

ITEM	24
MANAGER'S REPORT NO.	51
COUNCIL MEETING	July 18/77

Re: CHEVRON CANADA LIMITED - REFINERY EXPANSION STATUS REPORT

The following is the report of the Director of Planning dated July 11, 1977, regarding the above.

This is for the information of Council.

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PLANNING DEPARTMENT  
JULY 11, 1977

**TO:** MUNICIPAL MANAGER  
**FROM:** DIRECTOR OF PLANNING  
**SUBJECT:** CHEVRON CANADA LIMITED - REFINERY EXPANSION  
STATUS REPORT

**1.0 BACKGROUND**

On January 14, 1974, Burnaby Municipal Council approved in principle an expansion and modernization program for the Chevron Canada Ltd. refinery in North Burnaby. This approval was given subject to a number of conditions related to commitments made by the Company in its Proposal and arising out of Council's deliberations on the matter. These conditions related in general to physical improvements to be made to the plant itself, management practices, a reconciliation of the land use with the adjacent residential areas by boundary definition, and the adherence to appropriate environmental standards designed to reduce pollution.

Since that time, Chevron has been proceeding on the basis of numerous Preliminary Plan Approvals that have been requested and granted, toward completion of its commitments to the Council. The Company's development activities have been based on a program that balances environmental clean-up measures with approvals for further plant installations related to petroleum production. From time to time matters related to the development program have been referred to Council, where direction has been required or where enquiries have been received.

This report is being submitted in response to a Council request for a status update on the overall project. It is intended to provide a summary statement on the degree of completion of the various major elements in the program, and to give an indication of compliance with the designated environmental standards set out by the various pollution control authorities.

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2.0 SUMMARY OF PRESENT STATUS

In the most general terms, the modernization and expansion program has progressed according to the originally stated plan, and the majority of the steps in the program have now been satisfactorily completed. Substantial progress has been made in the improvement of emissions and the construction of facilities to accomplish this improvement as well as facilities related to the Company's goal of increasing through-put capacity and meeting product-specific market demands. The major objectives with respect to site boundary definition and landscaping improvement have been accomplished, although some of the final stages remain to be completed. In line with the agreement reached on the acquisition and transfer of properties within the defined green belt/buffer area, the Company has engaged in negotiations and is proceeding as agreed.

With reference to air and water pollution factors, we do not at this time have explicit statements on monitoring results from the respective government agencies; however when this information is made available we will advise Council of the results.

The foregoing is a general statement of the status of this program; more detailed information on the individual components of the program follow for the information of Council.

3.0 CONSTRUCTION PROGRESS

3.1 Major portions of the modernization and expansion program are now complete and "on stream". In the following section, we propose to indicate to Council the status of both production items (related to expanded capacity and/or product capabilities) and environmental protection items. This information was principally obtained by means of a July 5, 1977 meeting attended by Mr. D.G. Stenson, Planning Department, G.V. Harvie, Environmental Health, Mr. E. Kura and Mr. C. Cant, Chevron Canada Ltd., and in addition through information requested from and provided by the Greater Vancouver Regional District Air Quality Division.

3.2 PROCESS AREA (AREA II)

3.2.1 FACILITIES:

<u>Item</u>	<u>Status</u>	<u>Comments</u>
CO Boiler	Complete and in full operation for almost one year.	By converting CO to CO <sub>2</sub> (which is not considered a pollutant) the output of carbon monoxide from the fluid catalytic cracking unit has been virtually eliminated. The plume formerly evident at the 300' stack has been eliminated due to operating and temperature reduction and the consumption of sulphur trioxide. The emission from this stack now meets Ringlemann 1 standards, and a further improvement has been the elimination of the stack "rumble" that had been a significant source of noise to the surrounding area. The 300' stack will now be used only when it is necessary to shut down the CO Boiler for maintenance reasons.
Sour Water Stripper	In operation for almost one year; operating satisfactorily.	Overhead gas from this unit goes to the sulphur plant; improvement in effluent water contributes to acceptability for discharge to sewer.

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<u>Item</u>	<u>Status</u>	<u>Comments</u>
H <sub>2</sub> S/Sulphur Plant	Complete; went into operation 23 June 1977; achieving and surpassing design requirement of 99.9% sulphur reduction; has been inspected by GVRD and will undergo independent agency checking.	Meets and exceeds Level A standards.
Catalytic Reformer (Rheniformer)	Complete and in operation.	Produces component for low-lead/no-lead gasoline products and reduces sulphur content in the product.
Effluent Water Treatment	Complete and in operation, permitting discharge of Area II - process water to GVS&DD sewer. Sewer connection completed and in operation.	Combination to stripping facilities, air flotation units, separating and holding ponds as well as other measures result in standard of water quality acceptable to GVS&DD for secondary treatment at Iona Island treatment plant. Daily monitoring of water quality in operation to maintain quality standards. Second API separator planned, contingent on future addition of new crude unit.
Crude Unit/Light Product Treating	One of the 4 major components (splitter) complete and in operation with sufficient production to permit refinery to meet its short term product demands. Remaining component of crude unit deferred at present - not required at this time due to diminished market demand.	Splitter uses specialty feed stocks which are low in sulphur content (desulphurized light oil and treated condensate (Kaybob) from Alberta). Results in reduction in air pollution products as compared to the refining of crude.
Diesel Hydrodesulphurization	Also deferred at present time; this item deferred until new federal government standards for diesel fuel are established.	Decision not to proceed at this time related to low sulphur content of plant feed stock and the fact that diesel and furnace oil products now meet the required standards. To be advanced if improved standards required.
Flare Relocation/Low Level Flare	Low level flare complete; will undergo testing in August. Relocation of existing high level (emergency) flare to be undertaken upon construction of balance of crude unit.	When in operation only the low level flare will customarily be used; high level flare is emergency backup only.
Noise Reduction Program	At this stage of expansion, the Chevron Noise Control Program has reduced the refinery property line noise emission to a level which is currently in compliance with daytime (65 dBA - 7 a.m. to 10 p.m.) Burnaby Noise By-law Standard. In addition the refinery noise emission at the nearby residential areas has been reduced to a level which is difficult to distinguish over the normal residential background noise level.  The successful reduction of the refinery noise emission is primarily due to major noise reducing modifications to the refinery precipitator, furnaces, control valves, compressors and by the addition of the CO boiler. Chevron Officials are confident that the finalization of various noise reducing modifications and continuation of the Company's noise control program, the refinery property line noise emission should be further reduced to a level which is in compliance with the Burnaby night-time (60 dBA - 10 p.m. to 7 a.m.) standard.	

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<u>Item</u>	<u>Status</u>	<u>Comments</u>
Vapour Recovery System on Steam Traps, Seals, Vents, and Drains to the Flare System.	Program under way to collect and utilize escaped vapours; converting to mechanical seals, should be complete by some time next year.	Program under way.
Pipeline Protection System	Collection system is complete and in operation.	Refinements from system originally proposes: interceptor drain system through Confederation Park, discharges to tight line in 5.7 acre parcel east of Willingdon and discharges to the foreshore basin.
Spent Caustic Collection	Tank installed and in operation.	Caustic materials stored and re-used, eliminating their discharge to effluent water system.
Perco Unit Drains	Installed and in use.	Copper solution collected and recycled, eliminating discharge to effluent water system.
Painting Program	All new completed process facilities have been painted in aesthetic pastel colours, and tank repainting program continuing.	Visual improvement in new facilities and repainted older elements.
LPG Storage Spheres	Not yet constructed - existing LPG storage in existing tank field conforms to NPLP standards and is acceptable to Fire Prevention Office.	The specialty feed stocks for the new plant are essentially debutinized. The production of LPG for sale has decreased with the operation of new facilities allowing deferment of the new storage facility. If production increases, refinery would install low profile cylinders in Area II at a screened location as per Master Plan to replace existing containers in Area I.
Other Buildings in Process Area	Several support buildings including shop and store house buildings, control houses, and the like have been constructed and completed in Area II.	Consistent with modernization program.
Hydro Sub-Station	New 60 Kv sub-station installed and in operation.	New sub-station adjacent Penzance Drive, 60 Kv capacity, supplied from 2 independent B.C. Hydro feeder systems - improves reliability of electric service, minimizing changes for a complete shut down due to electrical service reasons.
Landscaping	Landscaping complete adjacent new sub-station; minor landscaping provided in conjunction with individual buildings.	As per Master Landscape Plan.

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3.2.2. OPERATIONS

<u>Item</u>	<u>Status</u>	<u>Comments</u>
Sulphur Reduction by 99%+	Achieved by new sulphur plant.	Apparently complies with GVRD's Level A permit requirement, subject to confirmation by further testing.
Air Emissions: Ringlemann No. 1 stack emissions, oxygen analyzers on major stacks, 2-stage separators and precipitation on FCC	Chevron advises that every stack now meets Ringlemann No. 1, and also meets the "stack loading" provisions of permit.	Requirements apparently met, subject to confirmation by GVRD.
Monitoring of SO <sub>2</sub> ground level concentration	Chevron is still monitoring but GVRD will be taking responsibility for monitoring program now that sulphur plant is in operation. Chevron is a participant in the financing of the GVRD Air Monitoring facilities.	Upon analysis of GVRD sampling data, the Regional District will be able to provide information on refinery air emission quality. Chevron officials confident SO <sub>2</sub> standards will be easily met.
Curtailement of operations to maintain Maximum Desirable limits in event of upset	Part of refinery's standard operating procedure.	GVRD monitoring will indicate effectiveness of operating procedure under these conditions.
Shutdown procedures	Plant operating procedures dictate that units installed for environmental protection (such as CO Boiler and sulphur recovery plant) are to be shut down only when plant units containing substantial quantities of contaminants are also out of operation, in order to meet ground level concentration permit criteria.	
Flare Operations	Standard operating procedure provides that scheduled shutdowns are to be done with a new low-level flare only and will not exceed its capacity.	Procedure eliminates the need to use the elevated flare for this purpose.
Oily Balast Water	No balast water treating facilities required as marine transport utilize barges only - no tankers.	No balast water involved in barge operations.
Air Quality-GVRD Permit Requirements	Many of the major components necessary are constructed and in operation.	Major improvements have been made; await GVRD monitoring results.
Sulphur Content and feed stock	Criteria required use of low sulphur content Peace River crude for 80% of the post-expansion refinery crude run. The use of desulfurized light oil has allowed a further reduction in the total sulphur content of feed stocks.	Sulphur content of Peace River crude is 0.4%, by weight, while the content of Great Canadian Oil Sands desulfurized light oil is 0.17%.



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Fire Protection	The Company advises that its facilities and operations conform to all the pertinent NFPA and API standards, and that they meet the requirements of the Fire Prevention Officer in all respects.	The Fire Prevention Officer confirms his satisfaction with operations relevant to fire prevention and protection measures.
Fire Truck	The Company advises that a new fire truck has been purchased and is located on the site; ongoing training program is held weekly.	The requirements of the Fire Prevention Office have been satisfied regarding this item.
Steam Turbine Spares or Standby Equipment on Sulphur Plant	The sulphur plant has been constructed in such a way that electric power is supplied from either of the 2 major power sources serving the refinery. In this way, continued operation is assured except in the highly unlikely circumstance that both electric power sources (Horne-Payne sub-station and Barnard sub-station) were to fail simultaneously.	This provision ensure continuing operation of the sulphur plant under upset conditions short of absolute failure of all power from both sources. Even if this unlikely situation were to arise, the emissions from flue gases would not exceed current SO <sub>2</sub> emission levels, and of course the refinery would immediately undergo a controlled systematic shutdown.

3.3 TANK FARM AREA I

3.3.1 FACILITIES

<u>Item</u>	<u>Status</u>	<u>Comments</u>
Vapour Recovery System - Tank Truck Loading Rack	Bottom loading facilities under construction at this time for all light products (gasoline and diesel).	In discussions between the GVRD and Chevron it was agreed that a bottom loading installation would be pursued as the first stage in the vapour recovery program. The results of this stage will be monitored, and if the GVRD standards are not met, then further vapour recovery measures will be undertaken.
Tank Modification to reduce hydrocarbon emissions	Reallocation of products within the tanks has been completed and floating roofs with improved seals are in place on all gasoline storage tanks; all emission requirements and the air pollution permit are met.	Reallocation, floating roofs and improved seals were required to reduce the emissions and free hydrocarbons from high vapour pressure products under the air pollution permit.
New Tank Construction	A sole new tank in Area I that has been approved under the program is nearing completion.	The tank location, grading, and screening was designed to minimize view of the tank from the residential area, and this has been, we believe, successfully achieved.
In-line Blending	This item has been deferred for the present time, again in response to reduced product demand. An understanding exists that no additional new gasoline tanks will be approved prior to installation of the blending system.	The function of the gasoline blender is to allow combination of products without relying on large amount of intermediate storage tankage. No new gasoline tanks should be approved until the blending system is in place.

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Foreshore Basin	Complete and in operation.	This foreshore basin forms a last stage holding pond for storm runoff and discharge from the pipeline protection system prior to discharge to the Inlet. Skimming and pumping equipment has been installed to remove any colours of oil that might appear in this final trim stage.
Tank Car Loading and Foreshore Landscaping	The loading rack is complete and in operation and foreshore landscaping adjacent the facility has been provided.	Installed as per program.
Removal of LPG Cylinders	As noted in Section 3.2.1 above, the LPG cylinders have not to date been removed from the tank farm area.	Deferred due to lack of requirement for additional LPG storage; present situation is acceptable to the Fire Prevention Office.
LPG Loading Rack	Not yet constructed.	Due to small market demand for LPG products delivered by truck, an expanded LPG loading rack is not presently justified (most LPG now goes out by tank car).

3.3.2 BOUNDARY DEFINITION AND TREATMENT

<u>Item</u>	<u>Status</u>	<u>Comments</u>
Land Exchange Program	Initial land exchange complete, including cancellation of redundant roads and lanes, vesting of title, securing of easements in return for Chevron-owned properties.	Initial land exchange complete as per proposal.
Rezoning of specified properties related to new boundary definition	Rezoning Reference #50/74 was finally adopted on September 15, 1975.	Completed as per program.
Green belt/buffer strip	Agreement reached between Council and Chevron; negotiations undertaken by Chevron and preparations being made for transfer of recently acquired parcel to the Corporation for inclusion in the park strip.	Chevron maintain a budget for appropriate acquisitions under this program and the first transfer is expected to be made in the near future.
Lease of portion of 5.7 acre parcel.	Council have approved the entering of a lease for the westerly portion of the 5.7 acre parcel east of Willington Avenue; in preparation at present.	Nearing completion as per program.

<u>Item</u>	<u>Status</u>	<u>Comments</u>
Major Land-scaping Program	The first phase of the land-scaping program as approved by Council has been completed; a smaller final phase is yet to be completed.	Staff are working with Chevron to complete the design and installation of the final phase (vicinity of Eton Street, Rosser and Madison Avenues) on a priority basis.
Fence Construction	Boundary fencing in the Block 34 area completed; reflecting the setbacks requested by the North Slope Ratepayers Association; the public access easements associated with the setbacks have been registered.	New fencing portion generally complete; replacement and maintenance of fencing continuing.

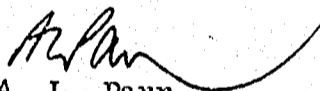
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### 3.4 CONCLUSIONS

The modernization and expansion program for the Chevron refinery is well on its way to completion within the parameters established for the initial approval in principle. Of the elements remaining to be completed, the majority are related primarily to the expansion of throughput capacity rather than to environmental improvements. That is to say, virtually all of the environmental protection and enhancement measures have been initiated by the Company and are either operating satisfactorily or undergoing testing. Any remaining items are being pursued by Chevron staff in consultation with Municipal Departments as required.

When definitive results are available from the GVRD air quality control monitoring program and the PCB with reference to effluent water quality, the information will be made available to Council, should it so desire.

The foregoing is for the information of Council.

  
A. L. Parr,  
DIRECTOR OF PLANNING.

DGS: cm

c.c. Chief Public Health Inspector