 Tank
- |               |               |
|---------------|---------------|
| Resid         | 4" (2 valves) |
| Diesel        | 3"            |
| Reformat      | 3"            |
| LSR           | 3"            |
| Spare         | 3" (2 valves) |
| Lt. Cycle     | 3" (2 valves) |
| Jet (old MSR) | 3"            |

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PIPELINE SPILLS, INTERCONNECTING PIPEWAY cont'd.

- b) Other Locations
- |               |   |
|---------------|---|
| ICC 3"        | - Slop Manifold, 79, 80, 83 Tanks   |
| Slop 2"       | - Slop manifold (3 valves), drawoff between 36 and 37 Tanks, C-Station (4 valves, 3 blinds) |
| HCC 3"        | - Slop manifold, 86, 87 Tanks   |
| Polygaso 2"   | - Slop manifold, 89, 90 Tanks   |
| Butane 2"     | - Above slop manifold, access from road.  |
| Propane 2"    | - C-Station (2 valves)  |
| Stove 4"      | - At 37 Tank  |
| 400 lb. Steam | - Pipeway north of 41 Tank, also immediately east of 1 Tank                                 |
| Hvy Cycle     | - Slop manifold and at 27 Tank  |

**REPORTING**

Any employee detecting or receiving a report of a leak in these lines will immediately notify the Shift Foreman. The Shift Foreman will follow the procedure on page one of this instruction and will immediately initiate the following line patrol:

1. Check Insulating Flanges.
2. Patrol the buried section of the pipeline from Area 1 to Area 2 and the CPR mainline from Area 2 to Area 1. An inspection sheet and an outfall check list obtainable from the Area 1 Operating Foreman's office as well as a radio are to be carried on the patrol.

In addition to the check list and instructions provided on the sheet, the following are to be looked for:

1. On buried section of interconnecting pipeway:
  - a) Natural drainage - for oil sources.
  - b) Hot spots with hot water or steam leakage
  - c) Oil leakage on the north side of the right of way
  - d) Condition of drains installed to divert natural water way from the 400 PSIG steam line.
2. On CPR Mainline:

After completing the patrol of the buried section, proceed north along the Area 2 fence line, to CPR right of way then return to Area 1 via CPR mainline inspecting all creeks and the ditch on the south side of the right of way for traces of oil. All outfalls along the route designated with numbered markers are to be checked for oil and noted on the outfall check list.
3. Area 2:

An additional PATROL PROCEDURE is to be followed on TUESDAYS and FRIDAYS. Walk the pipeline from the Area 2 west fence to the separator. Check the pipewall drainage ditch for traces of oil.

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PIPELINE SPILL - INTERCONNECTING PIPEWAY cont'd.

- CONTINGENCY PLAN** If failure of any of the subject pipelines occurs, the line is to be identified and either taken out of service or repaired immediately. Additional emphasis must be placed on sections of line which are outside of the refinery impounding basins.
- ORGANIZATION** The organization for control and clean up will be the same as that outlined earlier in this instruction.
- PROTECTIVE EQUIPMENT** Existing plant rules regarding use of protective equipment when working on the HGO and LPG lines apply.
- NORMAL PROCEDURES** Refer to Operating Standard 9211 for details on routine inspections and spill prevention measures.

APPROVED: JLB  
REFINERY MANAGER.

Original: July 12, 1972  
Revised: December 7, 1972

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BURNABY REFINERY

ATTACHMENT #1  
 REFINERY INSTRUCTION 300

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EQUIPMENT ON HAND	<u>Boats</u>		<u>Location</u>
	1 - 25 ft. Sea truck powered barge (monitor equipped)		Boathouse
	1 - 10 ft. Rowboat		Dock
	<u>Room</u>		
	2200 ft. Gundy Bilmac Kingfisher Boom, plus 5 boom anchors		Boathouse
	<u>Other</u>		
	6 Dispersant applicators		Boathouse
	1 Swiss Skimmer		Boathouse
	16 drums dispersant		Docks & Stores
	25 bags of peat moss		Dock - west end
	100 bales of hay		Docks & Stores
	33 1/2 lb. bags sorbal		
	1 Portable fire pump (150 USGMP @ 20 psig 10' suction lift)		Refinery
	Fire hose-shovels-rakes-forks-protective clothing-life jackets, etc.		
	20 Portable radios (range from Port Moody to Lions Gate Bridge)		
DISPERSANT SOURCE:	"Corexit 7664" - This is the only dispersant approved for use. Available without paperwork from Imperial Oil - Ioco.		
BOATS: RENTAL EQUIPMENT	<u>Goodwin Johnson</u>	299-0277	
	<u>after hours</u>		
	Bud Colightly	298-2205	
	George Cooper	299-4742	
	Lloyd Burnet	526-9429	
	Vic Ewing	112-534-6559	
MCKENZIE BARGE	Days	929-3434	Elmer Laird (Don Wray, mgr.)
	Nights	879-2018	Elmer Laird - beeper 24 hr. call
	Elmer Laird is their oil spills specialist. They have:		
	1. Two harbour tugs		
	2. Small scow with high pressure monitor and dispersant.		
	3. A barge on which they can put a work platform.		
SEASPAN:	Telephone 24 hr.	988-3111	
	Request Seaspan Tempest and/or Driver monitor equipped harbour tugs.		
LYTTLE:	Telephone 24 hr.	987-4444	

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ATTACHMENT 1 - Page 2

OIL SPILL CONTINGENCY PLAN

SOBC  
 ROSSER STREET  
 WAREHOUSE

Materials are crated, ready for immediate shipment.

Crate No.	Quantity	Contents
Crate No. 1	6	Shovels
	2	Mattocks
	3	Rakes
	1	Pump Suction Tube
	1	Skimming screen
Crate No. 2	1	Gasoline driven pumping unit, complete with Kamlocks
	1	Tokeheim hand pump, complete with suction stub and hose
	1	Fire nozzle
Crate No. 3	1 ctn.	Gloves
	3 prs.	Hip Waders
	1	First Aid Kit
	6 prs.	Coveralls
	3	Nylon Rain Coats
4	Red Hard Hats	
Crate No. 4	15 lbs.	Rags
	100 ft.	3 wire extension cord
	1	Bowser electric pumping unit
Crate No. 5	1	5 gallon stirrup pump
Crate No. 6 (Hose Reel):	1	1 1/4" x 50' hose
		1 1/4" x 25' hose
Crate No. 7 (Hose Reel):	1	1" x 50' hose
		complete with 1" marine nozzle
2 barrels	of	"Corexit" dispersant

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To obtain access nights, holidays or weekends call the following:

C. Socher	299-4025
T. Middleton	298-2803
T. Lawrie	434-3303
G. Jamieson	299-3666
D. Talling	733-7600
J. Bain	321-8548
B. Burton	942-8652
H. Higgins	435-1359

PEAT MOSS:

Emergency contacts are:

	Office	Home
<u>President</u>		
John Fleming	731-0491	261-9621
<u>Delta Plant</u>		
Bob Dickson	596-3323	576-6859
Don Hall	596-3323	

Withdrawal to be against PM 3473X1

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OIL SPILL CONTINGENCY PLAN

CLEAN UP SERVICE: CLEAN SEAS CANADA LIMITED 687-2444

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C.S. Protector  
C.S. Receiver  
C.S. Surveyor  
C.S. Tanker  
C.S. Transporter  
C.S. Spillmaster

Gulf of Georgia Tugs dispatched with this equipment if available, otherwise first available harbour tug is used.

C.S. Protector

Dimensions: 30' x 80' x 7.9'  
Reg. Tonnage 158.51 - Wooden Construction

The C.S. Protector has proven to be the most versatile and efficient Oil Pollution Clean-up barge available to date. As a base of operations and her electric power supply, galley and accommodations it permits around the clock clean-up operations. Besides oil-clean up equipment and materials aboard this barge is also capable of salvage and fire fighting duties if requested.

The C.S. Protector is stationed in Vancouver Harbour on 24 hour call and can be manned with an experienced Oil Clean up Crew on short notice and dispatched to any Area within a 100 mile radius of Vancouver. The C.S. Protector is equipped with F.M. Radio Vancouver and Dispatch frequencies.

C.S. Receiver (black oil barge)

Dimensions: 29' x 91' x 8.6'  
Reg. Tonnage 184.66  
Capacity 2,200 barrels (Black Oil)  
Pump - 6" Worthington Pump @ 1200 RPM @ 600 barrels/hr.

The C.S. Receiver is used to receive oil from Holed ships or barges if necessary, to prevent further oil from escaping into the sea, and could be used in conjunction with an oil skimmer to receive the oil from the skimmer.

C.S. Surveyor

Is a specially equipped truck with 400 feet of oil containing boom and other essential equipment to commence the clean up operation of an oil spill.

If the oil spill is accessible by road the C.S. Surveyor is dispatched as soon as a request for service is received, on arriving at the scene, the trained crew will survey the type and size of oil spill and advise their supervisor of their findings, and string their boom and commence clean up operations with the chemicals or absorbent material until the C.S. Protector arrives on the scene. The C.S. Surveyor is equipped with F.M. Radio (Dispatch Frequency).

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OIL SPILL CONTINGENCY PLAN

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CLEAN SEAS CANADA LIMITED, cont'd.

C.S. Tanker (truck)

The C.S. Tanker truck transports recovered oil from barges or directly from an oil spill to sludge tanks or to authorized disposal. Tank capacity 1,000 gallons.

C.S. Transporter

Is a 10 passenger carrying vehicle used in transporting extra men to an oil spill scene, and by removing one seat, is capable of carrying extra equipment if needed. Th C.S. Transporter is equipped with F.M. Radio (Dispatch frequency).

C.S. Trailer

Is a heavy duty trailer used in transporting equipment or material to the scene of an oil spill, such as:

Chemicals, absorbants, pumps and hoses, oil booms (2000' in storage), tools, etc....

C.S. Spillmaster

See attached specification sheet.

HELICOPTERS:

Okanagan Helicopter	278-5502
Skyway Air Services	526-1118

OTHER:

For equipment available from government agencies or members of the Burrard Inlet Oil Spill Co-Operative, see REFINERY INSTRUCTION 301.

REFINERY  
SUPPLIERS:

See the following list for local equipment and labour rentals.

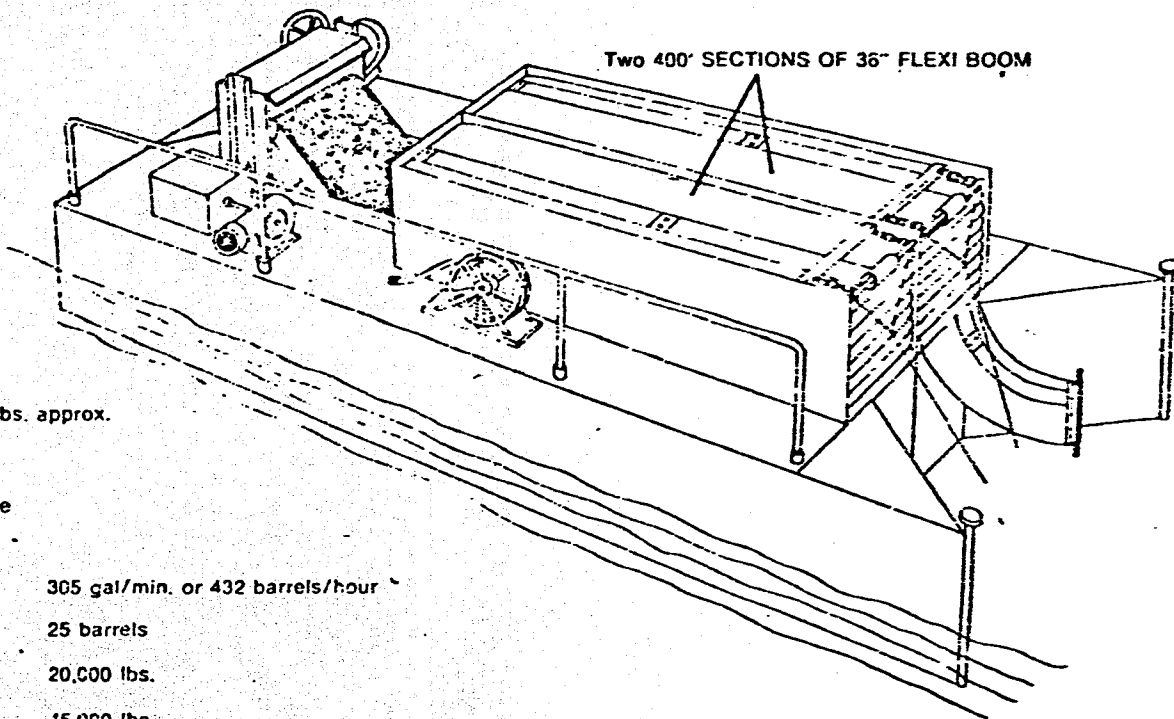


*C S SPILL MASTER.*

**SPECIFICATIONS**

LENGTH	34'
WIDTH	14'
HEIGHT	4'
WEIGHT	30,000 lbs. approx.
DRAFT	2'
OIL RECOVERY BELT	36" wide
<b>CAPACITIES</b>	
Pumping at 600 r.p.m.	305 gal/min. or 432 barrels/hour
Oil storage	25 barrels
Ballast Tanks	20,000 lbs.
Buoyancy Tanks	45,000 lbs.
Transfer Hose & Reel	400 ft. 3" P.V.C. Hose on fire hose reel.
Lighting	24 volt
Power supply	10 h.p. diesel

The above figures are design specifications, actual weights and capacities may vary slightly.



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Clean Seas Inc.

EMERGENCY SERVICE CONTRACTS

<u>CONTRACTOR</u>	<u>SERVICE</u>	<u>PHONE 8-5</u>	<u>PHONE AFTER HOURS</u>
<u>MATERIAL &amp; HANDLING</u>			
Tarling's of Burnaby	Earth Removal & Cranes	434-3525	Jim Noel 434-9262 293-7604
Standard General Inter Ltd.	Roads, Equip. & Oper., Snow Removal	683-4164	Dunlop Evans 277-9883 596-3295
Blair Bulldozing	Earth Removal & Equipment	521-6331	Blair 521-6331
Ed's Bulldozing	Earth Removal & Equipment	874-3340	Ed McLaughlin 874-3340
Commercial Truck	Cranes and Oper.	524-6661	Bligh Fairweather 522-8771 522-7491
McCallister Trucking	Pick up & Delivery	980-7504	McCallister Trudell 987-1228 685-7785

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EMERGENCY SERVICE CONTRACTS

<u>CONTRACTOR</u>	<u>SERVICE</u>	<u>PHONE 8-5</u>	<u>PHONE AFTER HOURS</u>
<u>TRADES &amp; LABOUR</u>			
Aqua Chem Enterprises	High Press Cleaning	942-5136	942-5136
Johnstone Fab Ltd.	Fitters, Welders, & Equipment	253-1151	253-1151
Gam-X Inspection Ltd.	Field Inspection & Interpretation	985-9588	Elsey 327-4457 Scopis 688-1861 Rawlings 929-1320
Reliance Motor & Machine Works	Machine shop	681-3345	Ross 733-6446 Smithson 327-2205
Ross Morrison Electric	Electrical Services & Repair	299-3531	299-3531 Vic Sanderson 255-4935
Argus Installations	Pipe Fitters, Welders & Equipment	437-5531	Leccelli 433-4078 Syroid 534-1123
Mathias Nichol	Labourers, Fitters, Welders, Equip.	682-2704	Mochinski 298-9857 Hagedorn 277-8902
Sutherland Construction	Gradall Equip, Labourers	291-7104	298-4322
Dillingham Corp. Canada	Tradesmen and Equip.	985-6111	985-6111

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<u>CONTRACTOR</u>	<u>SERVICE</u>	<u>PHONE 8-5</u>	<u>PHONE AFTER HOURS</u>
<u>EQUIPMENT RENTAL</u>			
Canadian Motorola	T.V. & Radio Equip. & Repair	985-9411	Anderson 985-9411
Anthes Equipment	Scaffolds, Safety Fencing, Safety Lines, Cages, Shoring	298-7288	Armstrong 939-2078
Total Video Systems Ltd.	T.V. Camera and Monitors	879-0471	Miller 929-2604
Cypress Equipment Co. Ltd.	Equipment Rental	299-2611	Meyers 942-8527
Land Sea Power	Mobile Liting	253-3535	Simpson 325-9006 Devine 987-4206 Brant 434-4357
Nelsons	Coveralls	876-3272	

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<u>CONTRACTOR</u>	<u>SERVICE</u>	<u>PHONE 8-5</u>	<u>PHONE AFTER HOURS</u>
<u>MARINE SERVICES</u>			
Goodwin Johnson Ltd.	Towboats	299-0277	299-0277
Industrial Diving Co. Ltd.	Underwater Services	684-8326	J. Kail 684-8326
Cundry Bilmack	Oil Loom Repair	254-1304	McWilliams 736-5296, 945-1774 Cheropita 987-5136
A.H. Austen Co. Ltd.	Chevron Bומר Repair & Maintenance	681-1822	Gus 434-2105
Fraser River Pile Driving	Wharf Repairs	522-7971	Corbett 594-9802 Reid 942-8815
Flare Craft Marine	Small Boat and Motor Rentals	299-4388	Gorrill 437-4573

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<u>CONTRACTOR</u>	<u>SERVICE</u>	<u>PHONE 8-5</u>	<u>PHONE AFTER HOURS</u>
<u>EQUIPMENT PURCHASING</u>			
Fleck Brothers Ltd.	Safety Equipment	684-8131	684-8131
Construction Aggregates	Gravel, rock	261-5131	Lankaster 987-3574
Buckerfields Ltd.	Straw - Bales	253-1577	Week Nights 253-1577 Week Ends: Dawson 926-1166 Anderson 298-2036
Western Peat Moss	Peat	278-5814	Waterman 273-4139
Goodall Rubber Co. of Canada	Hoses	254-7121	Styan 987-3419 Dakers 278-8974
McIntosh Supply Ltd.	Barrel Pumps, Hardware	291-6061	291-6061

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EMERGENCY SERVICE CONTRACTS

<u>CONTRACTOR</u>	<u>SERVICE</u>	<u>PHONE 8-5</u>	<u>PHONE AFTER HOURS</u>
<u>WASTE DISPOSAL</u>			531-8313
McCrae Septic Tank	Empty & Clean Tanks & Sumps	434-3313	434-3765
Smithrite Disposal	Garbage Disposal	928-7151	988-7151
Maple Leaf Disposal Service	Waste Disposal	299-2197	299-2197
Corp. of District of Burnaby	Garbage Pick up	299-7211	Works Yard 299-7544

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EMERGENCY SERVICE CONTRACTS

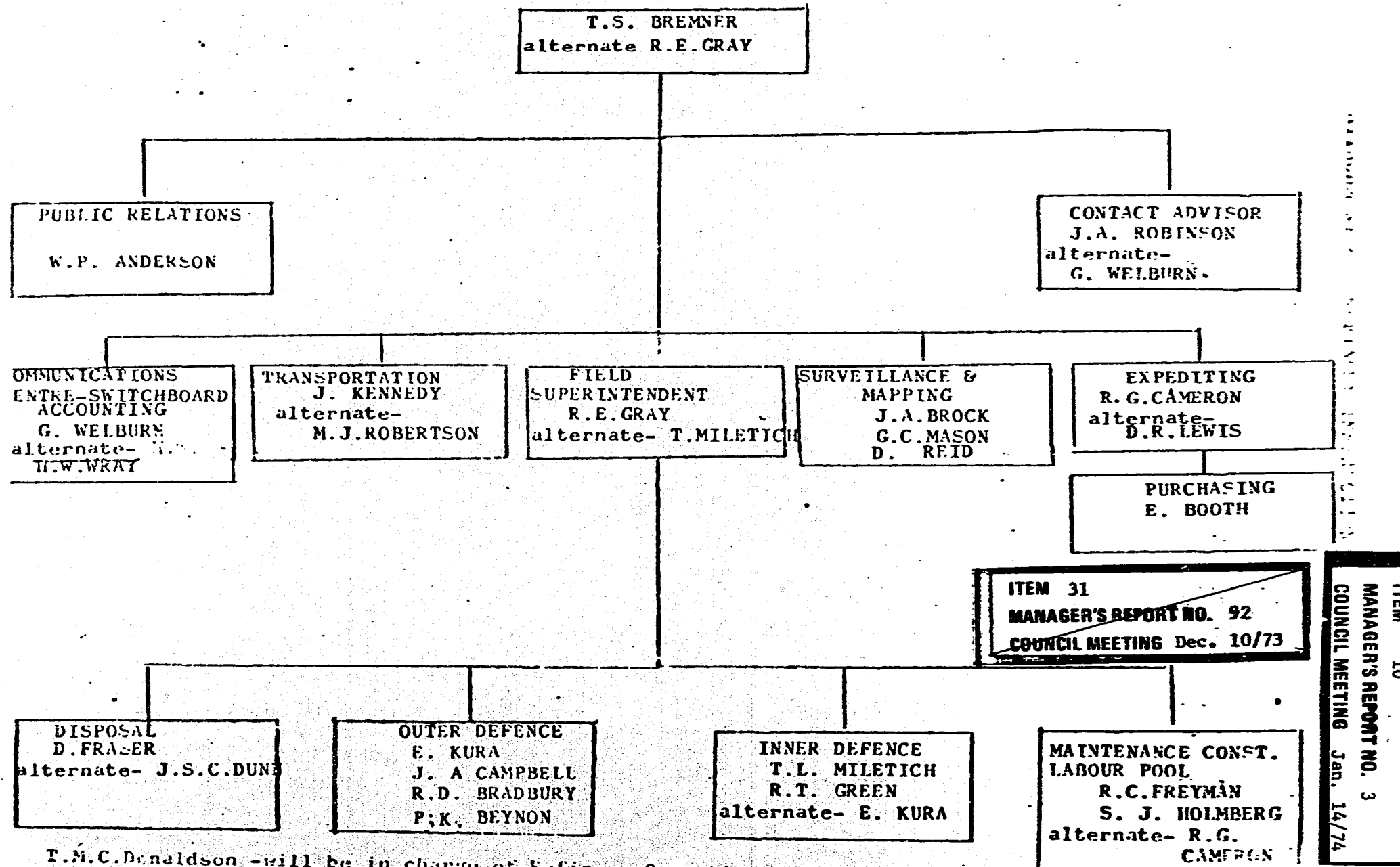
<u>CONTRACTOR</u>	<u>SERVICE</u>	<u>PHONE 8-5</u>	<u>PHONE AFTER HOURS</u>
<u>SECURITY</u>			
Corp. of Commissionaires	Security	681-9207	Nil
Pinkertons of Canada Ltd.	Security Guards	736-4394	736-4394

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ORGANIZATION FOR CONTROL OF A MAJOR  
OIL SPILL



T.M.C. Donaldson - will be in charge of Refinery Operations  
- has relieved

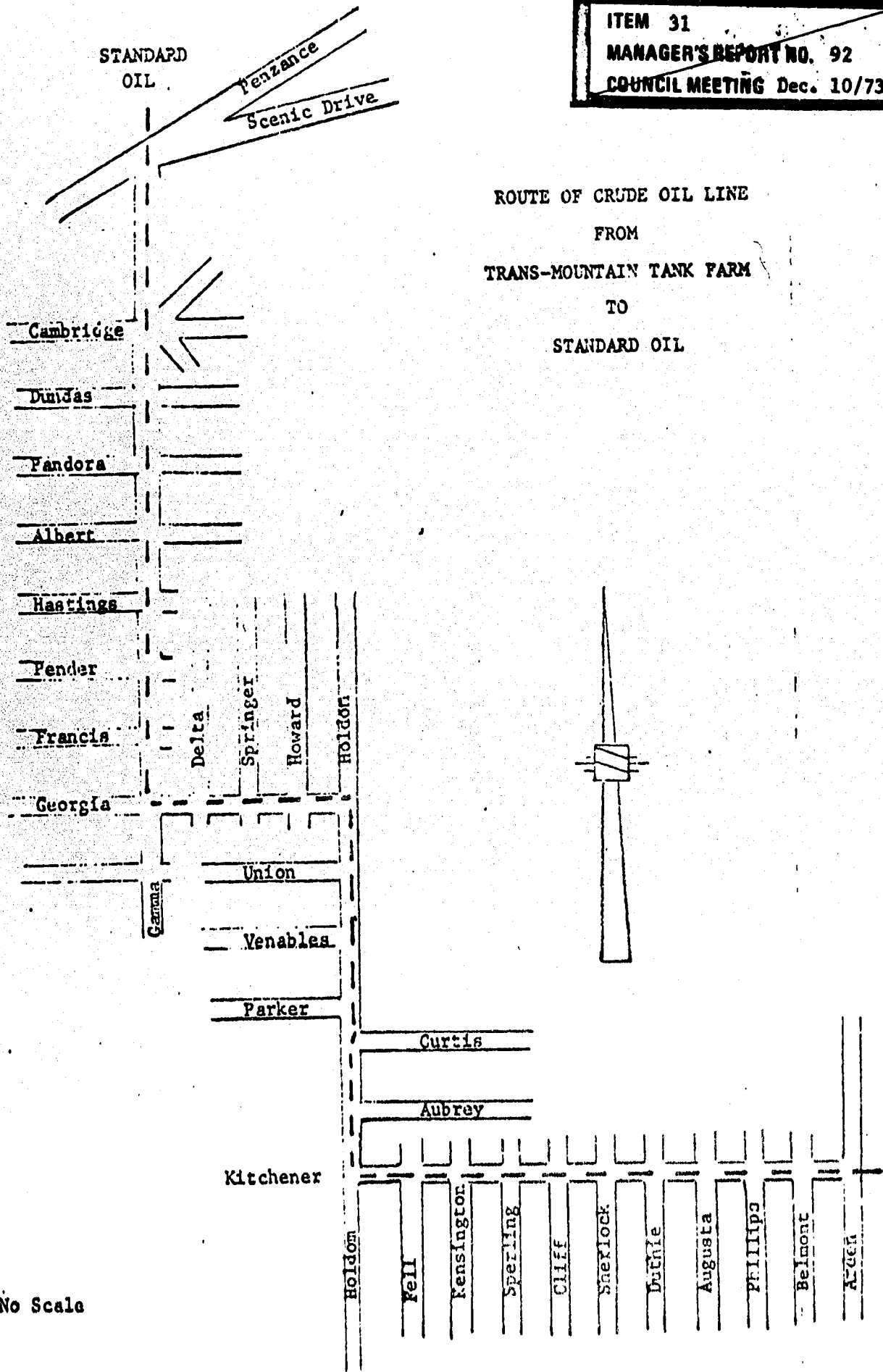
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ATTACHMENT #3

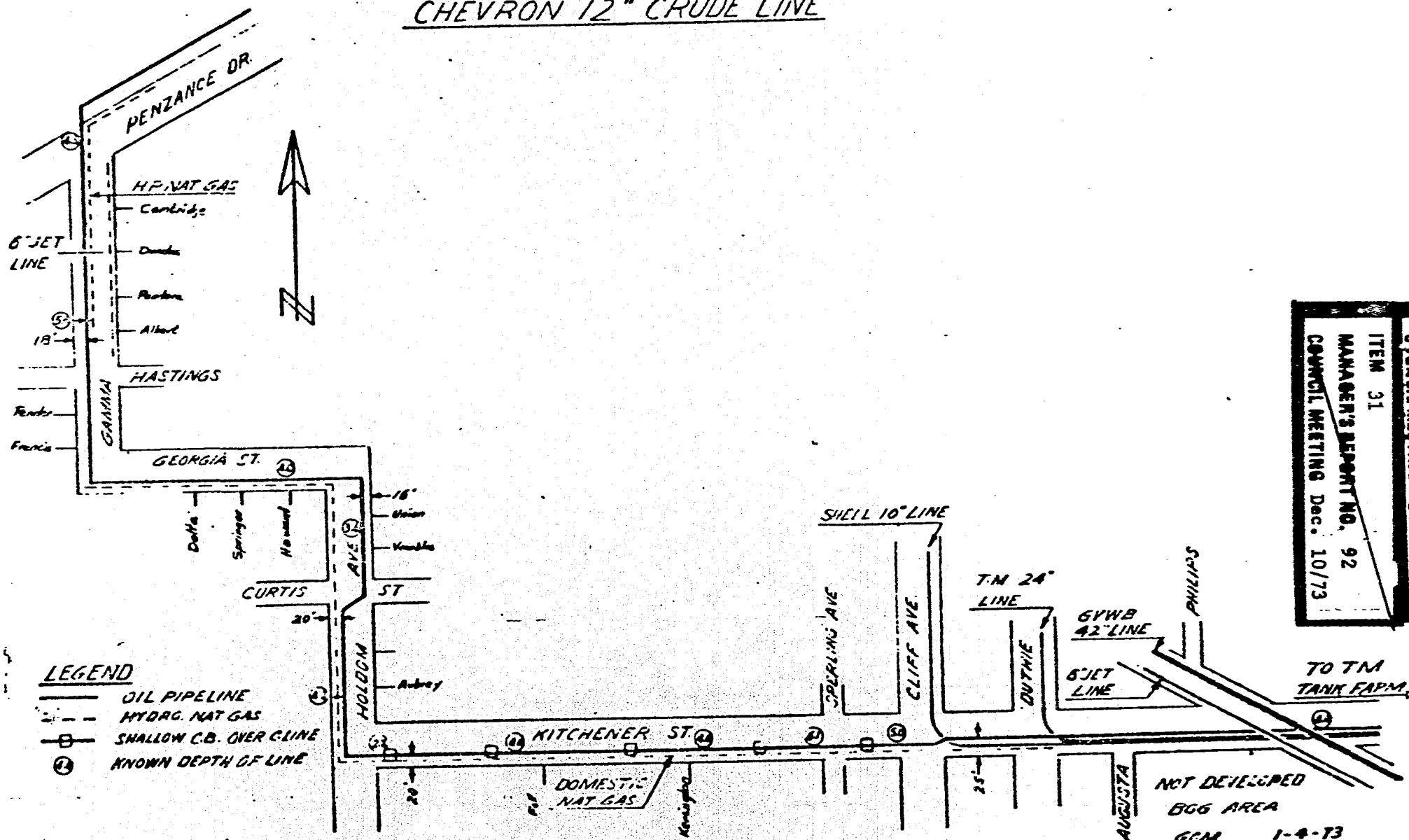
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ROUTE OF CRUDE OIL LINE  
 FROM  
 TRANS-MOUNTAIN TANK FARM  
 TO  
 STANDARD OIL

No Scale

CHEVRON 12" CRUDE LINE



**LEGEND**  
 — OIL PIPELINE  
 - - - HYDRG. NAT GAS  
 — SHALLOW C.B. OVER CLINE  
 (A) KNOWN DEPTH OF LINE

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TO TM TANK FARM

NOT DEVELOPED  
 BGG AREA  
 GCM 1-4-73  
 B-70-D-113950-0

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REFINERY INSTRUCTION 301  
BURRARD INLET OIL SPILL CO-OPERATIVE

PURPOSE

The purpose of this instruction is to list oil spill equipment available at refineries and marketing terminals of the members located on Burrard Inlet. In addition, telephone numbers to call for release of this equipment and those authorized to make such requests are documented.

REQUESTS FROM CO-OPERATIVE MEMBERS

Equipment or assistance requests from co-operative members must be handled as follows since Shift Foremen are not authorized to release equipment or provide assistance:

- (a) #2 Shift Contact R. E. Gray, if unavailable contact T. L. Miletich. This contact must be made immediately upon receipt of a request and must be treated as an emergency. Have the switchboard operator page the above persons.
- (b) #1 and #3 Shifts, plus weekends or holidays, contact R. E. Gray, T. L. Miletich or T. S. Bremner to release the boom, Chevron Boomer, fire pumps, skimmers, or radios. The Supervisor on weekend call may release up to one-half the refinery stock of the following:

Chemical Dispersants  
Dispersant Sprayers  
Hay  
Peat Moss

APPROVED: *R. E. Gray*

DATE: Nov 5, 1972

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BURRARD INLET

OIL SPILL CO-OPERATIVE

MANUAL NO. \_\_\_\_\_

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BURRARD INLET OIL SPILL CO-OPERATIVE

INTRODUCTION

The Burrard Inlet Oil Spill Co-Operative has been organized with the objective of providing an immediate and effective oil spill control system within Burrard Inlet.

While the Co-Operative is a mutual assistance organization, its members are not relieved of their responsibilities to meet their own requirements. Further, the member companies agree that any member, directly involved with an oil spill in Burrard Inlet is expected to assume responsibility for coordination of all control and clean up operations.

It is understood that spills within Burrard Inlet resulting from operations other than those of the member companies will be handled by the appropriate government agencies. Upon request, the Co-Operative will assist those agencies in such operations.

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BURRARD INLET OIL SPILL CO-OPERATIVE

LIST OF MEMBERS

Gulf Oil Canada Limited  
Imperial Oil Enterprises Ltd.  
Shell Canada Limited  
Standard Oil of B. C. Ltd.  
Texaco Canada Limited.

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BURRAID INLET OIL SPILL CO-OPERATIVE

Call List of Members

Gulf Oil Canada Limited

Burnaby	-	936-7262 24 hrs per day
Bute Street	-	683-6861 days
	-	681-6020 after 4:30 p.m.

---

Texaco Canada

298-5501 days  
Committee number after 4:30 p.m.

---

Standard Oil of B.C. Ltd.

298-1353 days, Mon.-Fri.  
298-1354 after 4:30 p.m.  
Sat. & Sun.

---

Imperial Oil Company

939-3311 days, Mon.-Fri.  
939-3311 after 4:30 p.m.  
Sat. & Sun.

---

Shell Canada

298-2484 days  
298-2489 after 4:30 p.m.  
Sat. & Sun.

In all cases of calls after 4:00 - 4:30 p.m., ask for Shift Supervisor.



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BURRARD INLET OIL SPILL CO-OPERATIVE

Committee Members & Personnel Authorized to Request Equipment

1. Gulf Oil Canada Limited

Committee Members:

<u>Burnaby</u>	<u>Office</u>	<u>Home</u>
R. Porter	936-7262	463-6482
J. Simmons (alternate)	939-1158	434-0738
<u>Bute Street</u>		
T. Hewson	683-6861	936-3563
D. Wilson (alternate)	683-6861	325-4627

Authority to Request Equipment:

<u>Burnaby</u>	<u>Bute Street</u>
R. Porter	T. Hewson
J. Simmons	D. Wilson
D. Higgins	
D. Wright	
V. Johns	

2. Imperial Oil Enterprises Ltd.

Committee Members:

	<u>Office</u>	<u>Home</u>
G. A. L. Sholund	939-3311	939-1960

Authority to Request Equipment:

G. A. L. Sholund	M. Roman
G. G. Clarke	Shift Supervisor

3. Shell Canada Ltd.

Committee Members:

	<u>Office</u>	<u>Home</u>
B. J. Carrigan	298-2484	291-1878
D.W.G. Peters (alter.)	298-2484	437-7486

Authority to Request Equipment:

J. C. Fisher  
B. J. Carrigan  
D. M. Simpson  
Shift Supervisor

4. Standard Oil Of B.C. Ltd.

Committee Members:

	<u>Office</u>	<u>Home</u>
R. E. Gray	298-1353	936-9581
T. L. Miletich	298-1353	274-1985

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Authority to Request Equipment:

T. S. Bremmer	E. M. Kura
R. E. Gray	T. M. C. Donaldson
J. A. Robinson	T. L. Miletich
R. C. Freyman	

5. Texaco Canada Ltd.

Committee Members:

	<u>Office</u>	<u>Home</u>
B. C. Spring	298-5501	321-9946
M. S. Colbourne(alter.)	298-5501	936-7552

Authority to Request Equipment:

B. C. Spring  
M. S. Colbourne  
T. F. O'Riordan

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BURRARD INLET OIL SPILL CO-OPERATIVE

Call List of Government Agencies

1.	<u>National Harbours Board</u>		
		<u>Days</u>	<u>Nights</u>
	First Narrows Bridge	255-3565	255-3567
	Harbour Master	255-3565	922-1589
2.	<u>Department of Transport</u>		
	H. O. Buchannan	544-1388	
	(Regional Director)		
	Rescue Co-ordinating Centre		732-4141
3.	<u>Federal Department of the Environment</u>		
		<u>Office</u>	<u>Home</u>
	G. Webster	666-3601	988-6418
	D. Coyette	666-3854	987-9267
	H. Burrow	524-7181	325-7221
4.	<u>B.C. Pollution Control Branch</u>		
	W. G. Hamilton		521-9461
5.	<u>Canadian Pacific Railway</u>		
		<u>Days</u>	<u>Other</u>
	Chief Train Dispatcher	681-2212 #407	681-2234 #32

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BURRARD INLET OIL SPILL CO-OPERATIVE

Members Authorized to Request Interruption of CPR Traffic

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1. Gulf Oil Canada Ltd.

R. Porter  
J. Simmons  
D. Higgins

D. Wright  
V. Johns

2. Imperial Oil Enterprises Ltd.

G. A. L. Sholund  
G. G. Clarke

M. Roman  
Shift Supervisor

3. Shell Canada Ltd.

J. D. Fisher  
B. J. Carrigan  
D. M. Simpson  
Shift Supervisor

4. Standard Oil of B.C. Ltd.

T. S. Bremner  
R. E. Gray  
J. A. Robinson  
R. C. Freyman  
E. M. Kura

T. M. C. Donaldson  
T. L. Miletich  
J. W. Kennedy  
G. Welburn  
Shift Foreman

5. Texaco Canada Ltd.

B. C. Spring  
M. S. Colbourne  
T. F. O'Riordan

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BURRARD INLET OIL SPILL CO-OPERATIVE

Call List of Police & Fire Departments

Police

Vancouver	683-1122
North Vancouver	985-1311
Burnaby	291-7131
Port Moody	939-1234

Fire Departments

Vancouver (including fire boat)	34-1234
North Vancouver	988-2345
Burnaby	291-1234
Port Moody	939-1234

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BURRARD INLET OIL SPILL CO-OPERATIVE

EQUIPMENT LIST (MEMBER COMPANIES)

GULF OIL CANADA LIMITED

Burnaby M.T.

Equipment

Boats

- 1 - 24 ft. Sea truck, equipped with:
  - 2 - portable sprayers
  - 1 - pump (chemical spraying)
  - 4 - drums oil dispersant (for bunker fuel)
- Life jackets, etc.

- 2 - 10 ft. fiberglass row boats

Boom

1000 ft. Gundy Bilmac Boom stored in a shed ramped to the water side. Boom is attached to a heaving line and is available for immediate loading or placement. Accessible at all tides with Sea truck.

4-Boom anchors.

Other

- 2000 gallon shore sloop tank
- 500 gallon dock (west) sloop tank
- 6 - 12 drums oil dispersant (for gasolines)
- 4 - 8 drums oil dispersant (for bunker fuel)
- 50 - bags peat moss
- 8 - 5 gallon capacity bush-pak sprayers (range 20 ft.)
- Rakes - Coveralls - Rope
- Shovels - Sorball - Fire Hose, etc.

June 14, 1972

Bute Street Plant  
Coal Harbour

Equipment

Boats

- 1 - 16 ft. boat (25 h.p. outboard powered)

Boom

800 ft. Gundy Bilmac Boom

Other

- 6 - Drums oil dispersant (bunker fuel)
- 3 - 5 gallon capacity bush-pak sprayers (range 20 ft.)
- Rakes - coveralls - rope - shovels - fire hose, etc.

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IMPERIAL OIL

Loc Plant

Equipment

Boats

- \* 1 - Fireboat, equipped with:
  - 3 monitors
  - corexit storage tank
  - corexit applicator
  - 4 life jackets

1 - 12 ft. aluminum boat with seagull outboard motor.

Boom

1200 ft. kingfisher boom  
800 ft. T. T. Boom

Other

1 - Slick Licker - which can be fitted with a Briggs Stratton motor  
25 - drums corexit 7664 (all fuels except bunker)  
40 - drums corexit 8666 (for bunker fuels)  
floodlight - gasoline engine driven generator - gasoline engine  
driven water pump - coveralls - boats - hay - forks - etc.

June 9, 1972

SHELL CANADA

Equipment

1900 ft. T. T. Boom  
3 - spill boom anchor bouys, rope and anchors  
1 - 22 ft. work boat with 200 gal. tank of Corexit 7664  
(operator must accompany)  
10 drums Corexit 7664  
Portable dispersant pump and applicator  
3 Rockwood FW 1 1/2" eductors  
2 Rockwood SG48 1 1/2" nozzles fitted with 10 ft. applicators  
2 - 50 ft. length of rope  
9 h.p. Fire Pump  
Portable oil skimmer  
50 bags peat moss  
1 - 10 ft. row boat  
1 - 10 h.p. outboard motor  
1 - 700 gallon Vacuum Truck (operator must accompany)

For release of equipment or material Contact Shift Supervisor at 298-2484

\* Fireboat may be released only by permission of:

	<u>Office</u>	<u>Home</u>
J. Guthrie	939-3311	937-5882
M. Roman	939-3311	522-8906

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STANDARD OIL COMPANY OF B.C. LIMITED

SCHEDULE "B"

Equipment

Boats

- 1 - 25 ft. Sea truck powered barge
- 1 - 10 ft. rowboat

Boom

- 2200 ft. Gundy Bilmac Kingfisher Boom, plus 5 boom anchors

Other

- 6 Dispersant applicators
- 1 Swiss skimmer
- 16 drums dispersant
- 25 bags of peat moss
- 100 bales of hay
- 33 - 1/2 lb. bags sorbal
- 1 Portable fire pump (150 USGMP @ 20 psig 10' suction lift)
- Fire hose- shovels - rakes - forks - protective clothing - life jackets, etc.
- 14 portable radios (range from Fort Moody to Lions Gate Bridge)

TEXACO CANADA LIMITED

SCHEDULE "B"

Equipment

- 2 mobile hose reels complete with 250' of 1 1/2" fire hose on each reel.
- 14 - 50 ft. lengths of 1 1/2" firehose
- 1 portable gasoline driven pump on trailer c/w k50" of 1 1/2" hose
- 2 fog nozzles
- 1 liquid foam applicator



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SLOP HANDLING FACILITIES

SCHEDULE "D"

SHELL CANADA

Ballast Tankage - 7000 bbls.  
Dock Ballast Line - 3 inch  
Intakes - 3

STANDARD OF B.C.

Short notice capacity - 1800 bbls.  
2-day notice capacity - 3600 bbls.  
Pumping rate to Dock Tankage or API Separator 300 bbls. per hour

GULF CANADA

Short notice capacity - 38,000 gallons  
Other - Direct to Refinery  
All pumping must be by carrier's equipment. Booster pumps located on hillside (2200 bbls. per hour capacity)

TEXACO

Nil.

IMPERIAL

Facilities available to API separator or tankage.

TRANS MOUNTAIN

Tank #93 connected to dock at Westridge - capacity 50,000 bbls.

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BURKARD INLET OIL SPILL COOPERATIVE

EQUIPMENT LIST (GOVERNMENT AGENCIES)

1 Federal Dept. of Transport (Jan. 73)

Victoria

<u>Quantity</u>	<u>Description</u>
1	Heavy Slick-licker*
1	Light Slick-licker**
2000'	Inshore Boom
2	Surface skimmer pumps
400'	Floating hose for pumps
	Miscellaneous hand tools
15 sets	Protective clothing
5	Portable F.M. Walkie-talkies
1	Base F.M. transmitter/receiver (AC/DC)
4	Pocket type cassette recorder
1	Gas engine driven steam generator C/W hose, lances, etc.
50 drums	Dispersant
3 sets	Ship mounted spraying equipment
5 sets	Portable electric generators C/W flood lights
	Miscellaneous gear, ropes, etc.
2000 bales	Sorbent material
3000'	Offshore boom

\* Heavy slick-licker mounted on 36' catamaran

\*\* Light slick-licker mounted on 30' self propelled barge (Slick-licker is removable)

Vancouver

<u>Quantity</u>	<u>Description</u>
1	Light Slick-licker*
2000'	Inshore boom
2	Surface skimmer pumps
400'	Floating hose
	Miscellaneous hand tools
12 sets	Protective clothing
3	Portable F.M. walkie-talkies
1	Base F.M. transmitter/receiver (AC/DC)
3	Portable cassette tape recorders
20 drums	Dispersant
2 sets	Ship mounted spray equipment
3 sets	Portable spray equipment
1	Portable electric generator c/w flood lights
1	Gas engine driven steam generator c/w hose, lance, etc.
	Miscellaneous gear, ropes
500 bales	Sorbent material

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EQUIPMENT LIST (GOVERNMENT AGENCIES)

2. National Harbours Board (port of Vancouver)

(a) Ring Bolts @ Burns Point and Curaholly Point painted orange.  
No specific securing point on south shore but would use any  
derelict piling or would anchor.

(b) NHB Base (Foot of Campbell Ave.)

3,500' oil spill boom in 250 foot lengths  
2 portable spray pumps  
2 magnets for securing booms to side of vessel  
1 (45) gallon drum Diasol  
Spray bar equipment to fit Harbour Tug Brockton II  
2 stirrup pumps for spraying emulsifier.

(c) Kitsiaco Coast Guard Base

3. In addition the following companies can provide clean up equipment  
and labour

(a) Clean Seas Canada Ltd.	24 Hours 687-2444
(b) Seaspan	988-3111
(c) McKenzie Barge & Derrick	929-3434

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BURRARD INLET OIL SPILL COOPERATIVE

CALL LIST OF GOVERNMENT AGENCIES

	<u>Days</u>	<u>Nights</u>
1. <u>National Harbours Board</u>		
First Narrows Bridge	255-3565	255-3567
Harbour Master	255-3565	922-1589
2. <u>Department of Transport</u>		
Regional Director - H.O. Buchanan	666-1388	
Rescue Coordinating Centre		732-4141
3. <u>Federal Department of the Environment</u>		
R E. McLaren		
Regional Director, Pacific Region	666-1064	
Chris Hatfield		
Regional Environmental Emergency	666-1064	
Coordinator - Pacific Region		
4. <u>B.C. Pollution Control Branch</u>		
W. G. Hamilton	521-9461	
5. <u>Canadian Pacific Railway</u>		
Chief Train Dispatcher	681-2212 # 407	681-2234 # 32

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BURRARD INLET OIL SPILL CO-OPERATIVE

GUIDELINES FOR THE USE OF CHEMICALS

Attached is the:

Fisheries Service Policy 5.1

Excerpt from: Interim Federal Contingency Plan for  
Oil & Toxic Material Spills Field Manual.

Environment Canada  
Ottawa 1971

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## 5.1 FISHERIES SERVICE POLICY

The Fisheries Service of the Department of the Environment has been provided a set of interim guidelines concerning those dispersants and chemicals which might be considered for use in the consequence limiting phase of an oil spill. The guidelines are set out in the following:

### Introduction

1. Chemicals are used to disperse, gel, sink, absorb, or facilitate the burning of oil. With the exception of gelling agents, chemicals have been used in a number of major incidents, singly and in combination, with varying results. Each major incident differed as to the circumstances, i.e. the source, type of oil, nature of the marine environment and proximity of the shoreline.

### Definitions

2. Dispersants - are intended to increase the surface area of an oil slick and emulsify or disperse oil globules throughout the larger volume of water, thereby aiding in accelerated degradation of oils by microbiological means. The chemical dispersants do not themselves destroy oil. They vary considerably in toxicity, effectiveness and ability to stabilize the oil after extended periods of time. Technology for proper application of dispersants over large oil slicks with necessary mixing is currently lacking. Use appears far more critical in freshwater harbour and estuary areas and in proximity to shore. Particular care must be exercised where water supply might be affected.

The desirability of employing dispersants in the open sea remains doubtful although their use here is potentially more promising pending additional field data. After widespread dispersant use, reports led to the conclusion that dispersants or the dispersant-oil mixture cause much more damage to aquatic life than oil alone. On beaches, they actually compound the problem by adding to the amount of pollutants present, by causing the oil to penetrate more deeply into the sand, and by disturbing the sand's compactness so as to increase beach erosion through tidal and wave action.

3. Floating Absorbents - include a wider range of materials with oil-attracting and water-repelling characteristics such as straw, peat, etc., and certain plastic products. While they have unique advantages over other methods of clean-up such as limiting the rate of slick spreading or facilitating clean-up, they have a number of disadvantages which include delivery and application and collection and dispersal of the oil-absorbent mass. Considerable mixing or interaction of the oil and absorbent is very desirable for maximum uptake of oil. Collection and disposal of the oily mass poses greater problems than the dispersal of the oil-water emulsions due to their bulk.

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Fisheries Service Policy cont'd.

4. Sinking Agents - adhere to the oil, resulting in subsequent absorption and sinking of the mass. Care must be exercised in the use of these, as the oil mass can form a layer or blanket on the bottom, causing adverse effects on bottom-using organisms. It appears there might be some advantage in using these outside heavier fishing zones and where there will be minimum adverse effects on the coastal marine environment.
5. Gelling Agents - Are applied over the surface or periphery of an oil slick. It is claimed that gelled oils recovered in this manner may be profitably reclaimed, i.e. mixed with fuel oil and burned as replacement fuel.
6. Burning Agents - An attractive and inexpensive means of disposing of large amounts of oil. Although present techniques have not proved very successful, it is considered that burning should only be used in situations where the oil is sufficiently distant from the shoreline or other property so as not to create a fire hazard.

Use of Chemicals

7. In considering the use of chemicals with oil spills, a number of factors must be carefully borne in mind. Of first importance is the effect of the chemical or oil-chemical mixture on the water environment. The introduction of toxic chemicals in the water or on the shore face can result in lasting damage to valuable species. It is important not to make it invisible but to minimize its effect upon the environment.

Restrictions on Chemicals used for treating oil spills

8. Chemical agents should not be used in any place unless:
  - a) In the judgement of the on-scene commander, their use will prevent or substantially reduce a hazard to human life or important fire hazard to property.
  - b) In the opinion of the responsible federal or provincial agency, it is necessary to prevent or reduce a threat to a major population segment of a vulnerable species of water fowl.
  - c) In the opinion of the responsible federal or provincial agency, their use would cause less loss of environmental quality than other available methods of dealing with the oil spill.
9. To make a valid and objective decision regarding the use of chemical agents, the on-scene commander will need advice on the relative values involved from those agencies most directly concerned. DCO's and

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Fisheries Service Policy, cont'd.

Regional technical staff must be prepared to proceed to the spill area immediately, if necessary, in order to make a full assessment of all the fisheries values which might be at stake, e.g. oyster or clam beds, juvenile salmon, etc.

Urgent Situation

10. There may be an urgent requirement to take countermeasures because of a threat to human life or a fire hazard (para. 8(a) above). In this situation, if local Fisheries personnel are unable to contact Headquarters in time, they may agree to the use of a chemical dispersant but only to the extent necessary to remove the threat.

Policy on Dispersants

11. Except as noted in para. 8 above, it will be the policy of this Department that chemical dispersants SHOULD NOT BE USED ON:
- a) Any distillate fuel oil.
  - b) Any spill of oil less than 200 barrels in quantity.
  - c) Any shore line.
  - d) Any waters less than 100 feet deep.
  - e) Any waters containing major fish populations or large breeding or migration areas for species of fish or marine life which may be damaged or reduced in market value by exposure to dispersants or dispersed oil.
  - f) In any waters where winds or currents are of such nature that dispersed oil mixtures would likely - in the judgement of the departmental representative in charge - be carried to shore areas within 24 hours.
12. NOTWITHSTANDING THE ABOVE, dispersant MAY BE AUTHORIZED by Regional Headquarters if other control methods are judged to be inadequate or infeasible, provided information has been given to the Department in sufficient time prior to its use for adequate tests to be carried out.
13. The following is a short list of trade names of chemical agents which are known to the Service:
- |               |                 |
|---------------|-----------------|
| Gamlen        | Ameroid No. 1   |
| Corexit       | XZIT Spill-Gone |
| Polycomplex A | Diachem-Micro D |
| Energy Plus   | Diasol          |
| Cestic 365    | Basic H         |