ANNEX

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THE STUDY OF ENVIRONMENTAL EFFECTS

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AND INTEGRATED STEEL HILL

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This Scope of Work is agreed by the following two authorities concerned;

The Jurong Town Corporation,
Government of the Republic of Singapore.

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Japan International Cooperation Agency, the Official Agency responsible for the implementation of technical cooperation programmes of the Government of Japan.

To confirm the aforementioned, the Scope of Work is herewith attached and signed by the responsible personnel of the said authorities concerned.

Date: 19th December 1980

Issued at: Singapore

For the Jurong Town Corporation, Government of the Republic of Singapore.

For Japan International Cooperation Agency, the Government of Japan.

YING YEX HANG
PRINCIPAL DIRECTOR (TECHNICAL)
JURONG TOWN CORPORATION
GOVERNMENT OF THE REPUBLIC OF
SINGAPORE

菊岛一郎

ICHIRO KIKUSHIMA
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ENVIRONMENTAL PROTECTION GUIDANCE
DIVISION
INDUSTRIAL LOCATION & ENVIRONMENTAL
PROTECTION BUREAU
MINISTRY OF INTERNATIONAL TRADE AND
INDUSTRY

IN THE PRESENCE OF:-

レキン

LIM SAK LAN
SENIOR DIRECTOR, ENGINEERING
JURONG TOWN CORPORATION

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READ, INDUSTRY DIVISION
HINING & INDUSTRIAL PLANNING
AND SURVEY DEPARTMENT
JAPAN INTERNATIONAL COOPERATION
AGENCY

1. Introduction

In response to the request of the Government of the Republic of Singapore, the Government of Japan has agreed to extend the technical assistance to conduct the study on the environmental effects of coal firing power stations and the integrated steel mill which will be sited in the new industrial estates of the Republic of Singapore, which assistance is given in accordance with the laws and regulations in force in Japan.

The study will be carried out through The Japan International Cooperation Agency (hereinafter referred to as JICA), which is the official agency responsible for the implementation of technical cooperation programmes of the Government of Japan, in close cooperation with the Government of the Republic of Singapore and authorities concerned.

2. Objectives

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The objectives of the study are:-

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- (1) To conduct the field survey in terms of air and water qualities within and at surrounding areas of Pulau Seraya, Jurong, Pulau Tekong, where the proposed coal firing power stations and the integrated steel mill are to be sited.
 - (2) To conduct the simulation study by computers based on the data obtained from the above said field survey and to assess the estimated pollution loads when these plants are in operation.

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3. Scope of the study

3-1 Survey Areas: Server and Serv

(A) Fulau Seraya, the proposed site of the coal firing power station and its surrounding areas,

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- (B) Pulau Tekong, the proposed site of the coal firing power station and the integrated steel will, and its surrounding areas.
- (C) Other areas mutually agreed to be surveyed.
- 3-2 Survey Plan
- (A) Air Quality Survey and grant of the survey and the survey and
 - i) Long Term Measurement
 - a) Sulphur dioxide (SO2) concentration

b) Wind directions and velocity at ground surface

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- c) Net radiation
- d) Temperature

Notes: Period of measurement - 1 year

ii) Short Term Keasurement

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- a) Vertical profile of wind directions and velocity
 Notes: Period of measurement two days each at two
 stations.
- iii) Simulation Simulation of sulfur dioxide (SO2)
- (B) Water Quality Survey
 - i) Reasurement:
 - a) Current directions and velocity
 - b) Chemical Oxygen Demand (COD)
 - c) Water temperature and salinity

Notes: Period of measurement - 2 weeks per measuring point for the above (a), once per measuring point for the above (b) and (c), and 1.5 months in total including preparation works.

- ii) Simulation Simulation of COD and temperature
- 4. Time Schedule

As shown in ANNEX I (Subject to change)

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S. Report

- 5-1 Interim Report
- march i) and 30 copies, and appropriate the religious
- ii) The interim report will be submitted in English to the Government of the Republic of Singapore within 5 months after the completion of the simulation for water quality survey.
- iii) The interim report will contain the results of the water quality survey and refer to the progress of air quality survey.
 - iv) The Government of the Republic of Singapore will provide the comments to JICA through the Embassy of Japan within I month after receipt of the interim report.
 - 5-2 Draft Final Report
- i) 30 copies

No. 1 House day (1944) (1825-1967) (1967)

ii) The draft final report will be submitted in English within 4 months after the completion of the simulation for air quality survey.

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- iii) The Government of the Republic of Singapore will provide the comments to JICA through the Embassy of Japan within 1 month after receipt of the draft final report.
 - 5-3 Final Report

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- i) 50 copies together with 50 copies of abstracts.
- ii) The final report will be submitted in English within 2 months after receipt of the comments of the draft final report.

6. Contribution of the Government of the Republic of Singapore

- 1. The Government of the Republic of Singapore will assign a qualified counterpart to be responsible for liaison and cooperation with the team conducting the survey. (hereinafter referred to as Survey Team)
- 2. The Government of the Republic of Singapore will provide the Survey Team with the necessary and available information and data:
- 3. The Government of the Republic of Singapore will make arrangements for the Survey Team to Visit the authorities concerned.
- The Government of the Republic of Singapore will provide the Survey Team with an office, sites for monitoring stations, laboratory testing facilities; storage space, temporary site office, transportation and boats as are necessary for the survey (ANNEX II)
- 5. The Government of the Republic of Singapore will exempt the Survey Team from taxes and duties on machinery, equipments and materials brought in Singapore by the Survey Team.
- 6. The Government of the Republic of Singapore will exempt the members of the Sorvey Team from any tax, including import and export duties imposed on the members personal effects.
- 7. The Government of the Republic of Singapore will make an effort to ensure the securities of machinery, equipments and materials brought in Singapore by the Survey Team.

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7. Contribution of the Covernment of Japan

- The Government of Japan, through JICA, will provide a Survey Team who will conduct the field survey and simulation according to the Time Schedule (ANNEX I)
- 2. The Government of Japan vill conduct during the stay of the Survey Team in the Republic of Singapore the training course for the Singapore counterparts to further their skills in operating and maintaining the necessary measuring machinery and equipments for the period of the field survey.

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TIME SCHEDULE FOR THE STUDY OF ENVIRONMENTAL

EFFECTS OF COAL FIRING POWER STATION AND INTEGRATED STEEL MILL IN THE REPUBLIC OF SINGAPORE

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The Detailed Information on Provision of Facilities by the Government of The Republic of Singapore

(1) Air Quality Survey

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- 1. Monitoring Stations

 About 7 monitoring stations are to be established in the surrounding areas of the proposed sites. The land or places for these monitoring stations should be provided.
- The electricity connection and supply for monitoring stations at mutually agreed sites should be provided by the Government of the Republic of Singapore.
- 3. The Facilities to Accommodate the Chemical Reagents
 The facilities for storage, preparation of chemical
 reagents and distilled water should be provided at Jurong
 Town Corporation's Laboratory or National University of
 Singapore's Laboratory.
- 4. The Government of the Republic of Singapore will provide necessary personnel for the daily operation and maintenance of the monitoring stations.

(2) Water Quality Survey

- 1. The Laboratory Testing Facilities for Chemical Analysis
 The laboratory testing facilities for chemical analysis of
 aqueous samples shall be provided at Jurong Town
 Corporation's Laboratory or National University of
 Singapore's Laboratory.
- The Storage Space for the Measuring Equipments and Materials
 The storage space to be provided for the measuring
 equipments and materials shall be big enough for opening
 of the packages and adjusting the equipments.
- The Small Boats for Survey
 The Survey Team will require 3 small boats for about 20 days in total. The Government of the Republic of Singapore will provide the Survey Team with such number of boats as are necessary for the survey.

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[3] Handling of Measuring Equipments

All the measuring equipments necessary to conduct the field survey will be, in principle, brought in and out by the Survey Team. The Government of the Republic of Singapore is requested to provide facilities and arrangement on the followings:-

- (a) Custom clearance including loading and unloading
- (b) Inland transportation
- (c) Packing and unpacking

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MINUTES OF MEETINGS

FOR

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THE STUDY OF ENVIRONMENTAL EFFECTS

OF COAL FIRING POWER STATIONS

AND INTEGRATED STEEL HILL

DECEMBER 1980

MINUTES OF MEETINGS

FOR

THE STUDY OF ENVIRONMENTAL EFFECTS

OF COAL FIRING POWER STATIONS

PRINTED TWO RESIDENCES TOY

AND INTEGRATED STEEL WILL

19TH DECEMBER 1980

CONFIRMED BY:

YING YOU HANG
PRINCIPAL DIRECTOR (TECHNICAL)
JURONG TOWN CORPORATION
GOVERNMENT OF THE REPUBLIC OF
SINGAPORE

ICHIRO KIXUSHIMA
LEADER OF THE JAPANESE
PRELIMINARY SURVEY TEAM
DEPUTY DIRECTOR
ENVIRONMENTAL PROTECTION
GUIDANCE DIVISION
INDUSTRIAL LOCATION & ENVIRONMENTAL
PROTECTION BUREAU
MINISTRY OF INTERNATIONAL TRADE AND

INDUSTRY

HINUTES OF MEETINGS

The Japanese Preliminary Survey Team and the Singapore Counterpart had discussion on the Environment Effects of the Coal Firing Power Stations and Integrated Steel Kill and the following were mutually agreed upon.

Data of the Proposed Coal Firing Power Stations and the Integrated Steel Kill

(A) Coal Firing Power Station

- The Japanese side requested for information on the proposed coal firing power station.
- (i) After discussion with the Singapore side which included P.U.B:, the assumptions given in Appendix A were agreed upon.
- iii) It was indicated that one coal firing power station will be on Pulau Seraya and one on Pulau Tekong. (See Appendix D)

Integrated Steel Hill (B)

- The Singapore side indicated that the proposed steel mill will use about eight million tons of iron ore per year and producing about one million tons of steel product by the direct reduction process using coal.
- requested for technical ii) The Japanese side information similar to those in Appendix A.
- iii) The Singapore side replied that it is not in a position to provide, except that the location will be in Pulau Tekong (See Appendix D), Hovever, it will try to obtain the information requested by the Japanese side at the earliest possible date.
- iv) It was mutually agreed that this matter will be further discussed and resolved when the next water quality survey team visits Singapore.

(C) Data on Emission Sources (Present & Future 1990)

detaile (a) Air Quality

- The Japanese side requested for emission data both present and future and suggested that if such data is not available then a survey be carried out to obtain the same.
 - The Singapore side agreed to carry out such survey. ii)
- iii) The Japanese side indicated that these data should be made available by June 1982.
- iv) The Singapore side agreed to the above.

(b) Water Quality

- i) The Japanese side requested for effluent data present and future including industries located on the southern islands and suggested if such data is not available then a survey be carried out to obtain the same.
- (ii) The Singapore side agreed to carry out such survey.
- The Japanese side indicated that these data should iii) be made available by Hay 1981.
- iv) The Singapore side agreed to the above.
- (c) Malaysian Development Plan (North of Straits of Johore)
 - The Japanese side requested information, regarding industrial development plan immediately north of the Straits of Johore.
- ii). The Singapore side replied that it is not in a position to do so.
 - It was mutually agreed that effects of the Malaysian iii) developments shall not be considered.

(D) Konitoring Points

Based on survey carried out by Japanese Preliminary Survey Team, the following monitoring points were agreed upon.

(a) Air Quality

- SO2, wind direction, wind velocity 7 points
- និស្សាស និស្សា សម្រាប់ ស្ថិត សូម្បី 🔾 📢 Net radiation | l point | Vertical distribution of temperature - | point ii)
- iv) Pilot balloon observation
- (b) Water Quality
 - Current direction, current velocity 10 points (around in the second at the course of another than the figure proposed gifilig sik (i) sites

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ii) Water temperature, salinity, COD and the first observation. Six signal Sa . -, 30 points (around the model factorial and species of anythe politically over the the two ារប្រភព គេកាត់ស្រាវិទ្យា bszogora sites

(c) Clearance from Competent Authorities

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The Singapore side will arrange and obtain necessary clearance from the competent authorities to conduct the above surveys.





(E) Simulation Methods

- i) The Japanese side stated that for SO₂ diffusion calculation, Plume Puff model will be adopted and predict a yearly concentration of SO₂.
- ii) As for water temperature and COD diffusion calculation, FEN (Finite Element Method) will be adopted.
- iii) The Singapore side agreed to the above methods.

(F) Evaluation on the Environmental Effects and Impacts

- i) The Japanese side enquired about the environmental ambient standards of SO2 and COD.
 - ii) The Singapore side replied that it has only the emission standard but not the ambient standard.
- 111) The Japanese side stated that it will predict the levels of SO₂ and COD from the coal firing power stations and integrated steel mill.
- iv) The Japanese side stated that it will also be able to predict the total levels of SO₂ and COD in the year 1990 if adequate datas on the emission are collected from the survey referred in para C.
 - V) It was notually agreed that if no ambient standard is indicated by the Singapore side, the Japanese side will not be in a position to comment on the levels of SO2 and COD and in any case further evaluation will have to be carried by the Singapore side.

(G) Maintenance of monitoring stations

- i) The Japanese side requested the Singapore side to provide the necessary personnel for the daily operation and maintenance of the monitoring stations as indicated in Appendix 'B'.
- Singapore side agreed to provide the personnel required.

(H) Survey Schedule

- i) The Japanese side mentioned that the schedule may need to be altered. Such alteration will be mutually discussed and agreed upon.
- ii) The Singapore side agreed to the above.

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5(1) Contributions

- i) The Japanese, side requested that land and sea transport for future survey team and equipments and their local counterparts be provided in accordance with schedule in Appendix 'C';
- ii) The Singapore side agreed to provide the same.
- At the commencement of the survey, the Japanese side will arrange for all the equipments to be delivered to Jurong Town Hall. The Singapore side will arrange for the transportation of the equipments from the Juroug Town Hall to the various monitoring stations and will be responsible for the setting up of the stations.
 - iv) On completion of survey, the Singapore side will arrange for transportation of all equipments from the monitoring stations back to Jurong Town Hall and the Japanese side will arrange to collect the same from Jurong Town Hall.

(J) Datas/Reports

i) The Singapore side requested that information supplied to the Japanese side shall be treated as confidential materials. Similarly the results and report of the study are to be treated also as confidential.

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ii) The Japanese side agreed to the above.

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Assumption on Coal Firing Power Station

	Generated Output	350 MW x 2		
e y e e e e e e e e e e e e e e e e e e	Fuei	Coal		
		Calorific Value 7,000 Kcal/kg Sulphur 1% (vt%) Consumption 154 x 10 ⁴ t/year (operation rate 70%)		
	Stack	Gas Volume 182 x 10 ⁴ Km ³ /h Gas Temperature 150°C (without desulfurization of flue gas)		
		Gas Discharge Velocity 30 m/s Reight 200m		
	Cooling Sea Water	Azount 29.4 m ³ /s Temperature difference 7°C		
	Effulent	Volume 1,200 m ³ /d COD 160 mg/1		

The sites of stacks and outlets are as shown in Appendix D





ON THE MAINTENANCE OF MONITORING STATIONS

	Qualified Persons	Regular Persons
1 SO ₂ Honitor	Once every 20 days:- a Absorption solution and chart sheet, ink should be refilled or replaced	Once per everyday he should check the moni- toring station whether it is operating properly without any trouble or not
	b Calibration of monitor should be conducted	
	c Chart data for last 20 days should be sent to Japan through JICA, Singapore	
2 Wind Speed Heter	Same as above but no calibration required	Same as above
3 Net Solar Radiation Flux Meter and Air Thermoneter	Same as No (2) above	Same as No (1) and (2) above





TIME SCHEDULE FOR FIELD SURVEY IN SINGAPORE (AIR QUALITY)

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MINUTES OF MEETINGS

FOR

THE STUDY OF ENVIRONMENTAL EFFECTS

OF COAL FIRING POWER STATIONS

AND INTEGRATED STEEL HILL

FEBRUARY 1981

HINUTES OF HEETINGS

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THE STUDY OF ENVIRONMENTAL EFFECTS

OF COAL FIRING POWER STATIONS

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Confirmed by:

YING YOK LANG
PRINCIPAL DIRECTOR (TECHNICAL) JURONG TOWN CORPORATION COVERNMENT OF THE REPULIC OF

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SINGAPORE

HASATOSHI TOMODA ENVIRONMENTAL PROTECTION GUIDANCE DIVISION INDUSTRIAL LOCATION & ENVIRONMENTAL. PROTECTION BUREAU

MINISTRY OF INTERNATIONAL TRADE ASSIST INDUSTRY

FOR JAPAN INTERNATIONAL COOPERATION ACENCY

Minutes of Meeting

The Japanese Survey Team and the Singapore Counterpart had discussion on the Environmental Effect of the Coal Firing Power Stations and Integrated Steel Hill and the following were mutually agreed upon.

Data of the Proposed Coal Firing Power Stations and the Integrated Steel Bill

(A) Coal Firing Pover Station

- (i) The Japanese Side worked out a revised set of assumptions on the proposed coal firing power stations.
- (ii) After discussion with the Singapore Side which included the P.U.B., the assumptions given in Appendix 'A' were agreed upon.
- (iii) These assumptions will supercede those contained in Appendix 'A' of Minutes of Meetings dated 19th December 1980.

(B) Intergrated Steel Hill

- (i) The Japanese Side showed a set of draft assumptions on the proposed integrated steel mill, studied and calculated based on the data provided by the Singapore side.
- (ii) After discussion with the Singapore Side, which included E.D.B., the assumptions given in Appendix 'B' were agreed upon.
- (iii) These assumptions will be adopted for the purpose of the study.
- (iv) The location of the stacks and effluent points are as indicated on the plan (Appendix 'C') attached.

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Assumption on Coal Firing Power Stations

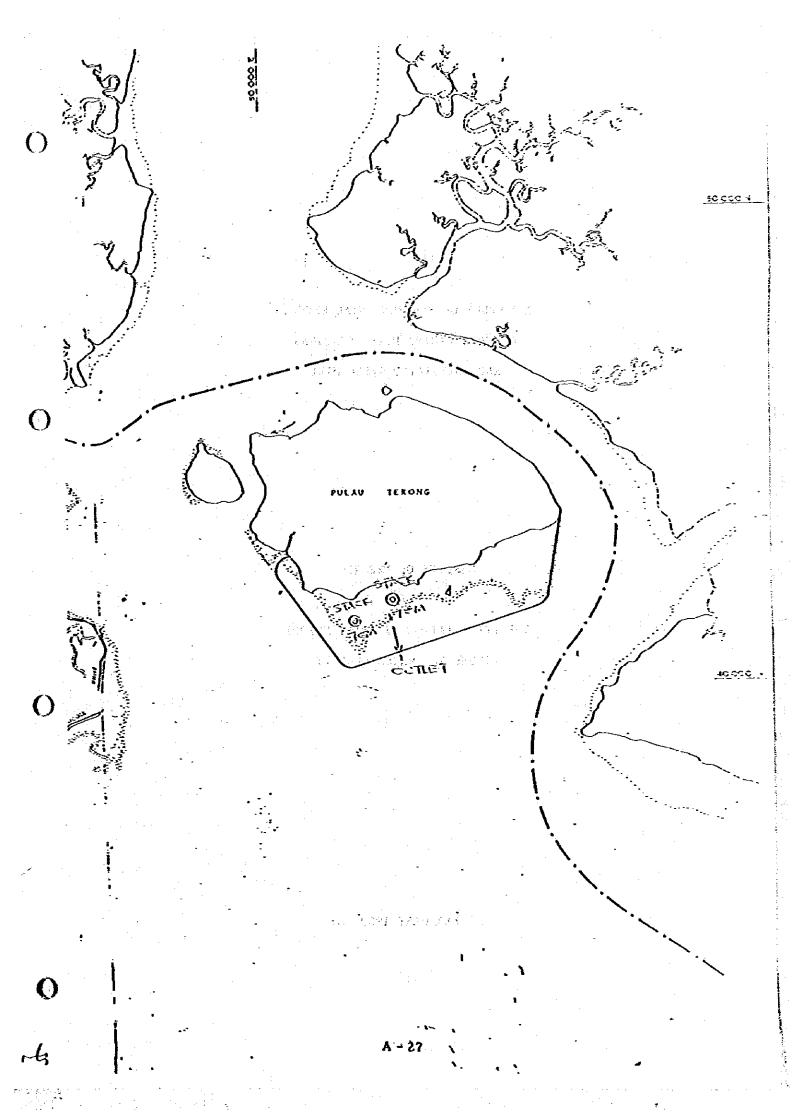
Location	P. Sereys	P. Tekong
General Capacity	100	700 HH (350 HH × 2)
		entropy of the state of the sta
	22 MI/ko	27 KJ/kg
Sulfur Consumption	lX (vt) 1.7 Ht/year	1.6 Ht/year
Stack		
Height Gas Température		183 m 150 °c
Gas Volume Gas Discharge	2,650,000 Nm ³ /h 25 m/s	2,470,000 Nm ³ /h 25 m/s
Velocity Angle of the second	(without flue gas desulfurization)	(without flue gas desulfurization)
Cooling Sea Water		
Volume	110,000 m ³ /h	100,000 m ³ /h
Temperature Difference	8.3°c	8.3°c
Effluent Yolume (COD) Yn	1,500 m ³ /d 50 mg/1	1,500 m ³ /d 50 mg/1
	(Boiler air heater washin neutralisation & mixing plant effluent)	g effluent, after vith vater treatment

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Assumption on Integrated Steel Hill

Location	Pulau Tekong
Production Process	Grate Kiln and Electric Arc Furnace Steelmaking
Ore Feed	Lump Ore (Fe 62.62, S 0.0182) 800 x 104t/year
Product	Bar and Wire Rod 100 x 104t/year Balance (reduced from) for Export
Reductant	Coal (S livt) Calorific Value 30 HJ/kg
	Consumption 336 x 104t/year (Operation rate 83%)
Fuel	Heavy Oil (S 3%ut) Consumption 431 x 10 ³ kl/year(Grate Kiln)
	357 x 10 ² kl/year(Reheating Furnace)
Stack	Grate Kiln Process Gas Volume 5 x 106 km ³ /h
	Gas Temperature 100°c (vithout desulfurization of flue gas) SO ₂ Volume 3,500 Nm ³ /h
	Gas Discharge Velocity 30 m/s Height 170 m
	Reheating Furnace Gas Volume Gas Temperature 6.3 x 10 ⁴ Nm ³ /h 500°c
	Gas Température. 500°c SO2 Volume 100 Nat ³ /h
	Gas Discharge Velocity 30 m/s Height 70 m
Effluent	Volume 9,300 m³/day (10% of total used vater)
	(COD) Hn 7 ppm





THE STUDY OF ENVIRONMENTAL EFFECTS OF COAL FIRING POWER STATIONS AND INTEGRATED STEEL HILL

HINUTES OF PEETING

THE PRESENTATION OF DRAFT REPORT VOLUME 1 - WATER QUALITY

FEBRUARY 1982

HINUTES OF MEETING

The Japanese study team for the Water Quality Survey of the Study of Environmental Effects of Coal Firing Power Stations and Integrated Steel Mill in the Republic of Singapore (Hereinafter referred to as "The Team"), sent by the Japan International Cooperation Agency (Hereinafter referred to as "JICA"), presented to the Singapore authorities a report entitled "DRAFT REPORT ON ENVIRONMENTAL EFFECTS OF COAL FIRING POWER STATIONS AND INTEGRATED STEEL MILL IN THE REPUBLIC OF SINGAPORE VOLUME 1 - WATER QUALITY".

The following is a summary of the meetings and discussions:

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- Schedule of Meetings and Participants

 The schedule of meetings and participants are listed in Annexes 1 & 2.
- 2 Presentation of the Draft Report
- 2.1 The Team presented the Draft Report which has been prepared based on the objectives, the scope of work, and information described in the following record of discussions:
 - Scope of Work dated 19 December 1980

 Minutes of Meeting dated 21 February 1981

The presentation was made by highlighting the features of the study and results.

- The Singapore authorities and the Team exchanged views on the Draft Report.
 - 1 The Singapore authorities expressed satisfaction and appreciation for the dedication, efforts and hard work put in to complete the study.
 - 2 A preliminary review of the Draft Report indicates that the contents of the Report are objective.

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- The Singapore authorities expressed the intention of making questions in order to clarify the contents of the Draft Report, if necessary
 - The Team replied to the Singapore authorities that such questions should be made to JICA's office in Singapore by 28 February 1982. The answers will be made in written form outside the final report.
- Final Report of Volume 1 Water Quality

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The Draft Report of Yolume 1 - Water Quality will be considered as final.

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The Final Report of Volume 1 - Water Quality will be submitted to the Singapore authorities by the end of Arpil 1982.

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VING YOU BANG
PRINCIPAL DIRECTOR (TECHNICAL)
JURONG TOWN CORPORATION
FOR GOVERNMENT OF REPUBLIC OF
SINGAPORE

经木腐一

VOICH SUZUKI
LEADER OF THE JAPANESE
WATER QUALITY SURVEY TEAM
FOR JAPAN INTERNATIONAL
CO-OPERATION AGENCY

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ENVIRONMENTAL STUDY WATER QUALITY SURVEY

Presentation of Draft Report

Venue: VIP Lounge, Jurong Town Hall, Singapore

Time: 9.00 am - 10.00 am

Date: 4 February 1982

Wember Lists

Japanese Report Team

Kr Yolchi Suzuki - IPCAJ, Leader, Hater Quality Survey Team

Hr Kihachi Inagaki - IPCAJ, Co-ordinator

Mr Kisaburo Nakata - MITI

Xr Kasaya Konno - HITI

Singapore Counterpart (3TC)

Hr Tang I Fang - Chairman

Hr Francis Mak - General Manager

Hr Ying Yok Hang - Principal Director (Technical)

Hr Lim Sak Lan - Senior Director (SME)

Mr Tan Suan Yong - Senior Principal Civil Engineer

Mr Hee Ah Mui Senior Civil Engineer

ENVIRONMENTAL STUDY WATER QUALITY SURVEY

Technical Session for The Discussion on The Draft Water Quality Survey Report

Venue: Jurong Town Hall, Singapore

Time: 9.30 am - 12.00 noon

Date: 5 February 1982

Kember Lists

Japanese Report Team

Kr Yoichi Suzuki - IPCAJ, Leader, Water Quality Survey Team

1 1 . . .

Hr Kihachi Inagaki - IPCAJ, Co-ordinator

Hr Kisaburo Nakata - HITI

Hr Hasaya Konno - HITI

Japanese Embassy

Mr Tokio Katayama - 1st Secretary, Commercial Attaché

Singapore Team

Kr Lim Sak Lan - Jurong Town Corporation

Hr Tan Suan Yong - Jurong Town Corporation

Hr Ree Ah Mui - Jurong Town Corporation

Hr Ng Hwee Choon - Jurong Town Corporation

Hr Chiang Kok Meng - Ministry of the Environment

Mr Foong Chee Leong - Kinistry of the Environment

Hr Jasbir Singh - Port of Singapore Authority

Hr Yang Keng Num - Port of Singapore Authority

Hr Wong Seng Chee - Port of Singapore Authority

Mr Joseph Hui - Anti-Pollution Unit

Dr Tay Joo Hwa - National University of Singapore

Dr Ng Wun Jern - National University of Sincapore

MINUTES OF MEETING

FOR

THE STUDY OF ENVIRONMENTAL EFFECTS

OF COAL PIRING POWER STATIONS

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AND

INTEGRATED STEEL MILL

23 JULY 1982

CONFIRMED BY

YING YOW HANG
PRINCIPAL DIRECTOR (TECHNICAL)
JURENG TOWN CORPORATION
ON BEHALF OF
THE COVERNMENT OF
THE REPUBLIC OF SINGAPORE

KIHACHI INAGAKI
TEAM LEADER
JAPANESE SURVEY TEAM
ON BEHALF OF
JAPAN INTERNATIONAL COOPERATION AGENCY

The Japanese Survey Team and the Singapore Counterpart had held discussions with the Relevant Authorities on future and present emission sources data for the purpose of setting up conditions and input data pertaining to the study on the environmental effects of coal firing power stations and integrated steel mill, and the following were mutually agreed upon —

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- 1 For facilities commissioned before 1975, they are permitted to continue the use of the present quality of fuel; and For facilities commissioned after 1975, they are required to use fuel which contains less than 2% of sulphur, with the exception of PUB's Senoko Power Station.
- 2 Besides the present three existing power stations, the following power stations are expected to be in operation -

a Seneko Power Station Phase III

Expected Date	ia signitika	Sulphur Content	Stack
of Operation	Capacity	of Fuel	Diameter
i June 1983	1 x 250 KW	2.8%	4.30m
ii Dec 1983	1 × 250 HW	2.8%	4.30m

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Seraya Power Station Phase I

Expe	ected Date		Sulphur Content	Stack Diameter	
ôĖ (Operation	Capacity	of Fuel		
i	1987	2 x 250 HH	2%	4.30m	
ii	1988	1 🗴 250 มพ	2%	4.30m	

The projection of growth of industries will be based on information and data provided by EDB earlier, except that the petroleum refining industries will maintain the present level of production until 1990.

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