ITEM 7
MANAGER'S REPORT NO. 57
COUNCIL MEETING Aug. 29/77

Re: DISSIPATION OF SO2
OBJECTION TO THE GRANTING OF AN AIR POLLUTION PERMIT
TO B. C. HYDRO FOR THE BURRARD THERMAL PLANT
(Item 22, Report No. 51, July 18, 1977)
(Item 10, Report No. 43, June 13, 1977)
(Item 32, Report No. 51, July 18, 1977)

On June 30, 1977, Council in connection with a discussion on the subject application for an air pollution permit requested information as to the projected ground level concentration of SO2 that would result from an indicated stack emission of 1600 p.p.m. SO2 at the Burrard Thermal Plant.

The method used for the estimation of ground level concentration is known as a diffusion calculation. As we have neither the facilities nor the required information to perform this calculation, the matter was referred to Mr. W. N. Venables, Director of the Provincial Government's Pollution Control Branch, for comment. An acknowledgment dated August 12, 1977 from K. K. Bhattacharyya, a professional engineer with the Industrial Section of the Branch, is attached.

This information has been referred to the Chief Public Health Inspector for his review and analysis and his comments concerning the projected effect on Burnaby will be provided to Council as soon as this review is completed.

This is for the information of Council.

* * * * * *

ITEM	7
MANAGER'S REPORT NO.	57
COUNCIL MEETING	Aug. 29/77

114

Province of
British Columbia

Ministry of
The Environment

POLLUTION CONTROL BRANCH

1106 Cook Street
Victoria
British Columbia
~~V8T 2W1~~ V8V 4S5
Phone: 387-5321

YOUR FILE 0262100-AA-4789

OUR FILE

August 12, 1977

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

Attention: Mr. Melvin J. Shelley,
Municipal Manager

Gentlemen:

Application Pursuant to Pollution Control Act on behalf of British Columbia Hydro & Power Authority, located at Ioco, dated April 4, 1977

This will acknowledge receipt of your letter dated July 29, 1977.

As requested in your letter, we are enclosing a copy of the computer print-out for the dispersion estimates carried out by our program. The ground level concentrations of SO_2 thus estimated are based on residual oil (2% sulphur) burning. To obtain the ground level concentrations for 2.8% sulphur oil (approximately equivalent to 1600 ppm SO_2 in the flue gas), the values shown should be multiplied by a factor of 1.4.

Regarding your request for our comments on the monitoring program during the recent plant operation, please be advised that to our knowledge, the plant was operated on residual oil (average sulphur content of 1.5%) and on partial load from April 1 to May 1, 1977. On average two turbogenerators were operated on a daily basis during the above period. There was no operation on nine days. The ambient SO_2 monitoring results obtained during this period at two locations are as follows:

SO_2 Concentration	Location A	Location B
Exceeding 0.17 ppm (1-hr average)	None	For 1 hour on April 4 For 1 hour on April 5 For 2 hours on April 6

Location A: Texaco Road, Barnet

Location B: R.R. 1, Anmore

Note: On April 4, 5 and 6, two turbogenerators were running at full load

Trust the above information is satisfactory.

Yours very truly,

K.K. Bhattacharyya, P.Eng.
General Section
Industrial Division

Encl:
KKB:mn

cc. Regional Manager -
Lower Mainland

DISPERSION ESTIMATES FOR FLAT TERRAIN - POLLUTION CONTROL BRANCH

AA-4789, B.C. HYDRO & POWER AUTHORITY, BURRARD T.G.S., IOCU.

DIAMETER OF STACK - M	4.25
HEIGHT OF STACK - M	48.77
STACK EXIT TEMPERATURE -K	410.90
SAMPLING TIME - HRS.	1.00
FLOW RATE - CUBIC METER/SEC	198.43
CONTAMINANT RATE - GM/SEC	452.41 ≅ 2% S (approx.) IN OIL.
MOLECULAR WT. OF CONTAMINANT	64.00
CRITICAL WIND SPEED -M/SEC	5.81
DOWNWIND DISTANCE WHERE MAX. CONC. OCCURS -M	3379.52

SAMPLING TIME	G.L. CONCENTRATION -PPM
10 MIN.	0.2393
30 MIN.	0.1985
60 MIN.	0.1764
8 HOURS	0.1239
24 HOURS	0.1028

NOTE: THE RESULTS ARE FOR ONE TURBO-GENERATOR UNIT. THERE ARE SIX UNITS OF SIMILAR DESIGN.

TO OBTAIN DATA FOR 1600 PPM OF SO_2 (equivalent to about 2.8% S in the fuel) MULTIPLY THE VALUES BY A FACTOR $\frac{2.8}{2}$ or 1.4.

ATMOSPHERIC CONDITION - NEUTRAL

GROUND LEVEL CONCENTRATIONS -PPM 1.0 HOUR AVG.

WIND SPEED -MPS	DOWNWIND DISTANCES FROM SOURCE -M							
	500.00	1000.00	2000.00	4000.00	6000.00	8000.00	10000.00	12000.00
2.24	0.0000	0.0000	0.0048	0.0712	0.1092	0.1136	0.1040	0.0933
4.47	0.0000	0.0067	0.1037	0.1653	0.1353	0.1060	0.0850	0.0699
6.70	0.0001	0.0403	0.1688	0.1585	0.1118	0.0819	0.0636	0.0513
8.94	0.0005	0.0766	0.1846	0.1385	0.0918	0.0654	0.0501	0.0400
13.41	0.0036	0.1151	0.1713	0.1056	0.0662	0.0460	0.0349	0.0276

ITEM 7
MANAGER'S REPORT NO. 57
COUNCIL MEETING Aug. 29/77

DISPERSION ESTIMATES FOR FLAT TERRAIN - POLLUTION CONTROL BRANCH

AA-4789 B.C.HYDRO & POWER AUTHORITY,BURRARD T.G.S.,IOCO

DIAMETER OF STACK - M	4.25
HEIGHT OF STACK - M	46.77
STACK EXIT TEMPERATURE -K	410.90
SAMPLING TIME - HRS.	1.00
FLOW RATE - CUBIC METER/SEC	198.43
CONTAMINANT RATE - GM/SEC	452.41
MOLECULAR WT. OF CONTAMINANT	64.00
CRITICAL WIND SPEED -M/SEC	5.81
DOWNWIND DISTANCE WHERE MAX. CONC. OCCURS -M	3379.52

SAMPLING TIME	G.L. CONCENTRATION -PPM
10 MIN.	0.2393
30 MIN.	0.1985
60 MIN.	0.1764
8 HOURS	0.1239
24 HOURS	0.1028

ATMOSPHERIC CONDITION - NEUTRAL

GROUND-LEVEL CONCENTRATIONS -PPM 1.0 HOUR AVG.

WIND SPEED -MPS	DOWNWIND DISTANCES FROM SOURCE -M							
	1200.00	1400.00	1600.00	1800.00	2200.00	2400.00	2600.00	2800.00
2.24	0.0000	0.0002	0.0008	0.0022	0.0086	0.0138	0.0200	0.0270
4.47	0.0197	0.0388	0.0611	0.0834	0.1211	0.1353	0.1463	0.1546
6.70	0.0741	0.1069	0.1341	0.1546	0.1777	0.1825	0.1841	0.1834
8.94	0.1158	0.1461	0.1666	0.1788	0.1860	0.1843	0.1805	0.1755
13.41	0.1466	0.1647	0.1727	0.1741	0.1660	0.1595	0.1522	0.1448