

ภาคผนวก ง

ใบรับรองผลการตรวจวัดและวิเคราะห์

คุณภาพอากาศในบรรยากาศ



บริษัท ซีคอต จำกัด SECOT CO., LTD.

239 ถนนริมคลองประปา แขวงบางซื่อ เขตบางซื่อ กรุงเทพมหานคร 10800

239 RIMKLONGPRAPA ROAD, BANGSUE, BANGKOK 10800, THAILAND

TEL. (662) 959-3600 FAX (662) 959-3535 Website: secot.co.th E-mail: envserv@secot.co.th

AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical Public Co., Ltd, Branch 6	REQUEST SERVICE No.	: 1092/66
	(Refinery GC 6)	SAMPLING METHOD	: Subatmospheric Pressure Sampling
SAMPLING BY	: SECOT Co., Ltd.	ANALYTICAL DATE	: 08/07/2023
SAMPLING DATE	: 03-04/07/2023	SAMPLE CONDITION	: Normal
SAMPLING TIME	: 11:34-11:03	FILE CODE	: 223010_TO-15_July
RECEIVED DATE	: 05/07/2023		
REPORT DATE	: 11/07/2023		

Compound	Non Detection		SAMPLING LOCATION		STANDARD* (µg/m ³)
			Takuan-Ao Pradu Community 1		
	ppbv	µg/m ³	ppbv	µg/m ³	
Benzene	0.004	0.013	0.41	1.31	7.6

Methods for the Determination of Toxic Organic Compound in Ambient Air, 2nd - EPA Methods TO-15.1999

Jutarat Jaemruen

(Miss Jutarat Jaemruen)

Analyst

(Mrs. Araya Tipparuk)

Technical Management Team

Remark : 1. Reported analysis refers to submitted sample only.

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3. * Notification of the Pollution Control Department, dated December 18, B.E.2551(2008), which was published in the Royal Government Gazette Vol. 126, Special Part 13D dated January 27, B.E. 2552 (2009).

R:\Database\Windrose\FileControl\Win-223010-Takuan-Ao pradu Community 1 03-04 Jul 2023



Meteorological Monitoring Results : Wind Rose

MTR-PTTGC6-Refinery

Location : Takuan-Ao pradu Community 1

Monitor period : 03-04 Jul 2023

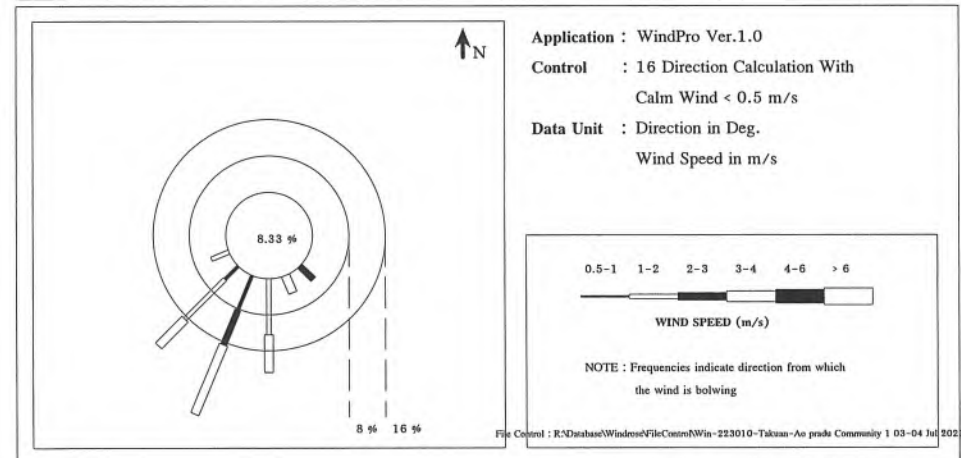
Wind Speed Model : NRG Symphonie

Serial No : A5088

Wind Direction Model : NRG Symphonie

Serial No : A5088

Direction	Percentage of Occurrence of Wind Direct Grouped in Various Wind Speed						Total
	0.5-1 m/s	1-2 m/s	2-3 m/s	3-4 m/s	4-6 m/s	More than 6	
N	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ENE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
E	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ESE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SE	0.0000	0.0000	0.0417	0.0000	0.0000	0.0000	0.0417
SSE	0.0000	0.0000	0.0000	0.0417	0.0000	0.0000	0.0417
S	0.0000	0.1250	0.0000	0.0833	0.0000	0.0000	0.2083
SSW	0.0833	0.0000	0.0833	0.1667	0.0000	0.0000	0.3333
SW	0.0417	0.1250	0.0000	0.0833	0.0000	0.0000	0.2500
WSW	0.0000	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
W	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
WNW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
CALM	0.0833						



(Miss Katesarin Vorradetwittaya)

Environmental Scientist

Preeda S.

(Miss Preeda Somjai)

Technical Management Team



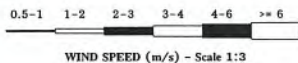
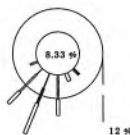
Meteorological Monitoring Results : Wind Rose

MTR-PTTGC6-Refinery

Location : Takuan-Ao pradu Community 1 Monitor period : 03-04 Jul 2023
 Wind Speed Model : NRG Symphonie Serial No : A5088
 Wind Direction Model : NRG Symphonie Serial No : A5088

Time	03-04 Jul 2023	
	WS(m/s)	WD
12:00 - 13:00	1.4	S
13:00 - 14:00	3.9	S
14:00 - 15:00	0.8	SSW
15:00 - 16:00	3.4	SSE
16:00 - 17:00	1.2	SW
17:00 - 18:00	3.7	SSW
18:00 - 19:00	2.2	SE
19:00 - 20:00	0.3	SW
20:00 - 21:00	1.2	WSW
21:00 - 22:00	1.2	SW
22:00 - 23:00	3.7	SW
23:00 - 24:00	2.2	SSW
00:00 - 01:00	0.3	SSE
01:00 - 02:00	1.2	S
02:00 - 03:00	3.9	SSW
03:00 - 04:00	0.8	SW
04:00 - 05:00	3.4	SW
05:00 - 06:00	1.2	SW
06:00 - 07:00	3.7	SSW
07:00 - 08:00	1.4	S
08:00 - 09:00	3.9	S
09:00 - 10:00	0.8	SSW
10:00 - 11:00	3.4	SSW
11:00 - 12:00	2.0	SSW

Wind Rose



File Control : R:\Database\Winrose\Win-223010-Takuan-Ao pradu Community 1 03-04 Jul 2023



บริษัท ซีคอต จำกัด

SECOT CO., LTD.

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AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Co., Ltd, Branch 6 REQUEST SERVICE No. : 1092/66
 (Refinery GC 6) SAMPLING METHOD : Subatmospheric Pressure Sampling
 SAMPLING BY : SECOT Co., Ltd. ANALYTICAL DATE : 08/07/2023
 SAMPLING DATE : 03-04/07/2023 SAMPLE CONDITION : Normal
 SAMPLING TIME : 11:12-10:47 FILE CODE : 223010_TO-15_July
 RECEIVED DATE : 05/07/2023
 REPORT DATE : 11/07/2023

Compound	Non Detection		SAMPLING LOCATION		STANDARD*
			Takuan-Ao Pradu Community 2		
	ppbv	µg/m ³	ppbv	µg/m ³	
Benzene	0.004	0.013	0.26	0.83	7.6

Methods for the Determination of Toxic Organic Compound in Ambient Air, 2nd : EPA Methods TO-15.1999

Jutarat Jaemruen

(Miss Jutarat Jaemruen)

Analyst

Mrs. Araya Tipparak

(Mrs. Araya Tipparak)

Technical Management Team

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(Miss Katesarin Vorradetwittaya)
 Environmental Scientist

Preeda S.

(Miss Preeda Somjai)
 Technical Management Team



Meteorological Monitoring Results : Wind Rose

MTR-PTTGC6-Refinery

Location : Takuan-Ao pradu Community 2

Monitor period : 03-04 Jul 2023

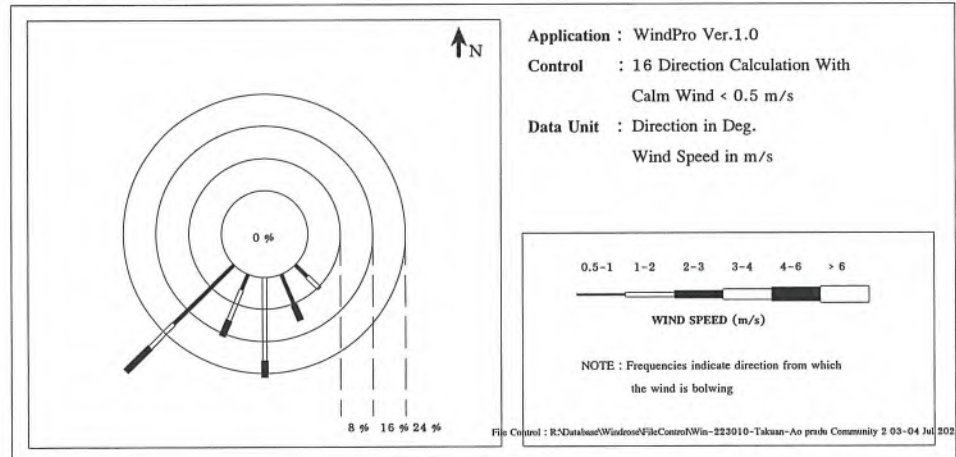
Wind Speed Model : NRG Symphonie

Serial No : PO216016

Wind Direction Model : NRG Symphonie

Serial No : PO216016

Direction	Percentage of Occurrence of Wind Direct Grouped in Various Wind Speed						Total
	0.5-1 m/s	1-2 m/s	2-3 m/s	3-4 m/s	4-6 m/s	More than 6	
N	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ENE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
E	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ESE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SE	0.0417	0.0417	0.0000	0.0000	0.0000	0.0000	0.0833
SSE	0.0833	0.0000	0.0417	0.0000	0.0000	0.0000	0.1250
S	0.0000	0.2083	0.0417	0.0000	0.0000	0.0000	0.2500
SSW	0.0417	0.0833	0.0417	0.0000	0.0000	0.0000	0.1667
SW	0.2083	0.0833	0.0833	0.0000	0.0000	0.0000	0.3750
WSW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
W	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
WNW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
CALM	0.0000						



(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose

MTR-PTTGC6-Refinery

Location : Takuan-Ao pradu Community 2

Monitor period : 03-04 Jul 2023

Wind Speed Model : NRG Symphonie

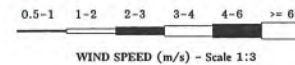
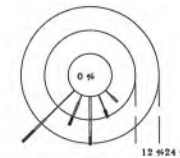
Serial No : PO216016

Wind Direction Model : NRG Symphonie

Serial No : PO216016

Time	03-04 Jul 2023	
	WS(m/s)	WD
12:00 - 13:00	1.9	S
13:00 - 14:00	1.0	S
14:00 - 15:00	0.6	SSW
15:00 - 16:00	1.9	SE
16:00 - 17:00	1.8	S
17:00 - 18:00	2.1	S
18:00 - 19:00	1.3	S
19:00 - 20:00	0.5	SW
20:00 - 21:00	0.8	SW
21:00 - 22:00	0.8	SW
22:00 - 23:00	2.1	SSW
23:00 - 24:00	1.3	SSW
00:00 - 01:00	0.8	SE
01:00 - 02:00	0.8	SW
02:00 - 03:00	2.2	SW
03:00 - 04:00	1.0	S
04:00 - 05:00	1.9	SSW
05:00 - 06:00	0.8	SSE
06:00 - 07:00	2.1	SW
07:00 - 08:00	0.9	SSE
08:00 - 09:00	2.2	SSE
09:00 - 10:00	1.0	SW
10:00 - 11:00	1.9	SW
11:00 - 12:00	0.9	SW

Wind Rose



(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



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AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical Public Co., Ltd, Branch 6 (Refinery GC 6)	REQUEST SERVICE No.	: 1289/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Subatmospheric Pressure Sampling
SAMPLING DATE	: 03-04/08/2023	ANALYTICAL DATE	: 07/08/2023
SAMPLING TIME	: 14:51-13:52	SAMPLE CONDITION	: Normal
RECEIVED DATE	: 05/08/2023	FILE CODE	: 223010_TO-15_August
REPORT DATE	: 09/08/2023		

Compound	Non Detection		SAMPLING LOCATION Takuan-Ao Pradu Community 1		STANDARD* ($\mu\text{g}/\text{m}^3$)
	ppbv	$\mu\text{g}/\text{m}^3$	ppbv	$\mu\text{g}/\text{m}^3$	
Benzene	0.004	0.013	0.63	2.01	7.6

Methods for the Determination of Toxic Organic Compound in Ambient Air, 2nd : EPA Methods TO-15, 1999

Jutarat Jaemruen
(Miss Jutarat Jaemruen)

Analyst

MTR
(Mrs. Araya Tipparuk)

Technical Management Team

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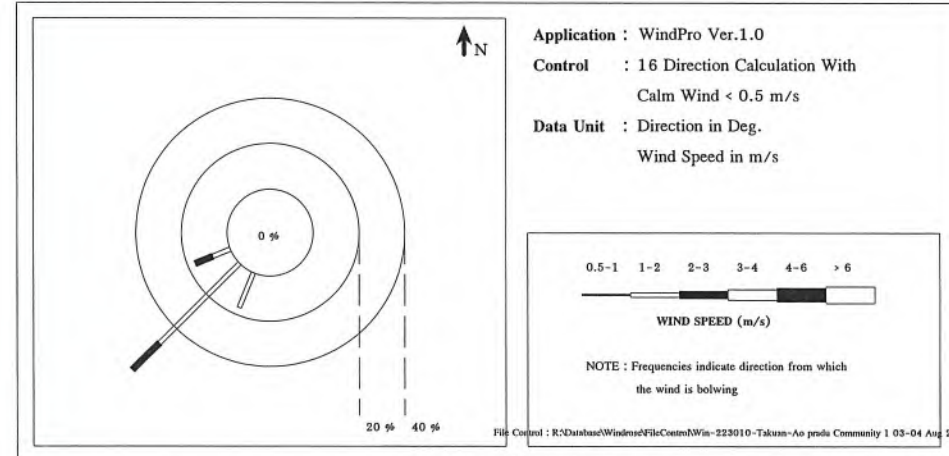
R:\Database\Windrose\FileControl\Win-223010-Takuan-Ao pradu Community 1 03-04 Aug 2023



Meteorological Monitoring Results : Wind Rose MTR-PTTGC6-Refinery

Location	: Takuan-Ao pradu Community 1	Monitor period	: 03-04 Aug 2023
Wind Speed Model	: NRG Symphonie	Serial No	: 309018842
Wind Direction Model	: NRG Symphonie	Serial No	: 309018842

Direction	Percentage of Occurrence of Wind Direct Grouped in Various Wind Speed						Total
	0.5-1 m/s	1-2 m/s	2-3 m/s	3-4 m/s	4-6 m/s	More than 6	
N	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ENE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
E	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ESE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SSE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SSW	0.0000	0.1667	0.0000	0.0000	0.0000	0.0000	0.1667
SW	0.0000	0.5000	0.1667	0.0000	0.0000	0.0000	0.6667
WSW	0.0000	0.0833	0.0833	0.0000	0.0000	0.0000	0.1667
W	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
WNW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
CALM	0.0000						



(Miss Katesarin Vorradetwittaya)

Environmental Scientist

Preeda S.

(Miss Preeda Somjai)
Technical Management Team



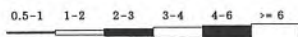
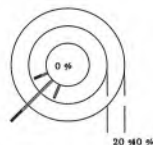
Meteorological Monitoring Results : Wind Rose

MTR-PTTGC6-Refinery

Location : Takuan-Ao pradu Community 1 Monitor period : 03-04 Aug 2023
 Wind Speed Model : NRG Symphonie Serial No : 309018842
 Wind Direction Model : NRG Symphonie Serial No : 309018842

Time	03-04 Aug 2023	
	WS(m/s)	WD
11:00 - 12:00	2.1	SW
12:00 - 13:00	2.2	WSW
13:00 - 14:00	2.0	WSW
14:00 - 15:00	2.1	SW
15:00 - 16:00	1.5	WSW
16:00 - 17:00	1.5	SW
17:00 - 18:00	1.2	SSW
18:00 - 19:00	1.4	SSW
19:00 - 20:00	1.3	SSW
20:00 - 21:00	1.5	WSW
21:00 - 22:00	1.8	SW
22:00 - 23:00	1.9	SW
23:00 - 24:00	1.9	SW
00:00 - 01:00	2.0	SW
01:00 - 02:00	1.9	SW
02:00 - 03:00	1.6	SW
03:00 - 04:00	1.8	SW
04:00 - 05:00	1.5	SW
05:00 - 06:00	1.5	SW
06:00 - 07:00	1.7	SW
07:00 - 08:00	1.8	SW
08:00 - 09:00	1.9	SW
09:00 - 10:00	2.0	SW
10:00 - 11:00	1.7	SSW

Wind Rose



WIND SPEED (m/s) - Scale 1:3

File Control : R:\Database\Windrose\FileControl\Win-223010-Takuan-Ao pradu Community 1 03-04 Aug 2023

(Miss Katesarin Vorradetwittaya)
 Environmental Scientist

(Miss Preeda Somjai)
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บริษัท ซีคอต จำกัด

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AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Co., Ltd, Branch 6 REQUEST SERVICE No. : 1289/66
 (Refinery GC 6) SAMPLING METHOD : Subatmospheric Pressure Sampling
 SAMPLING BY : SECOT Co., Ltd. ANALYTICAL DATE : 07/08/2023
 SAMPLING DATE : 03-04/08/2023 SAMPLE CONDITION : Normal
 SAMPLING TIME : 14:38-13:41 FILE CODE : 223010_TO-15_August
 RECEIVED DATE : 05/08/2023
 REPORT DATE : 09/08/2023

Compound	Non Detection		SAMPLING LOCATION		STANDARD* (µg/m ³)
			Takuan-Ao Pradu Community 2		
	ppbv	µg/m ³	ppbv	µg/m ³	
Benzene	0.004	0.013	0.26	0.83	7.6

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Meteorological Monitoring Results : Wind Rose

MTR-PTTGC6-Refinery

Location : Takuan-Ao pradu Community 2

Monitor period : 03-04 Aug 2023

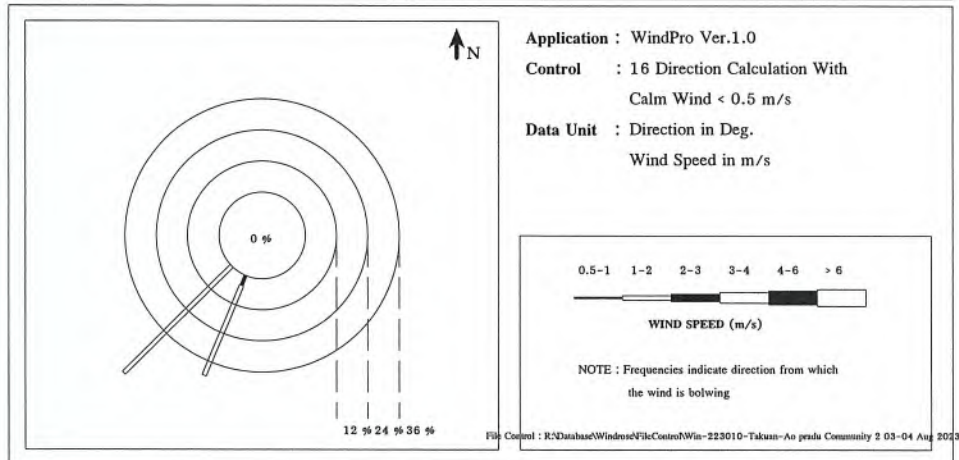
Wind Speed Model : NRG Symphonie

Serial No : 309019737

Wind Direction Model : NRG Symphonie

Serial No : 309019737

Direction	Percentage of Occurrence of Wind Direct Grouped in Various Wind Speed						Total
	0.5-1 m/s	1-2 m/s	2-3 m/s	3-4 m/s	4-6 m/s	More than 6	
N	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ENE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
E	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ESE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SSE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SSW	0.0417	0.3750	0.0000	0.0000	0.0000	0.0000	0.4167
SW	0.0000	0.5833	0.0000	0.0000	0.0000	0.0000	0.5833
WSW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
W	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
WNW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
CALM	0.0000						



(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose

MTR-PTTGC6-Refinery

Location : Takuan-Ao pradu Community 2

Monitor period : 03-04 Aug 2023

Wind Speed Model : NRG Symphonie

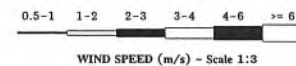
Serial No : 309019737

Wind Direction Model : NRG Symphonie

Serial No : 309019737

Time	03-04 Aug 2023	
	WS(m/s)	WD
11:00 - 12:00	1.8	SSW
12:00 - 13:00	1.9	SW
13:00 - 14:00	1.6	SW
14:00 - 15:00	1.9	SW
15:00 - 16:00	1.3	SW
16:00 - 17:00	1.2	SSW
17:00 - 18:00	0.9	SSW
18:00 - 19:00	1.2	SSW
19:00 - 20:00	1.0	SSW
20:00 - 21:00	1.1	SW
21:00 - 22:00	1.5	SW
22:00 - 23:00	1.5	SSW
23:00 - 24:00	1.6	SW
00:00 - 01:00	1.7	SW
01:00 - 02:00	1.5	SSW
02:00 - 03:00	1.2	SSW
03:00 - 04:00	1.4	SW
04:00 - 05:00	1.1	SSW
05:00 - 06:00	1.2	SW
06:00 - 07:00	1.4	SW
07:00 - 08:00	1.4	SW
08:00 - 09:00	1.6	SW
09:00 - 10:00	1.6	SW
10:00 - 11:00	1.5	SSW

Wind Rose



File Control : R:\Database\Windrose\FileControl\Win-223010-Takuan-Ao pradu Community 2 03-04 Aug 2023

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



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TEL. (662) 959-3600 FAX (662) 959-3535 Website : secot.co.th E-mail : envserv@secot.co.th

AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical Public Co., Ltd, Branch 6	REQUEST SERVICE No.	: 1528/66
	(Refinery GC 6)	SAMPLING METHOD	: Subatmospheric Pressure Sampling
SAMPLING BY	: SECOT Co., Ltd.	ANALYTICAL DATE	: 13/09/2023
SAMPLING DATE	: 04-05/09/2023	SAMPLE CONDITION	: Normal
SAMPLING TIME	: 11:25-11:01	FILE CODE	: 223010_TO-15_September
RECEIVED DATE	: 06/09/2023		
REPORT DATE	: 14/09/2023		

Compound	Non Detection		SAMPLING LOCATION		STANDARD*
	ppbv	µg/m ³	Takuan-Ao Pradu Community 1	µg/m ³	
Benzene	0.004	0.013	0.37	1.18	7.6

Methods for the Determination of Toxic Organic Compound in Ambient Air, 2nd : EPA Methods TO-15.1999

Siriwan Chimsa-nga

(Miss Siriwan Chimsa-nga)

Analyst

MR

(Mrs. Araya Tipparuk)

Technical Management Team

Remark : 1. Reported analysis refers to submitted sample only.

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3. * Notification of the Pollution Control Department, dated December 18,B.E.2551(2008), which was published in the Royal Government Gazette Vol. 126, Special Part 13D dated January 27, B.E. 2552 (2009).

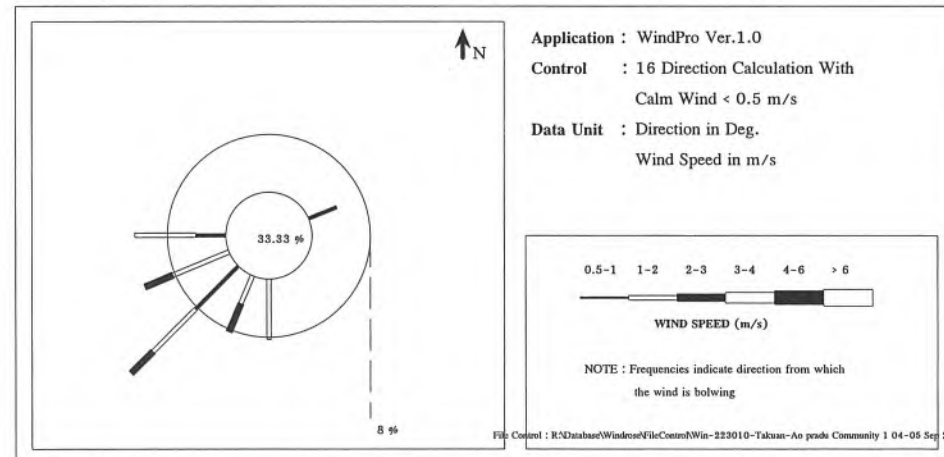
R:\Database\Windrose\FileControl\Win-223010-Takuan-Ao pradu Community 1 04-05 Sep 2023



Meteorological Monitoring Results : Wind Rose
MTR-PTTGC6-Refinery

Location : Takuan-Ao pradu Community 1	Monitor period : 04-05 Sep 2023
Wind Speed Model : NRG Symphonie	Serial No : 15102802
Wind Direction Model : NRG Symphonie	Serial No : 15102802

Direction	Percentage of Occurrence of Wind Direct Grouped in Various Wind Speed						Total
	0.5-1 m/s	1-2 m/s	2-3 m/s	3-4 m/s	4-6 m/s	More than 6	
N	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ENE	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
E	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ESE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SSE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S	0.0000	0.0833	0.0000	0.0000	0.0000	0.0000	0.0833
SSW	0.0000	0.0417	0.0417	0.0000	0.0000	0.0000	0.0833
SW	0.0833	0.0833	0.0417	0.0000	0.0000	0.0000	0.2083
WSW	0.0000	0.0833	0.0417	0.0000	0.0000	0.0000	0.1250
W	0.0417	0.0833	0.0000	0.0000	0.0000	0.0000	0.1250
WNW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
CALM	0.3333						



(Miss Katesarin Vorradetwittaya)

Environmental Scientist

Preeda S.

(Miss Preeda Somjai)
Technical Management Team



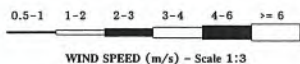
Meteorological Monitoring Results : Wind Rose

MTR-PTTGC6-Refinery

Location : Takuan-Ao pradu Community 1 Monitor period : 04-05 Sep 2023
 Wind Speed Model : NRG Symphonie Serial No : 15102802
 Wind Direction Model : NRG Symphonie Serial No : 15102802

Time	04-05 Sep 2023	
	WS(m/s)	WD
11:00 - 12:00	1.1	S
12:00 - 13:00	1.5	S
13:00 - 14:00	2.2	SSW
14:00 - 15:00	0.9	SW
15:00 - 16:00	0.1	SSW
16:00 - 17:00	1.5	WSW
17:00 - 18:00	1.1	WSW
18:00 - 19:00	0.5	W
19:00 - 20:00	1.6	SW
20:00 - 21:00	1.3	W
21:00 - 22:00	1.6	SSW
22:00 - 23:00	0.3	SW
23:00 - 24:00	1.0	SW
00:00 - 01:00	0.3	SSW
01:00 - 02:00	1.6	W
02:00 - 03:00	0.2	E
03:00 - 04:00	2.5	WSW
04:00 - 05:00	0.9	SW
05:00 - 06:00	0.2	W
06:00 - 07:00	0.7	ENE
07:00 - 08:00	0.3	ENE
08:00 - 09:00	2.7	SW
09:00 - 10:00	0.4	S
10:00 - 11:00	0.4	S

Wind Rose



File Control : R:\Database\Windrose\FileControl\Win-223010-Takuan-Ao pradu Community 1 04-05 Sep 2023

(Miss Katesarin Vorradeewittaya)
 Environmental Scientist

(Miss Preeda Somjai)
 Technical Management Team



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 TEL. (662) 959-3600 FAX (662) 959-3535 Website : secot.co.th E-mail : envserv@secot.co.th

AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Co., Ltd, Branch 6 REQUEST SERVICE No. : 1528/66
 (Refinery GC 6) SAMPLING METHOD : Subatmospheric Pressure Sampling
 SAMPLING BY : SECOT Co., Ltd. ANALYTICAL DATE : 13/09/2023
 SAMPLING DATE : 04-05/09/2023 SAMPLE CONDITION : Normal
 SAMPLING TIME : 10:08-10:45 FILE CODE : 223010_TO-15_September
 RECEIVED DATE : 06/09/2023
 REPORT DATE : 14/09/2023

Compound	Non Detection		SAMPLING LOCATION		STANDARD* (µg/m ³)
			Takuan-Ao Pradu Community 2		
	ppbv	µg/m ³	ppbv	µg/m ³	
Benzene	0.004	0.013	0.17	0.54	7.6

Methods for the Determination of Toxic Organic Compound in Ambient Air, 2nd : EPA Methods TO-15,1999

(Miss Siriwan Chimsa-nga)

Analyst

(Mrs. Araya Tipparuk)
 Technical Management Team

- Remark : 1. Reported analysis refers to submitted sample only.
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Meteorological Monitoring Results : Wind Rose MTR-PTTGC6-Refinery

Location : Takuan-Ao pradu Community 2

Monitor period : 04-05 Sep 2023

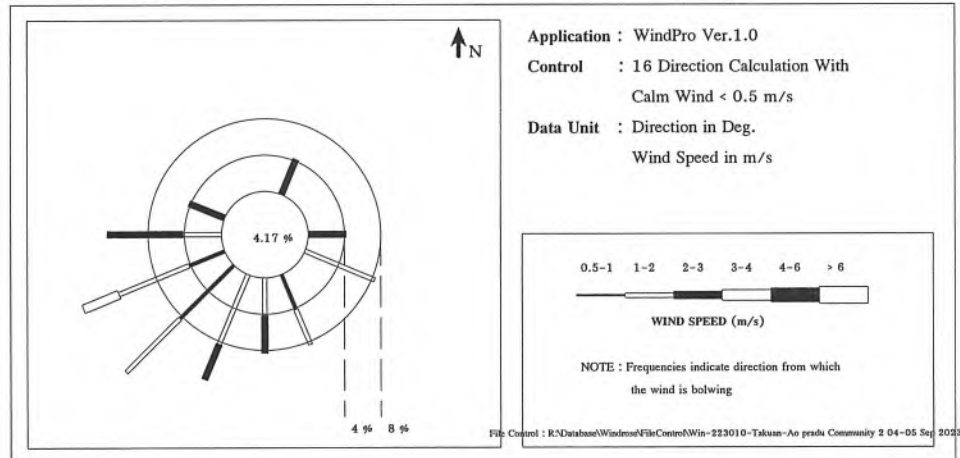
Wind Speed Model : NRG Symphonie

Serial No : 15102801

Wind Direction Model : NRG Symphonie

Serial No : 15102801

Direction	Percentage of Occurrence of Wind Direct Grouped in Various Wind Speed						Total
	0.5-1 m/s	1-2 m/s	2-3 m/s	3-4 m/s	4-6 m/s	More than 6	
N	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNE	0.0000	0.0000	0.0417	0.0000	0.0000	0.0000	0.0417
NE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ENE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
E	0.0000	0.0000	0.0417	0.0000	0.0000	0.0000	0.0417
ESE	0.0000	0.0833	0.0000	0.0000	0.0000	0.0000	0.0833
SE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SSE	0.0417	0.0417	0.0000	0.0000	0.0000	0.0000	0.0833
S	0.0000	0.0417	0.0417	0.0000	0.0000	0.0000	0.0833
SSW	0.0000	0.0833	0.0417	0.0000	0.0000	0.0000	0.1250
SW	0.0833	0.0833	0.0000	0.0000	0.0000	0.0000	0.1667
WSW	0.0417	0.0833	0.0000	0.0417	0.0000	0.0000	0.1667
W	0.0000	0.0417	0.0833	0.0000	0.0000	0.0000	0.1250
WNW	0.0000	0.0000	0.0417	0.0000	0.0000	0.0000	0.0417
NW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
CALM	0.0417						



(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose MTR-PTTGC6-Refinery

Location : Takuan-Ao pradu Community 2

Monitor period : 04-05 Sep 2023

Wind Speed Model : NRG Symphonie

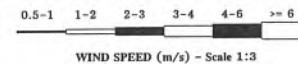
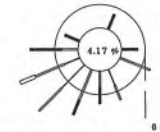
Serial No : 15102801

Wind Direction Model : NRG Symphonie

Serial No : 15102801

Time	04-05 Sep 2023	
	WS(m/s)	WD
11:00 - 12:00	1.0	S
12:00 - 13:00	2.7	NNE
13:00 - 14:00	1.8	W
14:00 - 15:00	1.2	ESE
15:00 - 16:00	1.2	SSW
16:00 - 17:00	0.7	WSW
17:00 - 18:00	2.7	S
18:00 - 19:00	1.9	SSE
19:00 - 20:00	3.2	WSW
20:00 - 21:00	1.0	SSW
21:00 - 22:00	2.4	W
22:00 - 23:00	0.9	SW
23:00 - 24:00	1.5	SW
00:00 - 01:00	0.3	S
01:00 - 02:00	1.7	WSW
02:00 - 03:00	2.4	WNW
03:00 - 04:00	0.9	SSE
04:00 - 05:00	1.5	SW
05:00 - 06:00	2.3	SSW
06:00 - 07:00	1.1	ESE
07:00 - 08:00	2.4	E
08:00 - 09:00	0.6	SW
09:00 - 10:00	2.5	W
10:00 - 11:00	1.9	WSW

Wind Rose



File Control : R:\Database\Windrose\FileControl\Win-223010-Takuan-Ao pradu Community 2 04-05 Sep 2023

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



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AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical Public Co., Ltd, Branch 6	REQUEST SERVICE No.	: 1709/66
	(Refinery GC 6)	SAMPLING METHOD	: Subatmospheric Pressure Sampling
SAMPLING BY	: SECOT Co., Ltd.	ANALYTICAL DATE	: 06-07/10/2023
SAMPLING DATE	: 02-03/10/2023	SAMPLE CONDITION	: Normal
SAMPLING TIME	: 11:11-11:22	FILE CODE	: 223010_T0-15_October
RECEIVED DATE	: 04/10/2023		
REPORT DATE	: 10/10/2023		

Compound	Non Detection		SAMPLING LOCATION		STANDARD*
	ppbv	µg/m ³	Takuan-Ao Pradu Community 1	µg/m ³	
Benzene	0.004	0.013	0.91	2.91	7.6

Methods for the Determination of Toxic Organic Compound in Ambient Air, 2nd : EPA Methods TO-15, 1999

Siriwan Chimsa-nga
(Miss Siriwan Chimsa-nga)

Analyst

M R
(Mrs. Araya Tipparuk)

Technical Management Team

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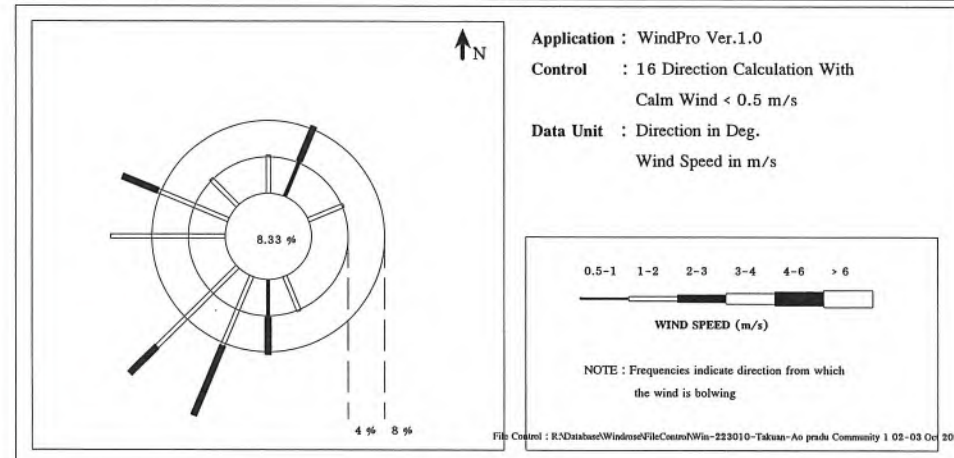
R:\Database\Windrose\FileControl\Win-223010-Takuan-Ao pradu Community 1 02-03 Oct 2023



Meteorological Monitoring Results : Wind Rose
MTR-PTTGC6-Refinery

Location : Takuan-Ao pradu Community 1	Monitor period : 02-03 Oct 2023
Wind Speed Model : NRG Symphonie	Serial No : 30909019
Wind Direction Model : NRG Symphonie	Serial No : 30909019

Direction	Percentage of Occurrence of Wind Direct Grouped in Various Wind Speed						Total
	0.5-1 m/s	1-2 m/s	2-3 m/s	3-4 m/s	4-6 m/s	More than 6	
N	0.0000	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
NNE	0.0417	0.0000	0.0417	0.0000	0.0000	0.0000	0.0833
NE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ENE	0.0000	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
E	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ESE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SSE	0.0000	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
S	0.0417	0.0000	0.0417	0.0000	0.0000	0.0000	0.0833
SSW	0.0000	0.0833	0.0833	0.0000	0.0000	0.0000	0.1667
SW	0.0000	0.1250	0.0417	0.0000	0.0000	0.0000	0.1667
WSW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
W	0.0000	0.1250	0.0000	0.0000	0.0000	0.0000	0.1250
WNW	0.0000	0.0833	0.0417	0.0000	0.0000	0.0000	0.1250
NW	0.0000	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
NNW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
CALM	0.0833						



(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team



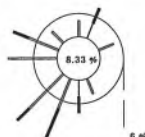
Meteorological Monitoring Results : Wind Rose

MTR-PTTGC6-Refinery

Location : Takuan-Ao pradu Community 1 Monitor period : 02-03 Oct 2023
 Wind Speed Model : NRG Symphonie Serial No : 30909019
 Wind Direction Model : NRG Symphonie Serial No : 30909019

Time	02-03 Oct 2023	
	WS(m/s)	WD
11:00 - 12:00	1.2	W
12:00 - 13:00	0.4	NNW
13:00 - 14:00	1.2	W
14:00 - 15:00	1.6	NW
15:00 - 16:00	1.8	WNW
16:00 - 17:00	2.3	NNE
17:00 - 18:00	1.2	WNW
18:00 - 19:00	2.4	WNW
19:00 - 20:00	1.2	W
20:00 - 21:00	1.7	ENE
21:00 - 22:00	0.7	NNE
22:00 - 23:00	1.2	SW
23:00 - 24:00	1.1	SSW
00:00 - 01:00	1.7	SSW
01:00 - 02:00	1.2	SW
02:00 - 03:00	2.7	SW
03:00 - 04:00	1.4	SW
04:00 - 05:00	2.4	S
05:00 - 06:00	2.2	SSW
06:00 - 07:00	0.7	S
07:00 - 08:00	1.2	N
08:00 - 09:00	2.4	SSW
09:00 - 10:00	1.7	SSE
10:00 - 11:00	0.4	S

Wind Rose



File Control : R:\Database\Windrose\FireControl\Win-223010-Takuan-Ao pradu Community 1 02-03 Oct 2023

(Miss Katesarin Vorradetwittaya)
 Environmental Scientist

(Miss Preeda Somjai)
 Technical Management Team



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AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Co., Ltd, Branch 6 REQUEST SERVICE No. : 1709/66
 (Refinery GC 6) SAMPLING METHOD : Subatmospheric Pressure Sampling
 SAMPLING BY : SECOT Co., Ltd. ANALYTICAL DATE : 06-07/10/2023
 SAMPLING DATE : 02-03/10/2023 SAMPLE CONDITION : Normal
 SAMPLING TIME : 10:53-11:02 FILE CODE : 223010_TO-15_October
 RECEIVED DATE : 04/10/2023
 REPORT DATE : 10/10/2023

Compound	Non Detection		SAMPLING LOCATION		STANDARD* (µg/m ³)
			Takuan-Ao Pradu Community 2		
	ppbv	µg/m ³	ppbv	µg/m ³	
Benzene	0.004	0.013	0.35	1.12	7.6

Methods for the Determination of Toxic Organic Compound in Ambient Air, 2nd : EPA Methods TO-15,1999

(Miss Siriwan Chimsa-nga)

Analyst

(Mrs. Araya Tipparuk)

Technical Management Team

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Meteorological Monitoring Results : Wind Rose

MTR-PTTGC6-Refinery

Location : Takuan-Ao pradu Community 2

Monitor period : 02-03 Oct 2023

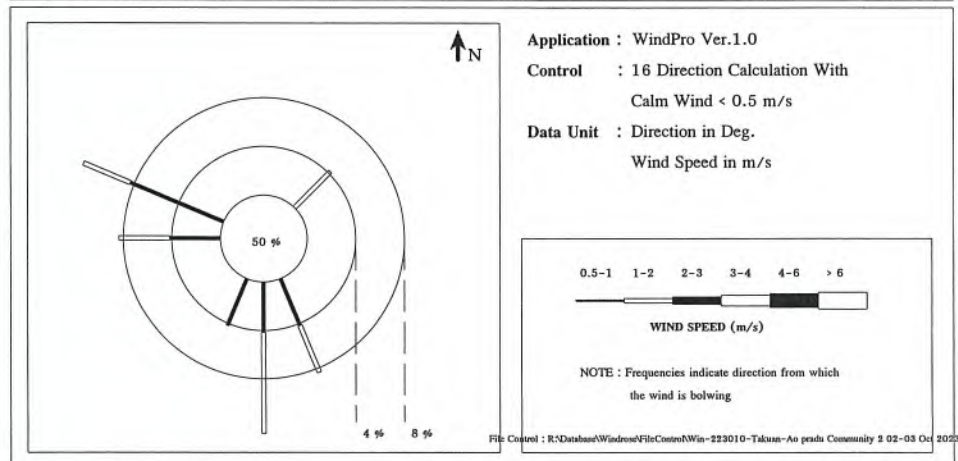
Wind Speed Model : NRG Symphonie

Serial No : 30909366

Wind Direction Model : NRG Symphonie

Serial No : 30909366

Direction	Percentage of Occurrence of Wind Direct Grouped in Various Wind Speed						Total
	0.5-1 m/s	1-2 m/s	2-3 m/s	3-4 m/s	4-6 m/s	More than 6	
N	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NE	0.0000	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
ENE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
E	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ESE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SSE	0.0417	0.0417	0.0000	0.0000	0.0000	0.0000	0.0833
S	0.0417	0.0833	0.0000	0.0000	0.0000	0.0000	0.1250
SSW	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
SW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
WSW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
W	0.0417	0.0417	0.0000	0.0000	0.0000	0.0000	0.0833
WNW	0.0833	0.0417	0.0000	0.0000	0.0000	0.0000	0.1250
NW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
CALM	0.5000						



(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose

MTR-PTTGC6-Refinery

Location : Takuan-Ao pradu Community 2

Monitor period : 02-03 Oct 2023

Wind Speed Model : NRG Symphonie

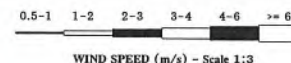
Serial No : 30909366

Wind Direction Model : NRG Symphonie

Serial No : 30909366

Time	02-03 Oct 2023	
	WS(m/s)	WD
10:00 - 11:00	0.2	WNW
11:00 - 12:00	0.5	WNW
12:00 - 13:00	0.7	WNW
13:00 - 14:00	0.3	W
14:00 - 15:00	1.2	W
15:00 - 16:00	0.3	WNW
16:00 - 17:00	0.9	W
17:00 - 18:00	1.3	WNW
18:00 - 19:00	1.5	NE
19:00 - 20:00	0.8	SSE
20:00 - 21:00	0.2	SSW
21:00 - 22:00	0.4	SSW
22:00 - 23:00	0.1	S
23:00 - 24:00	1.2	SSE
00:00 - 01:00	0.2	ENE
01:00 - 02:00	0.3	SSE
02:00 - 03:00	0.1	SE
03:00 - 04:00	0.2	SE
04:00 - 05:00	0.6	S
05:00 - 06:00	1.2	S
06:00 - 07:00	1.1	S
07:00 - 08:00	0.8	SSW
08:00 - 09:00	0.4	SW
09:00 - 10:00	0.3	SW

Wind Rose



(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



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TEL. (662) 959-3600 FAX (662) 959-3535 Website : secot.co.th E-mail : envserv@secot.co.th

AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical Public Co., Ltd, Branch 6 (Refinery GC 6)	REQUEST SERVICE No.	: 1903/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Subatmospheric Pressure Sampling
SAMPLING DATE	: 01-02/11/2023	ANALYTICAL DATE	: 04/11/2023
SAMPLING TIME	: 13:57-14:00	SAMPLE CONDITION	: Normal
RECEIVED DATE	: 03/11/2023	FILE CODE	: 223010_TO-15_November
REPORT DATE	: 08/11/2023		

Compound	Non Detection		SAMPLING LOCATION Takuan-Ao Pradu Community 1		STANDARD* ($\mu\text{g}/\text{m}^3$)
	ppbv	$\mu\text{g}/\text{m}^3$	ppbv	$\mu\text{g}/\text{m}^3$	
Benzene	0.004	0.013	0.82	2.62	7.6

Methods for the Determination of Toxic Organic Compound in Ambient Air, 2nd : EPA Methods TO-15.1999

Jutarat Jaemruen
(Miss Jutarat Jaemruen)

Analyst

AR

(Mrs. Araya Tipparuk)

Technical Management Team

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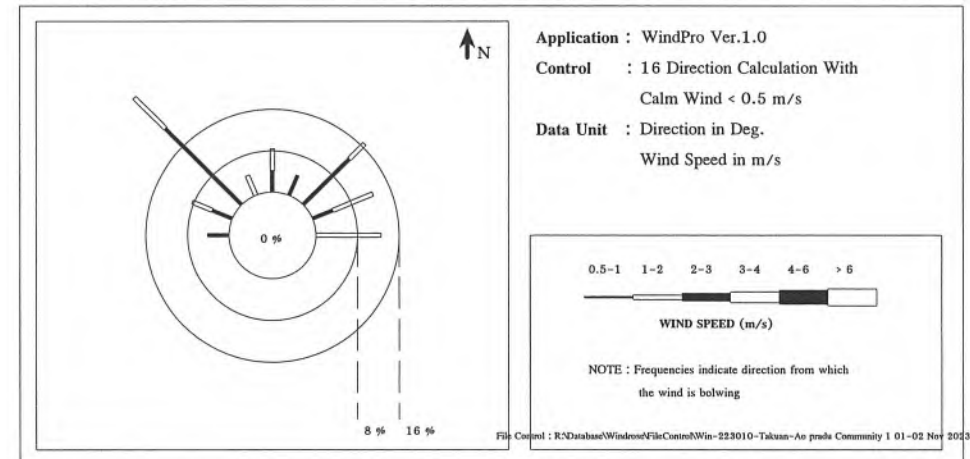
R:\Database\Windrose\FileControl\Win-223010-Takuan-Ao pradu Community 1 01-02 Nov 2023



Meteorological Monitoring Results : Wind Rose MTR-PTTGC6-Refinery

Location : Takuan-Ao pradu Community 1 Monitor period : 01-02 Nov 2023
Wind Speed Model : NRG Symphonie Serial No : A4904
Wind Direction Model : NRG Symphonie Serial No : A4904

Direction	Percentage of Occurrence of Wind Direct Grouped in Various Wind Speed						Total
	0.5-1 m/s	1-2 m/s	2-3 m/s	3-4 m/s	4-6 m/s	More than 6	
N	0.0417	0.0417	0.0000	0.0000	0.0000	0.0000	0.0833
NNE	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
NE	0.1250	0.0417	0.0000	0.0000	0.0000	0.0000	0.1667
ENE	0.0417	0.0833	0.0000	0.0000	0.0000	0.0000	0.1250
E	0.0000	0.1250	0.0000	0.0000	0.0000	0.0000	0.1250
ESE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SSE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SSW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
WSW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
W	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
WNW	0.0417	0.0417	0.0000	0.0000	0.0000	0.0000	0.0833
NW	0.2083	0.0833	0.0000	0.0000	0.0000	0.0000	0.2917
NNW	0.0000	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
CALM	0.0000						



(Miss Katesarin Vorradetwittaya)
Environmental Scientist

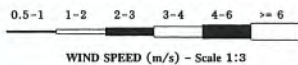
Preeda S.
(Miss Preeda Somjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose

MTR-PTTGC6-Refinery

Location : Takuan-Ao pradu Community 1		Monitor period : 01-02 Nov 2023	
Wind Speed Model : NRG Symphonie		Serial No : A4904	
Wind Direction Model : NRG Symphonie		Serial No : A4904	
Time	01-02 Nov 2023		WD
	WS(m/s)		
12:00 - 13:00	1.3		NE
13:00 - 14:00	1.4		ENE
14:00 - 15:00	1.5		N
15:00 - 16:00	0.8		N
16:00 - 17:00	0.6		ENE
17:00 - 18:00	1.1		ENE
18:00 - 19:00	0.6		NE
19:00 - 20:00	0.7		NNE
20:00 - 21:00	0.9		NW
21:00 - 22:00	1.0		NNW
22:00 - 23:00	0.6		NW
23:00 - 24:00	0.9		NW
00:00 - 01:00	0.8		NW
01:00 - 02:00	0.8		W
02:00 - 03:00	0.8		NW
03:00 - 04:00	1.0		NW
04:00 - 05:00	0.9		WNW
05:00 - 06:00	0.8		NE
06:00 - 07:00	1.0		E
07:00 - 08:00	1.7		WNW
08:00 - 09:00	1.4		NW
09:00 - 10:00	1.3		E
10:00 - 11:00	1.0		E
11:00 - 12:00	0.7		NE
Wind Rose			



File Control R:\Database\Win\WinControlWin-223010-Takuan-Ao pradu Community 1 01-02 Nov 2023

(Miss Katesarin Vorradetwittaya)
 Environmental Scientist

(Miss Preeda Somjai)
 Technical Management Team



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AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical Public Co., Ltd, Branch 6 (Refinery GC 6)	REQUEST SERVICE No.	: 1903/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Subatmospheric Pressure Sampling
SAMPLING DATE	: 01-02/11/2023	ANALYTICAL DATE	: 04/11/2023
SAMPLING TIME	: 13:43-13:52	SAMPLE CONDITION	: Normal
RECEIVED DATE	: 03/11/2023	FILE CODE	: 223010_TO-15_November
REPORT DATE	: 08/11/2023		

Compound	Non Detection		SAMPLING LOCATION		STANDARD* ($\mu\text{g}/\text{m}^3$)
			Takuan-Ao Pradu Community 2		
	ppbv	$\mu\text{g}/\text{m}^3$	ppbv	$\mu\text{g}/\text{m}^3$	
Benzene	0.004	0.013	0.52	1.66	7.6

Methods for the Determination of Toxic Organic Compound in Ambient Air, 2nd : EPA Methods TO-15.1999

(Miss Jutarat Jaemruen)

Analyst

(Mrs. Araya Tipparuk)

Technical Management Team

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Meteorological Monitoring Results : Wind Rose

MTR-PTTGC6-Refinery

Location : Takuan-Ao pradu Community 2

Monitor period : 01-02 Nov 2023

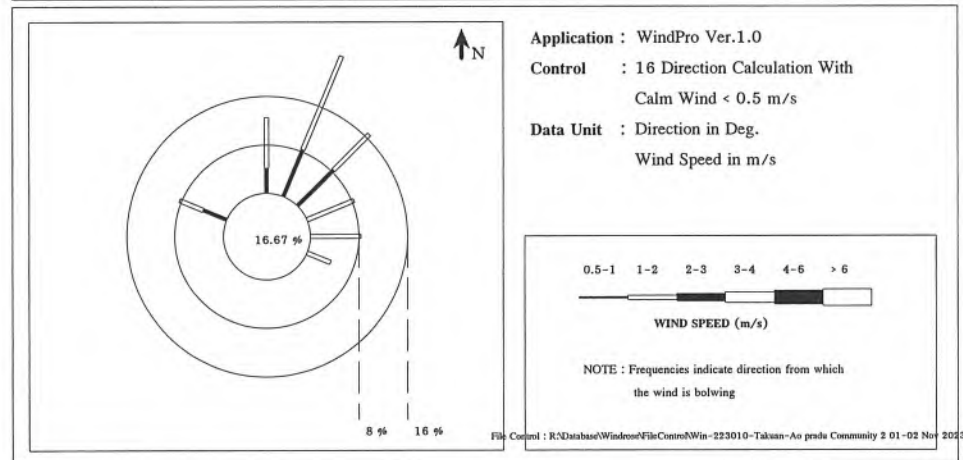
Wind Speed Model : NRG Symphonie

Serial No : A5090

Wind Direction Model : NRG Symphonie

Serial No : A5090

Direction	Percentage of Occurrence of Wind Direct Grouped in Various Wind Speed						Total
	0.5-1 m/s	1-2 m/s	2-3 m/s	3-4 m/s	4-6 m/s	More than 6	
N	0.0417	0.0833	0.0000	0.0000	0.0000	0.0000	0.1250
NNE	0.0833	0.1667	0.0000	0.0000	0.0000	0.0000	0.2500
NE	0.0833	0.0833	0.0000	0.0000	0.0000	0.0000	0.1667
ENE	0.0000	0.0833	0.0000	0.0000	0.0000	0.0000	0.0833
E	0.0000	0.0833	0.0000	0.0000	0.0000	0.0000	0.0833
ESE	0.0000	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
SE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SSE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SSW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
WSW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
W	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
WNW	0.0417	0.0417	0.0000	0.0000	0.0000	0.0000	0.0833
NW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
CALM	0.1667						



(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose

MTR-PTTGC6-Refinery

Location : Takuan-Ao pradu Community 2

Monitor period : 01-02 Nov 2023

Wind Speed Model : NRG Symphonie

Serial No : A5090

Wind Direction Model : NRG Symphonie

Serial No : A5090

Time	01-02 Nov 2023	
	WS(m/s)	WD
12:00 - 13:00	1.2	ESE
13:00 - 14:00	0.8	NNE
14:00 - 15:00	1.3	NE
15:00 - 16:00	0.4	NNW
16:00 - 17:00	0.4	WNW
17:00 - 18:00	0.4	NW
18:00 - 19:00	0.4	NNE
19:00 - 20:00	0.8	NE
20:00 - 21:00	0.5	N
21:00 - 22:00	1.1	NNE
22:00 - 23:00	1.2	WNW
23:00 - 24:00	0.9	WNW
00:00 - 01:00	0.9	NNE
01:00 - 02:00	1.3	NNE
02:00 - 03:00	1.1	NNE
03:00 - 04:00	1.1	NNE
04:00 - 05:00	1.1	N
05:00 - 06:00	0.5	NE
06:00 - 07:00	1.2	E
07:00 - 08:00	1.5	ENE
08:00 - 09:00	1.2	NE
09:00 - 10:00	1.4	E
10:00 - 11:00	1.5	N
11:00 - 12:00	1.2	ENE

Wind Rose



(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



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TEL. (662) 959-3600 FAX (662) 959-3535 Website : secot.co.th E-mail : envserv@secot.co.th

AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical Public Co., Ltd, Branch 6	REQUEST SERVICE No.	: 2185/66
	(Refinery GC 6)	SAMPLING METHOD	: Subatmospheric Pressure Sampling
SAMPLING BY	: SECOT Co., Ltd.	ANALYTICAL DATE	: 11/12/2023
SAMPLING DATE	: 06-07/12/2023	SAMPLE CONDITION	: Normal
SAMPLING TIME	: 10:02-10:17	FILE CODE	: 223010_10-15_December
RECEIVED DATE	: 08/12/2023		
REPORT DATE	: 15/12/2023		

Compound	SAMPLING LOCATION				STANDARD*
	Non Detection		Takuan-Ao Pradu Community 1		
	ppbv	µg/m ³	ppbv	µg/m ³	
Benzene	0.004	0.013	0.91	2.91	7.6

Methods for the Determination of Toxic Organic Compound in Ambient Air, 2nd ed. EPA Methods TO-15.1999

Jutarat Jaermuen

(Miss Jutarat Jaermuen)

Analyst

Mrs. Araya Tipparuk

(Mrs. Araya Tipparuk)

Technical Management Team

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R:\Database\Windrose\Win-223010-Takuan-Ao pradu Community 1 06-07 Dec 2023



Meteorological Monitoring Results : Wind Rose
MTR-PTTGC6-Refinery

Location : Takuan-Ao pradu Community 1

Monitor period : 06-07 Dec 2023

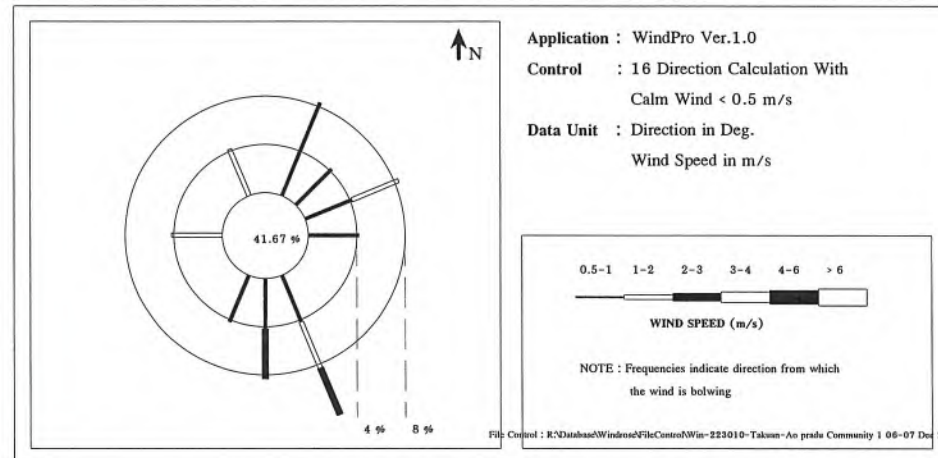
Wind Speed Model : NRG Symphonie

Serial No : 309010695

Wind Direction Model : NRG Symphonie

Serial No : 309010695

Direction	Percentage of Occurrence of Wind Direct Grouped in Various Wind Speed						Total
	0.5-1 m/s	1-2 m/s	2-3 m/s	3-4 m/s	4-6 m/s	More than 6	
N	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNE	0.0833	0.0000	0.0000	0.0000	0.0000	0.0000	0.0833
NE	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
ENE	0.0417	0.0417	0.0000	0.0000	0.0000	0.0000	0.0833
E	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
ESE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SSE	0.0417	0.0417	0.0417	0.0000	0.0000	0.0000	0.1250
S	0.0417	0.0000	0.0417	0.0000	0.0000	0.0000	0.0833
SSW	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
SW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
WSW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
W	0.0000	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
WNW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNW	0.0000	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
CALM	0.4167						



Miss Katesarin Vorradetwittaya

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preeda S.

(Miss Preeda Somjai)
Technical Management Team



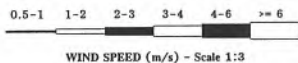
Meteorological Monitoring Results : Wind Rose

MTR-PTTGC6-Refinery

Location : Takuan-Ao pradu Community 1 Monitor period : 06-07 Dec 2023
 Wind Speed Model : NRG Symphonie Serial No : 309010695
 Wind Direction Model : NRG Symphonie Serial No : 309010695

Time	06-07 Dec 2023	
	WS(m/s)	WD
09:00 - 10:00	1.1	SSE
10:00 - 11:00	0.2	E
11:00 - 12:00	0.3	E
12:00 - 13:00	0.5	S
13:00 - 14:00	0.3	S
14:00 - 15:00	0.6	SSW
15:00 - 16:00	1.0	NNW
16:00 - 17:00	0.4	N
17:00 - 18:00	1.7	W
18:00 - 19:00	0.3	S
19:00 - 20:00	2.4	SSE
20:00 - 21:00	0.6	SSE
21:00 - 22:00	2.5	S
22:00 - 23:00	1.9	ENE
23:00 - 24:00	0.4	ENE
00:00 - 01:00	0.6	NNE
01:00 - 02:00	0.6	NNE
02:00 - 03:00	0.6	E
03:00 - 04:00	0.2	N
04:00 - 05:00	0.4	NNE
05:00 - 06:00	0.6	NE
06:00 - 07:00	0.4	ENE
07:00 - 08:00	0.4	NNE
08:00 - 09:00	0.6	ENE

Wind Rose



File Control : R:\Database\Win\Win-223010-Takuan-Ao pradu Community 1 06-07 Dec 2023

(Miss Katesarin Vorradetwittaya)
 Environmental Scientist

(Miss Preeda Somjai)
 Technical Management Team



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AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical Public Co., Ltd, Branch 6	REQUEST SERVICE No.	: 2185/66
	(Refinery GC 6)	SAMPLING METHOD	: Subatmospheric Pressure Sampling
SAMPLING BY	: SECOT Co., Ltd.	ANALYTICAL DATE	: 11/12/2023
SAMPLING DATE	: 06-07/12/2023	SAMPLE CONDITION	: Normal
SAMPLING TIME	: 09:51-10:09	FILE CODE	: 223010_TO-15_December
RECEIVED DATE	: 08/12/2023		
REPORT DATE	: 15/12/2023		

Compound	SAMPLING LOCATION				STANDARD* (µg/m ³)
	Non Detection		Takuan-Ae Pradu Community 2		
	ppbv	µg/m ³	ppbv	µg/m ³	
Benzene	0.004	0.013	0.73	2.33	7.6

Methods for the Determination of Toxic Organic Compound in Ambient Air, 2nd : EPA Methods TO-15.1999

(Miss Jutarat Jaemruen)

Analyst

(Mrs. Araya Tipparuk)

Technical Management Team

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Meteorological Monitoring Results : Wind Rose

MTR-PTTGC6-Refinery

Location : Takuan-Ao pradu Community 2

Monitor period : 06-07 Dec 2023

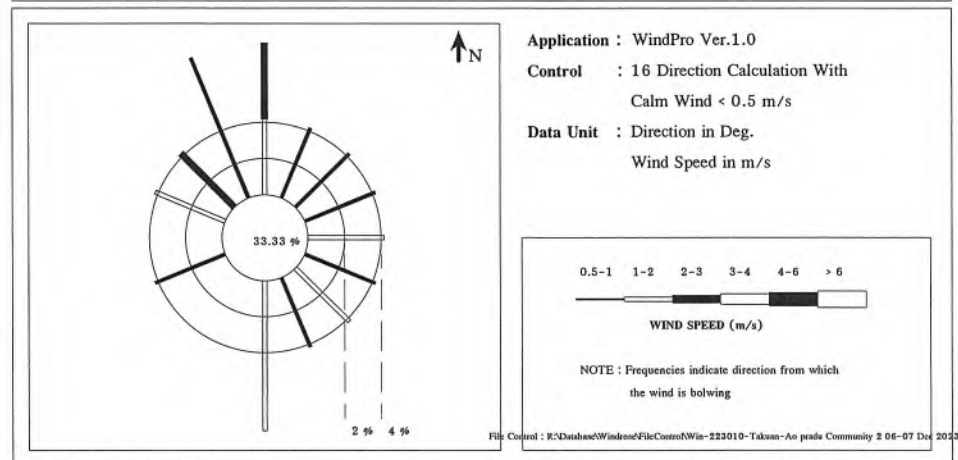
Wind Speed Model : NRG Symphonie

Serial No : 309010693

Wind Direction Model : NRG Symphonie

Serial No : 309010693

Direction	Percentage of Occurrence of Wind Direct Grouped in Various Wind Speed						Total
	0.5-1 m/s	1-2 m/s	2-3 m/s	3-4 m/s	4-6 m/s	More than 6	
N	0.0000	0.0417	0.0417	0.0000	0.0000	0.0000	0.0833
NNE	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
NE	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
ENE	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
E	0.0000	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
ESE	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
SE	0.0000	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
SSE	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
S	0.0000	0.0833	0.0000	0.0000	0.0000	0.0000	0.0833
SSW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
WSW	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
W	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
WNW	0.0000	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
NW	0.0000	0.0000	0.0417	0.0000	0.0000	0.0000	0.0417
NNW	0.0833	0.0000	0.0000	0.0000	0.0000	0.0000	0.0833
CALM	0.3333						



(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose

MTR-PTTGC6-Refinery

Location : Takuan-Ao pradu Community 2

Monitor period : 06-07 Dec 2023

Wind Speed Model : NRG Symphonie

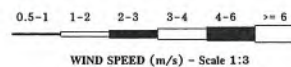
Serial No : 309010693

Wind Direction Model : NRG Symphonie

Serial No : 309010693

Time	06-07 Dec 2023	
	WS(m/s)	WD
09:00 - 10:00	1.3	E
10:00 - 11:00	1.0	S
11:00 - 12:00	1.6	SE
12:00 - 13:00	0.5	ESE
13:00 - 14:00	0.5	SSE
14:00 - 15:00	1.1	S
15:00 - 16:00	0.4	S
16:00 - 17:00	0.5	WSW
17:00 - 18:00	0.4	SW
18:00 - 19:00	2.0	NW
19:00 - 20:00	2.5	N
20:00 - 21:00	0.6	ENE
21:00 - 22:00	1.8	WNW
22:00 - 23:00	0.5	NNW
23:00 - 24:00	0.2	W
00:00 - 01:00	0.4	WNW
01:00 - 02:00	0.6	NNW
02:00 - 03:00	1.0	N
03:00 - 04:00	0.2	NNE
04:00 - 05:00	0.4	N
05:00 - 06:00	0.2	NE
06:00 - 07:00	0.5	NE
07:00 - 08:00	0.5	NNE
08:00 - 09:00	0.2	ENE

Wind Rose



(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



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AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Co., Ltd. REFERENCE NO. : PTTGC6 (Refinery)_223010_Cert-Amb/TSP (Nov23)
Branch 6 (Refinery) SAMPLING DATE : 13-20/11/2023
SAMPLING BY : SECOT Co., Ltd. ANALYTICAL DATE : 24-28/11/2023
RECEIVED DATE : 24/11/2023 SAMPLE CONDITION : Normal
REPORT DATE : 04/12/2023 SITE OPERATOR : Mr. Siwanon Kulawong
LOCATION DESCRIPTION : 1. North of Refinery Area 3. Takuan-Ao Pradu Community 1
2. North of VCU Area 4. Takuan-Ao Pradu Community 2

PARAMETER	SAMPLING DATE	UNITS	RESULTS				STANDARD*	REFERENCE METHOD
			1	2	3	4		
TSP (24 hr)	13-14/11/2023	mg/m ³	0.061	0.035	0.068	0.130	0.330	High Volume Air
	14-15/11/2023	mg/m ³	0.053	0.037	0.046	0.086		Sampler / Gravimetric
	15-16/11/2023	mg/m ³	0.047	0.036	0.034	0.083		Method
	16-17/11/2023	mg/m ³	0.033	0.033	0.033	0.031		
	17-18/11/2023	mg/m ³	0.067	0.055	0.052	0.074		
	18-19/11/2023	mg/m ³	0.085	0.057	0.049	0.076		
	19-20/11/2023	mg/m ³	0.095	0.037	0.059	0.086		

Phatchara Samanchan

(Miss Phatchara Samanchan)

Analyst

Narisa Poowasanetch

(Miss Narisa Poowasanetch)

Technical Management Team

Remark : 1. Reported analysis refers to submitted sample only.

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3. * Notification of the National Environment Board, No.24, B.E.2547 (2004).



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AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Co., Ltd. REFERENCE NO. : PTTGC6 (Refinery)_223010_Cert-Amb/PM-10 (Nov23)
Branch 6 (Refinery) SAMPLING DATE : 13-20/11/2023
SAMPLING BY : SECOT Co., Ltd. ANALYTICAL DATE : 24-28/11/2023
RECEIVED DATE : 24/11/2023 SAMPLE CONDITION : Normal
REPORT DATE : 04/12/2023 SITE OPERATOR : Mr. Siwanon Kulawong
LOCATION DESCRIPTION : 1. North of Refinery Area 3. Takuan-Ao Pradu Community 1
2. North of VCU Area 4. Takuan-Ao Pradu Community 2

PARAMETER	SAMPLING DATE	UNITS	RESULTS				STANDARD*	REFERENCE METHOD
			1	2	3	4		
PM-10 (24 hr)	13-14/11/2023	mg/m ³	0.052	0.023	0.040	0.056	0.12	High Volume
	14-15/11/2023	mg/m ³	0.040	0.021	0.043	0.061		Air Sampler
	15-16/11/2023	mg/m ³	0.038	0.013	0.023	0.061		(Hi-Vol. PM-10 Size
	16-17/11/2023	mg/m ³	0.020	0.015	0.019	0.022		Selective Inlet) /
	17-18/11/2023	mg/m ³	0.031	0.024	0.031	0.042		Gravimetric Method
	18-19/11/2023	mg/m ³	0.040	0.034	0.033	0.062		
	19-20/11/2023	mg/m ³	0.043	0.030	0.038	0.042		

Phatchara Samanchan

(Miss Phatchara Samanchan)

Analyst

Narisa Poowasanetch

(Miss Narisa Poowasanetch)

Technical Management Team

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AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Co., Ltd. REFERENCE NO. : PTTGC6 (Refinery)_223010_Cert-Amb/H₂S (Nov23)
Branch 6 (Refinery) SAMPLING DATE : 13-19/11/2023
SAMPLING BY : SECOT Co., Ltd. ANALYTICAL DATE : 30/11/2023
RECEIVED DATE : 24/11/2023 SAMPLE CONDITION : Normal
REPORT DATE : 08/12/2023 SITE OPERATOR : Mr. Siwanon Kulawong
INSTRUMENT : Impingment Absorption
LOCATION DESCRIPTION : 1. North of Refinery Area 3. Takuan-Ao Pradu Community 1
2. North of VCU Area 4. Takuan-Ao Pradu Community 2

PARAMETER	SAMPLING DATE	UNITS	ND Non-detectable	RESULTS				REFERENCE METHOD
				1	2	3	4	
Hydrogen Sulfide (H ₂ S)	13/11/2023	ppm	<0.001	0.002	0.002	0.001	0.002	Intersociety Committee
	14/11/2023	ppm	<0.001	0.002	0.001	0.002	0.002	Method 701
	15/11/2023	ppm	<0.001	0.002	0.002	0.002	0.002	
	16/11/2023	ppm	<0.001	0.002	0.002	0.002	0.002	
	17/11/2023	ppm	<0.001	0.002	0.001	0.002	0.001	
	18/11/2023	ppm	<0.001	0.002	0.002	0.001	0.001	
	19/11/2023	ppm	<0.001	0.001	0.001	0.001	0.002	

Phatchara Samanchan
(Miss Phatchara Samanchan)
Analyst

Narisa Poowasanpetch
(Miss Narisa Poowasanpetch)
Technical Management Team

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AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Co., Ltd. REFERENCE NO. : PTTGC6 (Refinery)_223010_Cert-Amb/NMHC (Nov23)
Branch 6 (Refinery) SAMPLING DATE : 13-19/11/2023
SAMPLING BY : SECOT Co., Ltd. ANALYTICAL DATE : 30/11/2023
RECEIVED DATE : 24/11/2023 SAMPLE CONDITION : Normal
REPORT DATE : 08/12/2023 SITE OPERATOR : Mr. Siwanon Kulawong
LOCATION DESCRIPTION : 1. North of Refinery Area 3. Takuan-Ao Pradu Community 1
2. North of VCU Area 4. Takuan-Ao Pradu Community 2

PARAMETER	SAMPLING DATE	UNITS	ND Non-detectable	RESULTS				REFERENCE METHOD
				1	2	3	4	
Non-methane	13/11/2023	ppm	<0.05	48.17	2.64	0.11	0.15	Flame Ionization
Hydrocarbon (NMHC)	14/11/2023	ppm	<0.05	7.10	1.10	0.10	0.14	Detection Method
	15/11/2023	ppm	<0.05	4.10	30.01	1.78	0.15	
	16/11/2023	ppm	<0.05	3.86	8.12	1.73	0.10	
	17/11/2023	ppm	<0.05	10.91	0.05	1.39	0.05	
	18/11/2023	ppm	<0.05	0.48	1.32	1.17	0.08	
	19/11/2023	ppm	<0.05	1.87	7.08	0.05	0.08	

Sudaporn S.
(Miss Sudaporn Soonthorn)
Analyst

Narisa Poowasanpetch
(Miss Narisa Poowasanpetch)
Technical Management Team

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AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Co., Ltd. **REFERENCE NO.** : PTTGC6 (Refinery)_223010_Cert-Amb/THC (Nov23)
Branch 6 (Refinery) **SAMPLING DATE** : 13-19/11/2023
SAMPLING BY : SECOT Co., Ltd. **ANALYTICAL DATE** : 30/11/2023
RECEIVED DATE : 24/11/2023 **SAMPLE CONDITION** : Normal
REPORT DATE : 08/12/2023 **SITE OPERATOR** : Mr. Siwanon Kulawong
LOCATION DESCRIPTION : 1. North of Refinery Area 3. Takuan-Ao Pradu Community 1
2. North of VCU Area 4. Takuan-Ao Pradu Community 2

PARAMETER	SAMPLING DATE	UNITS	ND Non-detectable	RESULTS				REFERENCE METHOD
				1	2	3	4	
Total Hydrocarbon	13/11/2023	ppm	<0.10	65.80	6.12	4.18	4.13	Flame Ionization
(THC)	14/11/2023	ppm	<0.10	9.15	7.01	4.98	3.75	Detection Method
	15/11/2023	ppm	<0.10	6.10	38.70	6.12	4.70	
	16/11/2023	ppm	<0.10	5.71	15.20	7.11	5.29	
	17/11/2023	ppm	<0.10	11.80	4.07	6.51	3.71	
	18/11/2023	ppm	<0.10	4.04	5.20	5.52	4.98	
	19/11/2023	ppm	<0.10	12.40	10.50	4.53	3.84	

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

Maia Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

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R:\Database\Ambient\FileControl\Amb-223010-North of Refinery Area - SO2 13-20 Nov 2023



Ambient Air Monitoring Results : Sulfur dioxide
MTR-PTTGC6-Refinery

Location : North of Refinery Area **Monitor Period** : 13-20 Nov 2023
Analyzer Model : Thermo 43C **Station No** : Mobile 10
Serial No : 0607415773 **Site Operator** : Mr. Siwanon Kulawong

Calibrator Model : Teledyne 700E **Serial No** : 587
Calibration Gas Cylinder I.D.: EB0108319
Certified Date : 09 Jan 2023 **Cal Concentration (ppb)** : 0,100,200,400
Expire Date : 08 Jan 2024

Time	SO2 Concentration (ppb)						
	13-14 Nov 2023	14-15 Nov 2023	15-16 Nov 2023	16-17 Nov 2023	17-18 Nov 2023	18-19 Nov 2023	19-20 Nov 2023
10:00 - 11:00	5.7	9.0	7.2	2.6	2.8	4.5	2.2
11:00 - 12:00	4.1	7.9	6.7	2.8	7.2	4.3	2.1
12:00 - 13:00	3.0	3.9	6.3	7.5	5.6	4.6	6.5
13:00 - 14:00	4.8	7.8	2.1	7.6	6.0	2.9	2.1
14:00 - 15:00	1.7	4.6	3.2	1.5	8.3	3.7	6.0
15:00 - 16:00	6.6	9.0	3.4	6.1	3.0	6.3	5.8
16:00 - 17:00	2.8	1.0	7.9	3.6	2.7	2.3	1.6
17:00 - 18:00	4.8	3.0	7.6	3.2	6.6	5.0	7.5
18:00 - 19:00	1.6	1.0	6.9	1.3	8.6	1.2	7.6
19:00 - 20:00	6.0	2.1	4.7	3.6	7.2	4.8	5.6
20:00 - 21:00	1.5	7.4	2.4	2.2	2.0	4.3	4.7
21:00 - 22:00	1.5	3.5	8.2	8.0	2.3	7.4	4.9
22:00 - 23:00	5.4	6.7	2.9	4.3	8.8	1.7	3.7
23:00 - 00:00	7.2	3.9	8.0	1.6	7.2	3.8	4.8
00:00 - 01:00	6.7	4.0	4.3	5.8	6.8	5.0	2.0
01:00 - 02:00	6.3	6.8	8.7	1.9	2.3	5.9	6.2
02:00 - 03:00	7.4	8.7	2.8	6.0	4.7	7.4	7.7
03:00 - 04:00	8.1	7.1	4.4	7.6	5.0	2.1	1.2
04:00 - 05:00	6.2	2.0	5.1	6.2	2.1	4.0	6.5
05:00 - 06:00	1.1	6.0	1.4	1.0	6.9	2.0	3.2
06:00 - 07:00	1.0	5.4	3.3	9.0	8.0	4.9	5.4
07:00 - 08:00	6.7	8.1	4.1	2.6	5.3	6.9	8.7
08:00 - 09:00	4.4	4.4	5.8	6.4	6.6	2.6	5.7
09:00 - 10:00	4.1	8.3	1.9	1.5	2.4	7.0	8.7
Average-24Hr*	4.5	5.5	5.0	4.3	5.4	4.4	5.0
Max-1Hr	8.1	9.0	8.7	9.0	8.8	7.4	8.7
Min-1Hr	1.0	1.0	1.4	1.0	2.0	1.2	1.2
Standard-1Hr	300 ppb(780 ug/cu.m)						
Standard-24Hr	120 ppb(300 ug/cu.m)						

Remark : * Average time between 10:00-10:00

Katesarin Vorradetwittaya

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preeda S.

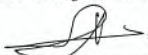
(Miss Preeda Somjai)
Technical Management Team

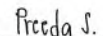


Ambient Air Monitoring Results : Sulfur dioxide MTR-PTTGC6-Refinery

Location : North of VCU Area				Monitor Period : 13-20 Nov 2023			
Analyzer Model : Teledyne T100				Station No : SCT-17			
Serial No : 120				Site Operator : Mr. Siwanon Kulawong			
Calibrator Model : Teledyne 700E				Serial No : 587			
Calibration Gas Cylinder I.D.: EB0108319							
Certified Date : 09 Jan 2023				Cal Concentration (ppb) : 0,100,200,400			
Expire Date : 08 Jan 2024							
Time	SO2 Concentration (ppb)						
	13-14 Nov 2023	14-15 Nov 2023	15-16 Nov 2023	16-17 Nov 2023	17-18 Nov 2023	18-19 Nov 2023	19-20 Nov 2023
12:00 - 13:00	3.2	2.2	2.2	4.3	7.1	6.2	5.1
13:00 - 14:00	5.8	3.2	6.4	8.9	7.5	6.0	3.3
14:00 - 15:00	7.6	3.9	5.8	4.1	4.0	7.8	4.9
15:00 - 16:00	4.7	7.6	4.7	7.4	7.2	7.1	2.3
16:00 - 17:00	6.6	2.1	3.4	6.1	4.9	8.1	7.5
17:00 - 18:00	5.5	5.4	4.8	3.6	3.8	5.6	7.2
18:00 - 19:00	8.1	5.9	7.1	4.7	8.8	6.1	2.5
19:00 - 20:00	6.3	3.6	2.6	3.4	2.4	5.3	7.4
20:00 - 21:00	2.3	7.2	5.7	2.3	7.6	6.5	4.3
21:00 - 22:00	4.9	4.3	2.0	3.5	4.4	8.7	2.2
22:00 - 23:00	8.5	8.0	8.1	4.1	8.4	7.3	5.5
23:00 - 00:00	8.4	6.7	6.1	4.8	8.2	6.0	5.4
00:00 - 01:00	4.7	4.8	5.5	3.8	3.0	5.1	6.0
01:00 - 02:00	2.2	6.1	2.8	6.1	3.0	3.2	6.0
02:00 - 03:00	7.5	4.2	7.2	2.0	3.1	5.2	1.8
03:00 - 04:00	3.3	2.2	4.7	4.8	8.7	3.8	5.5
04:00 - 05:00	3.9	4.3	4.0	1.9	2.6	2.0	2.8
05:00 - 06:00	3.6	7.9	6.7	3.6	8.0	2.0	4.8
06:00 - 07:00	3.8	7.9	8.3	6.1	7.7	6.8	7.8
07:00 - 08:00	5.4	5.0	3.9	6.7	6.7	1.9	8.0
08:00 - 09:00	5.2	6.6	5.2	7.9	5.0	3.6	2.2
09:00 - 10:00	2.6	5.1	8.2	7.1	8.1	6.7	2.5
10:00 - 11:00	3.2	7.6	3.1	4.4	2.7	3.1	7.7
11:00 - 12:00	4.1	6.9	8.6	2.0	6.7	4.5	5.0
Average- 24Hr*	5.1	5.4	5.3	4.7	5.8	5.4	4.9
Max-1Hr	8.5	8.0	8.6	8.9	8.8	8.7	8.0
Min-1Hr	2.2	2.1	2.0	1.9	2.4	1.9	1.8
Standard-1Hr	300 ppb(780 ug/cu.m)						
Standard-24Hr	120 ppb(300 ug/cu.m)						

Remark : * Average time between 12:00-12:00


(Miss Katesarin Vorradetwittaya)
Environmental Scientist

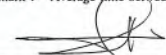

(Miss Preeda Somjai)
Technical Management Team




Ambient Air Monitoring Results : Sulfur dioxide MTR-PTTGC6-Refinery

Location : Takuan-Ao Pradu Community 1				Monitor Period : 13-20 Nov 2023			
Analyzer Model : API 100A				Station No : SCT-15			
Serial No : 132				Site Operator : Mr. Siwanon Kulawong			
Calibrator Model : Teledyne 700E				Serial No : 587			
Calibration Gas Cylinder I.D.: EB0108319							
Certified Date : 09 Jan 2023				Cal Concentration (ppb) : 0,100,200,400			
Expire Date : 08 Jan 2024							
Time	SO2 Concentration (ppb)						
	13-14 Nov 2023	14-15 Nov 2023	15-16 Nov 2023	16-17 Nov 2023	17-18 Nov 2023	18-19 Nov 2023	19-20 Nov 2023
13:00 - 14:00	3.9	3.2	5.1	4.6	3.6	3.7	5.3
14:00 - 15:00	4.1	5.7	5.0	3.9	3.2	5.9	5.4
15:00 - 16:00	4.5	5.5	5.3	3.3	4.5	4.1	5.5
16:00 - 17:00	5.7	3.4	5.0	4.2	5.4	5.0	3.9
17:00 - 18:00	5.4	3.4	4.3	3.3	4.8	5.7	4.7
18:00 - 19:00	3.3	5.9	5.0	5.1	4.0	3.3	5.2
19:00 - 20:00	5.4	4.4	3.9	3.4	3.6	6.0	4.5
20:00 - 21:00	4.7	3.5	4.0	5.0	5.0	3.9	3.8
21:00 - 22:00	3.0	4.0	4.6	4.2	3.7	4.2	3.7
22:00 - 23:00	4.0	4.7	5.8	4.4	3.1	4.6	3.5
23:00 - 00:00	3.1	5.3	4.1	4.5	4.1	4.9	5.9
00:00 - 01:00	5.6	3.4	5.3	5.3	5.5	3.8	5.6
01:00 - 02:00	3.6	4.3	4.4	4.1	5.7	4.8	3.0
02:00 - 03:00	5.7	5.0	5.4	3.3	4.1	5.5	4.0
03:00 - 04:00	3.8	4.0	5.9	4.6	5.8	5.7	5.1
04:00 - 05:00	4.0	5.3	3.0	4.1	3.8	3.3	5.5
05:00 - 06:00	3.9	3.2	3.8	6.0	4.3	4.8	3.3
06:00 - 07:00	5.0	3.5	3.8	5.7	4.2	4.1	5.0
07:00 - 08:00	4.9	5.3	4.6	5.7	4.2	3.1	3.0
08:00 - 09:00	5.0	6.0	5.8	4.8	4.1	5.3	4.5
09:00 - 10:00	4.4	4.9	3.7	4.9	5.0	3.7	3.2
10:00 - 11:00	5.3	3.0	4.5	3.6	4.8	3.6	5.5
11:00 - 12:00	4.6	5.7	3.2	5.4	3.2	6.0	4.9
12:00 - 13:00	4.7	5.6	3.6	3.2	3.9	4.9	5.9
Average-24Hr*	4.5	4.5	4.5	4.4	4.3	4.6	4.6
Max-1Hr	5.7	6.0	5.9	6.0	5.8	6.0	5.9
Min-1Hr	3.0	3.0	3.0	3.2	3.1	3.1	3.0
Standard-1Hr	300 ppb(780 ug/cu.m)						
Standard-24Hr	120 ppb(300 ug/cu.m)						

Remark : * Average time between 13:00-13:00


(Miss Katesarin Vorradetwittaya)
Environmental Scientist


(Miss Preeda Somjai)
Technical Management Team



Ambient Air Monitoring Results : Sulfur dioxide MTR-PTTGC6-Refinery

Location : Takuan-Ao Pradu Community 2	Monitor Period : 13-20 Nov 2023
Analyzer Model : API 100E	Station No : Shelter 17
Serial No : 069	Site Operator : Mr. Siwanon Kulawong
Calibrator Model : Teledyne 700E	Serial No : 587
Calibration Gas Cylinder I.D.: EB0108319	
Certified Date : 09 Jan 2023	Cal Concentration (ppb) : 0,100,200,400
Expire Date : 08 Jan 2024	

Time	SO2 Concentration (ppb)						
	13-14 Nov 2023	14-15 Nov 2023	15-16 Nov 2023	16-17 Nov 2023	17-18 Nov 2023	18-19 Nov 2023	19-20 Nov 2023
12:00 - 13:00	4.4	5.6	3.8	2.6	3.8	2.9	4.9
13:00 - 14:00	3.6	5.5	3.3	5.0	3.0	2.6	4.6
14:00 - 15:00	4.5	2.4	5.3	2.4	3.3	6.2	3.8
15:00 - 16:00	4.5	4.8	5.5	2.5	5.4	2.2	3.3
16:00 - 17:00	4.3	3.1	5.8	4.2	2.8	3.2	3.5
17:00 - 18:00	2.8	3.5	5.4	2.3	3.6	2.7	6.2
18:00 - 19:00	4.6	4.3	3.2	5.5	2.4	5.8	2.7
19:00 - 20:00	4.1	4.8	6.0	4.4	3.3	3.5	6.2
20:00 - 21:00	3.5	4.0	4.6	5.3	2.4	2.7	2.8
21:00 - 22:00	5.4	4.8	2.5	4.4	4.9	5.3	5.1
22:00 - 23:00	3.7	2.0	2.6	2.2	5.0	5.0	4.5
23:00 - 00:00	3.6	3.6	5.5	3.5	4.8	3.1	2.3
00:00 - 01:00	2.5	2.1	2.7	3.6	6.1	4.5	5.4
01:00 - 02:00	5.0	4.9	2.9	2.1	2.5	2.6	6.2
02:00 - 03:00	3.8	5.0	4.6	4.6	4.2	4.8	5.5
03:00 - 04:00	4.1	4.0	3.8	2.8	2.8	4.4	4.3
04:00 - 05:00	6.0	4.1	2.1	4.2	4.6	4.8	5.9
05:00 - 06:00	2.2	2.2	2.6	3.6	2.4	2.3	3.1
06:00 - 07:00	3.8	4.3	4.5	3.1	4.5	2.6	2.7
07:00 - 08:00	5.7	3.2	3.2	4.6	5.5	3.0	5.3
08:00 - 09:00	5.7	2.1	4.9	5.7	2.3	4.3	6.0
09:00 - 10:00	5.0	2.7	4.1	2.4	3.1	5.0	2.3
10:00 - 11:00	5.8	3.6	2.1	4.2	5.2	5.1	3.1
11:00 - 12:00	5.6	5.4	3.1	2.9	5.6	5.7	3.5

Average-24Hr*	4.3	3.8	3.9	3.7	3.9	3.9	4.3
Max-1Hr	6.0	5.6	6.0	5.7	6.1	6.2	6.2
Min-1Hr	2.2	2.0	2.1	2.1	2.3	2.2	2.3

Standard-1Hr	300 ppb(780 ug/cu.m)						
Standard-24Hr	120 ppb(300 ug/cu.m)						

Remark : * Average time between 12:00-12:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



Ambient Air Monitoring Results : Nitrogen dioxide MTR-PTTGC6-Refinery

Location : North of Refinery Area	Monitor Period : 13-20 Nov 2023
Analyzer Model : API 200A	Station No : Mobile 10
Serial No : 2384	Site Operator : Mr. Siwanon Kulawong
Calibrator Model : Teledyne 700E	Serial No : 587
Calibration Gas Cylinder I.D.: EB0108319	
Certified Date : 09 Jan 2023	Cal Concentration (ppb) : 0,100,200,400
Expire Date : 08 Jan 2024	

Time	NO2 Concentration (ppb)						
	13-14 Nov 2023	14-15 Nov 2023	15-16 Nov 2023	16-17 Nov 2023	17-18 Nov 2023	18-19 Nov 2023	19-20 Nov 2023
10:00 - 11:00	5.2	5.1	5.6	7.3	2.4	6.5	8.2
11:00 - 12:00	9.0	5.6	3.7	4.8	3.0	6.8	5.8
12:00 - 13:00	7.6	4.9	5.2	4.4	1.7	4.7	4.2
13:00 - 14:00	5.0	6.9	7.5	7.5	3.0	5.6	5.7
14:00 - 15:00	5.6	5.9	5.8	4.3	2.2	5.0	6.7
15:00 - 16:00	8.8	6.9	7.3	5.8	5.1	5.6	3.6
16:00 - 17:00	10.4	6.8	10.6	10.9	9.5	9.3	5.4
17:00 - 18:00	14.0	13.4	14.8	7.3	12.9	11.5	9.7
18:00 - 19:00	15.5	12.2	12.1	9.6	11.1	13.1	10.1
19:00 - 20:00	16.6	13.3	9.8	12.0	12.1	12.5	13.2
20:00 - 21:00	13.1	15.2	9.2	10.8	11.4	11.3	11.0
21:00 - 22:00	13.8	14.0	10.1	8.7	12.0	13.6	10.2
22:00 - 23:00	13.2	10.8	12.3	4.7	11.8	11.4	12.8
23:00 - 00:00	5.6	12.2	12.0	6.5	11.3	10.5	14.7
00:00 - 01:00	8.7	5.3	10.2	5.5	9.4	13.6	12.8
01:00 - 02:00	9.3	7.8	4.3	5.1	10.2	12.3	13.1
02:00 - 03:00	9.5	6.6	14.0	1.3	8.1	10.8	13.5
03:00 - 04:00	9.8	8.9	12.2	5.7	3.3	9.1	11.6
04:00 - 05:00	9.1	9.1	10.0	9.6	11.5	2.2	12.3
05:00 - 06:00	8.4	14.5	12.4	8.6	11.9	12.5	2.3
06:00 - 07:00	6.8	12.3	12.5	9.0	10.7	10.6	13.4
07:00 - 08:00	7.7	10.3	9.1	5.9	9.7	9.5	11.6
08:00 - 09:00	6.8	9.6	8.8	5.3	11.3	8.2	10.4
09:00 - 10:00	6.8	9.1	8.4	3.2	6.6	6.2	1.8

Average-24Hr*	9.4	9.4	9.5	6.8	8.4	9.3	9.3
Max-1Hr	16.6	15.2	14.8	12.0	12.9	13.6	14.7
Min-1Hr	5.0	4.9	3.7	1.3	1.7	2.2	1.8

Standard-1Hr	170 ppb(320 ug/cu.m)						
Standard-24Hr	-						

Remark : * Average time between 10:00-10:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



Ambient Air Monitoring Results : Nitrogen dioxide MTR-PTTGC6-Refinery

Location : North of VCU Area	Monitor Period : 13-20 Nov 2023
Analyzer Model : Thermo 42C	Station No : SCT-17
Serial No : 0336004016	Site Operator : Mr. Siwanon Kulawong
Calibrator Model : Teledyne 700E	Serial No : 587
Calibration Gas Cylinder I.D.: EB0108319	
Certified Date : 09 Jan 2023	Cal Concentration (ppb) : 0,100,200,400
Expire Date : 08 Jan 2024	

Time	NO2 Concentration (ppb)						
	13-14 Nov 2023	14-15 Nov 2023	15-16 Nov 2023	16-17 Nov 2023	17-18 Nov 2023	18-19 Nov 2023	19-20 Nov 2023
12:00 - 13:00	6.3	5.3	3.4	5.0	2.3	4.7	3.8
13:00 - 14:00	5.3	5.4	4.6	5.7	2.6	4.3	4.4
14:00 - 15:00	5.4	4.7	5.1	4.2	1.6	4.4	3.8
15:00 - 16:00	6.2	5.5	5.2	5.2	5.3	5.0	3.8
16:00 - 17:00	9.0	8.1	8.1	8.5	6.6	7.4	5.7
17:00 - 18:00	12.9	10.0	11.3	6.1	10.3	10.9	8.8
18:00 - 19:00	15.3	10.2	9.8	8.1	11.5	10.8	9.5
19:00 - 20:00	13.5	11.2	10.1	9.8	11.4	10.5	10.3
20:00 - 21:00	12.7	14.0	9.1	10.7	11.0	10.8	10.8
21:00 - 22:00	12.0	11.0	10.9	7.0	11.3	10.2	10.3
22:00 - 23:00	11.4	10.7	11.4	6.1	11.5	11.7	12.6
23:00 - 00:00	3.7	9.8	10.9	4.7	9.6	10.5	12.0
00:00 - 01:00	8.4	3.4	10.4	5.1	7.8	10.3	11.0
01:00 - 02:00	9.1	7.3	2.6	3.2	7.0	11.8	12.0
02:00 - 03:00	8.3	7.1	10.7	1.6	6.5	12.4	11.6
03:00 - 04:00	8.6	7.5	11.2	5.3	1.4	10.1	11.5
04:00 - 05:00	7.5	9.6	10.4	6.6	10.0	1.7	10.4
05:00 - 06:00	8.4	11.4	9.6	7.3	11.2	10.3	0.4
06:00 - 07:00	6.9	10.4	10.7	7.4	11.3	10.7	11.5
07:00 - 08:00	7.7	7.9	9.8	6.0	10.5	9.9	11.0
08:00 - 09:00	7.4	7.0	7.1	5.8	8.9	8.5	9.0
09:00 - 10:00	6.4	5.9	6.4	1.2	6.4	6.4	1.0
10:00 - 11:00	5.8	6.0	5.3	1.6	5.0	6.4	5.7
11:00 - 12:00	5.2	4.2	5.1	2.5	5.8	4.2	8.4
Average-24Hr*	8.5	8.1	8.3	5.6	7.8	8.6	8.3
Max-1Hr	15.3	14.0	11.4	10.7	11.5	13.2	12.6
Min-1Hr	3.7	3.4	2.6	1.2	1.4	1.7	0.4
Standard-1Hr	170 ppb(320 ug/cu.m)						
Standard-24Hr	-						

Remark : * Average time between 12:00-12:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



Ambient Air Monitoring Results : Nitrogen dioxide MTR-PTTGC6-Refinery

Location : Takuan-Ao Pradu Community 1	Monitor Period : 13-20 Nov 2023
Analyzer Model : API 200A	Station No : SCT-15
Serial No : 074	Site Operator : Mr. Siwanon Kulawong
Calibrator Model : Teledyne 700E	Serial No : 587
Calibration Gas Cylinder I.D.: EB0108319	
Certified Date : 09 Jan 2023	Cal Concentration (ppb) : 0,100,200,400
Expire Date : 08 Jan 2024	

Time	NO2 Concentration (ppb)						
	13-14 Nov 2023	14-15 Nov 2023	15-16 Nov 2023	16-17 Nov 2023	17-18 Nov 2023	18-19 Nov 2023	19-20 Nov 2023
13:00 - 14:00	6.5	4.5	4.3	5.2	4.4	7.7	4.1
14:00 - 15:00	5.8	3.7	6.3	5.6	5.7	5.1	5.9
15:00 - 16:00	7.1	8.3	8.0	5.1	4.3	7.6	7.6
16:00 - 17:00	6.6	6.7	9.4	3.8	6.4	7.8	7.9
17:00 - 18:00	8.9	8.9	3.6	5.1	7.0	7.2	7.6
18:00 - 19:00	10.2	2.9	6.8	4.9	5.9	9.7	13.8
19:00 - 20:00	2.5	4.9	5.6	6.1	4.2	8.9	10.1
20:00 - 21:00	9.8	7.0	7.7	3.8	6.6	5.6	7.8
21:00 - 22:00	4.1	8.9	6.6	3.3	6.8	7.2	5.4
22:00 - 23:00	7.0	4.1	3.5	3.7	2.7	6.0	6.8
23:00 - 00:00	6.4	3.0	2.0	2.5	2.5	6.5	6.0
00:00 - 01:00	5.2	4.6	2.4	4.9	5.8	4.7	6.4
01:00 - 02:00	4.9	5.8	5.7	3.3	3.2	5.6	5.9
02:00 - 03:00	5.8	5.6	5.1	5.4	6.1	2.4	5.6
03:00 - 04:00	6.9	5.5	5.6	5.3	4.4	4.3	3.1
04:00 - 05:00	4.7	5.6	5.5	6.4	2.7	2.8	3.1
05:00 - 06:00	5.4	6.6	8.2	5.2	3.1	6.1	3.6
06:00 - 07:00	4.7	7.1	7.6	3.7	4.7	3.9	7.1
07:00 - 08:00	5.6	6.2	5.7	5.4	6.2	6.0	5.5
08:00 - 09:00	4.6	7.1	5.2	7.1	7.3	6.5	6.3
09:00 - 10:00	4.8	4.2	7.3	4.3	6.3	5.0	7.2
10:00 - 11:00	5.6	6.8	7.4	7.0	4.3	3.0	5.6
11:00 - 12:00	4.3	6.1	5.2	5.0	6.2	6.8	6.2
12:00 - 13:00	6.5	7.6	4.8	5.9	5.3	7.4	3.6
Average-24Hr*	6.0	5.9	5.8	4.9	5.1	6.0	6.3
Max-1Hr	10.2	8.9	9.4	7.1	7.3	9.7	13.8
Min-1Hr	2.5	2.9	2.0	2.5	2.5	2.4	3.1
Standard-1Hr	170 ppb(320 ug/cu.m)						
Standard-24Hr	-						

Remark : * Average time between 13:00-13:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



Ambient Air Monitoring Results : Nitrogen dioxide MTR-PTTGC6-Refinery

Location : Takuan-Ao Pradu Community 2	Monitor Period : 13-20 Nov 2023
Analyzer Model : Teledyne T200	Station No : Shelter 17
Serial No : 110	Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Teledyne 700E	Serial No : 587
Calibration Gas Cylinder I.D.: EB0108319	
Certified Date : 09 Jan 2023	Cal Concentration (ppb) : 0,100,200,400
Expire Date : 08 Jan 2024	

Time	NO2 Concentration (ppb)						
	13-14 Nov 2023	14-15 Nov 2023	15-16 Nov 2023	16-17 Nov 2023	17-18 Nov 2023	18-19 Nov 2023	19-20 Nov 2023
12:00 - 13:00	4.6	2.9	4.1	5.3	6.0	6.3	5.3
13:00 - 14:00	3.2	3.9	6.5	5.3	6.2	6.3	3.8
14:00 - 15:00	6.6	6.7	4.4	4.1	5.6	3.2	6.4
15:00 - 16:00	5.6	5.4	8.2	5.8	1.9	4.8	6.7
16:00 - 17:00	8.4	8.5	8.3	4.6	6.7	6.7	6.7
17:00 - 18:00	9.9	7.3	4.6	7.2	6.9	7.4	8.8
18:00 - 19:00	10.7	3.3	7.0	4.8	7.8	9.1	13.6
19:00 - 20:00	5.5	5.3	8.1	6.9	4.0	8.7	8.3
20:00 - 21:00	10.2	6.1	4.6	6.1	5.6	6.3	4.9
21:00 - 22:00	6.6	10.3	4.7	4.1	5.0	6.7	2.6
22:00 - 23:00	3.2	4.9	2.6	3.9	3.3	2.7	5.6
23:00 - 00:00	3.0	4.2	3.8	4.9	3.0	4.0	6.0
00:00 - 01:00	4.8	4.0	3.7	3.6	5.5	3.6	4.0
01:00 - 02:00	3.7	3.4	5.4	2.8	2.1	4.4	5.6
02:00 - 03:00	4.0	5.0	3.5	2.6	3.3	4.0	3.9
03:00 - 04:00	4.3	4.1	3.1	5.8	3.9	2.3	4.4
04:00 - 05:00	6.2	4.9	5.1	2.6	2.9	2.4	3.8
05:00 - 06:00	4.3	4.2	6.3	4.1	5.7	6.6	5.4
06:00 - 07:00	7.0	4.8	4.0	4.3	4.9	5.2	4.3
07:00 - 08:00	6.9	4.5	4.0	6.0	3.5	6.5	6.7
08:00 - 09:00	5.3	4.3	6.9	6.6	3.5	5.0	7.7
09:00 - 10:00	5.6	3.7	7.6	6.4	5.6	5.7	7.3
10:00 - 11:00	6.9	5.1	8.0	5.9	3.4	5.1	6.4
11:00 - 12:00	4.3	7.0	2.9	4.8	7.3	7.3	7.2

Average-24Hr*	5.9	5.2	5.3	4.9	4.7	5.4	6.1
Max-1Hr	10.7	10.3	8.3	7.2	7.8	9.1	13.6
Min-1Hr	3.0	2.9	2.6	2.6	1.9	2.3	2.6

Standard-1Hr	170 ppb(320 ug/cu.m)						
Standard-24Hr	-						

Remark : * Average time between 12:00-12:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

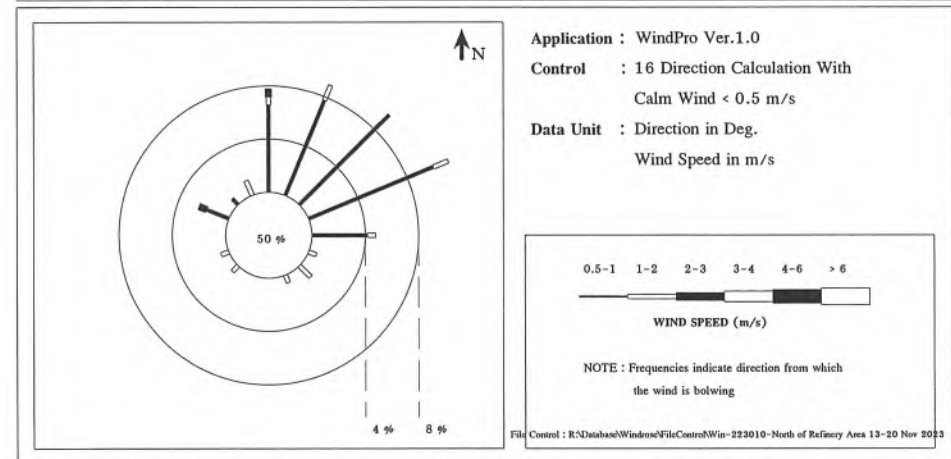
Preeda S.
(Miss Preeda Somjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose MTR-PTTGC6-Refinery

Location : North of Refinery Area	Monitor period : 13-20 Nov 2023
Wind Speed Model : NRG Symphonie	Serial No : A5088
Wind Direction Model : NRG Symphonie	Serial No : A5088

Direction	Percentage of Occurrence of Wind Direct Grouped in Various Wind Speed						Total
	0.5-1 m/s	1-2 m/s	2-3 m/s	3-4 m/s	4-6 m/s	More than 6	
N	0.0655	0.0060	0.0060	0.0000	0.0000	0.0000	0.0774
NNE	0.0774	0.0119	0.0000	0.0000	0.0000	0.0000	0.0893
NE	0.0952	0.0000	0.0000	0.0000	0.0000	0.0000	0.0952
ENE	0.1012	0.0119	0.0000	0.0000	0.0000	0.0000	0.1131
E	0.0417	0.0060	0.0000	0.0000	0.0000	0.0000	0.0476
ESE	0.0000	0.0060	0.0000	0.0000	0.0000	0.0000	0.0060
SE	0.0000	0.0119	0.0000	0.0000	0.0000	0.0000	0.0119
SSE	0.0000	0.0060	0.0000	0.0000	0.0000	0.0000	0.0060
S	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SSW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SW	0.0000	0.0060	0.0000	0.0000	0.0000	0.0000	0.0060
WSW	0.0000	0.0060	0.0000	0.0000	0.0000	0.0000	0.0060
W	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
WNW	0.0179	0.0000	0.0060	0.0000	0.0000	0.0000	0.0238
NW	0.0060	0.0000	0.0000	0.0000	0.0000	0.0000	0.0060
NNW	0.0000	0.0119	0.0000	0.0000	0.0000	0.0000	0.0119
CALM	0.5000						



(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose MTR-PTTGC6-Refinery

Location : North of Refinery Area

Monitor period : 13-20 Nov 2023

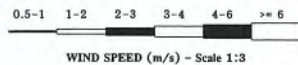
Wind Speed Model : NRG Symphonie

Serial No : A5088

Wind Direction Model : NRG Symphonie

Serial No : A5088

Time	13-14 Nov 2023		14-15 Nov 2023		15-16 Nov 2023		16-17 Nov 2023	
	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD
10:00 - 11:00	1.7	ENE	0.2	NNE	0.2	N	0.2	NE
11:00 - 12:00	0.5	NNE	0.4	NNE	0.5	ENE	0.6	NNE
12:00 - 13:00	0.4	N	0.5	N	1.5	SE	1.3	ESE
13:00 - 14:00	0.3	NE	0.5	N	1.5	SW	1.4	NNE
14:00 - 15:00	0.5	NNE	0.4	NE	1.8	SSE	0.2	NNE
15:00 - 16:00	0.5	NNE	0.6	E	0.4	E	0.2	NNE
16:00 - 17:00	1.2	SE	0.4	NNE	1.5	N	1.5	NNW
17:00 - 18:00	0.7	WNW	0.6	ENE	1.6	WSW	2.0	N
18:00 - 19:00	0.6	WNW	0.2	NNE	2.0	WNW	0.3	E
19:00 - 20:00	0.4	W	0.2	N	0.9	NE	0.3	NE
20:00 - 21:00	0.5	NW	0.5	NNE	0.6	NE	0.5	N
21:00 - 22:00	0.3	NW	0.4	N	0.4	N	0.3	NE
22:00 - 23:00	1.4	E	0.3	ENE	0.3	NE	0.5	ENE
23:00 - 24:00	0.5	NE	0.2	NE	0.4	E	0.5	NNE
00:00 - 01:00	0.2	N	0.6	ENE	0.2	ENE	0.2	NNE
01:00 - 02:00	0.3	N	0.5	ENE	0.3	NE	0.5	ENE
02:00 - 03:00	0.2	N	0.6	NNE	0.3	ENE	0.2	N
03:00 - 04:00	0.2	NNE	0.6	E	0.6	NE	0.2	ENE
04:00 - 05:00	0.5	NE	0.5	N	0.6	NNE	0.5	NNE
05:00 - 06:00	0.3	NNE	0.5	NE	0.2	NE	0.6	N
06:00 - 07:00	0.3	NE	0.5	NE	0.5	N	0.4	NNE
07:00 - 08:00	0.5	NNE	0.6	ENE	0.2	ENE	0.4	E
08:00 - 09:00	0.4	E	0.4	NNE	0.3	NE	0.4	NE
09:00 - 10:00	0.2	E	0.6	NE	0.5	NNE	0.5	E
Wind Rose								



(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose MTR-PTTGC6-Refinery

Location : North of Refinery Area

Monitor period : 13-20 Nov 2023

Wind Speed Model : NRG Symphonie

Serial No : A5088

Wind Direction Model : NRG Symphonie

Serial No : A5088

Time	17-18 Nov 2023		18-19 Nov 2023		19-20 Nov 2023	
	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD
10:00 - 11:00	0.6	NE	0.3	N	0.6	NNE
11:00 - 12:00	0.4	NE	0.4	NNE	0.5	E
12:00 - 13:00	0.5	ENE	0.6	ENE	0.2	ENE
13:00 - 14:00	0.3	ENE	0.6	N	0.5	NE
14:00 - 15:00	0.5	N	0.2	E	0.3	NE
15:00 - 16:00	0.2	NE	0.2	ENE	0.2	ENE
16:00 - 17:00	0.6	N	0.3	ENE	0.5	NNE
17:00 - 18:00	0.4	N	0.3	NNE	0.5	ENE
18:00 - 19:00	0.4	N	0.3	N	0.3	NE
19:00 - 20:00	0.6	NE	0.2	NE	0.4	NE
20:00 - 21:00	0.4	ENE	0.2	ENE	0.5	NE
21:00 - 22:00	0.5	ENE	0.3	ENE	0.7	WNW
22:00 - 23:00	0.4	N	0.4	ENE	1.9	NNE
23:00 - 24:00	0.3	N	0.6	E	0.3	NNE
00:00 - 01:00	0.5	N	0.6	ENE	0.6	ENE
01:00 - 02:00	0.3	NNE	0.4	NE	0.6	NE
02:00 - 03:00	0.3	NNE	0.4	N	0.5	NE
03:00 - 04:00	0.4	ENE	0.2	E	1.0	NNW
04:00 - 05:00	0.3	NE	0.6	NE	0.4	NW
05:00 - 06:00	0.3	NNE	0.3	NE	0.2	NNW
06:00 - 07:00	0.3	NNE	0.5	ENE	1.9	ENE
07:00 - 08:00	0.3	E	0.5	ENE	0.5	N
08:00 - 09:00	0.5	ENE	0.5	E	0.2	NNE
09:00 - 10:00	0.5	E	0.5	ENE	0.6	NE
Wind Rose						



(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose

MTR-PTTGC6-Refinery

Location : North of VCU Area

Monitor period : 13-20 Nov 2023

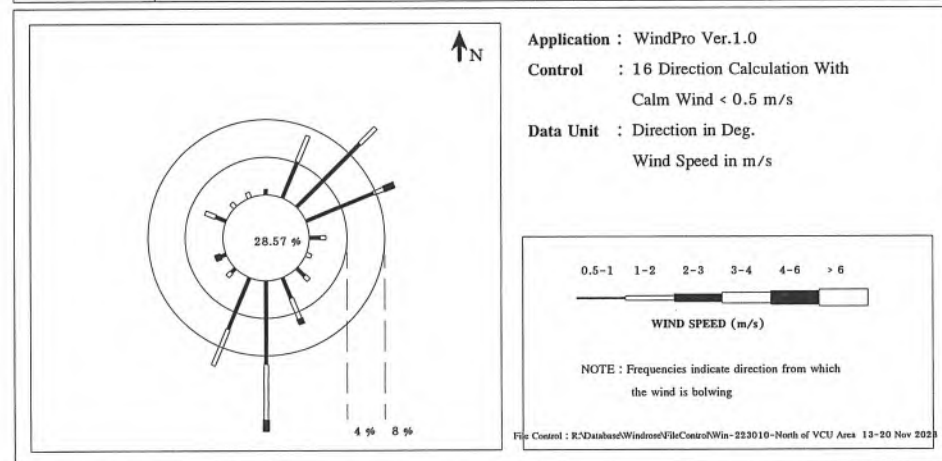
Wind Speed Model : NRG Symphonie

Serial No : A5084

Wind Direction Model : NRG Symphonie

Serial No : A5084

Direction	Percentage of Occurrence of Wind Direct Grouped in Various Wind Speed						Total
	0.5-1 m/s	1-2 m/s	2-3 m/s	3-4 m/s	4-6 m/s	More than 6	
N	0.0060	0.0000	0.0000	0.0000	0.0000	0.0000	0.0060
NNE	0.0417	0.0298	0.0000	0.0000	0.0000	0.0000	0.0714
NE	0.0952	0.0238	0.0000	0.0000	0.0000	0.0000	0.1190
ENE	0.0774	0.0119	0.0119	0.0000	0.0000	0.0000	0.1012
E	0.0119	0.0060	0.0000	0.0000	0.0000	0.0000	0.0179
ESE	0.0000	0.0060	0.0000	0.0000	0.0000	0.0000	0.0060
SE	0.0119	0.0060	0.0000	0.0000	0.0000	0.0000	0.0179
SSE	0.0238	0.0238	0.0060	0.0000	0.0000	0.0000	0.0536
S	0.0893	0.0595	0.0119	0.0000	0.0000	0.0000	0.1607
SSW	0.0595	0.0417	0.0000	0.0000	0.0000	0.0000	0.1012
SW	0.0060	0.0060	0.0000	0.0000	0.0000	0.0000	0.0119
WSW	0.0060	0.0000	0.0060	0.0000	0.0000	0.0000	0.0119
W	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
WNW	0.0119	0.0119	0.0000	0.0000	0.0000	0.0000	0.0238
NW	0.0000	0.0060	0.0000	0.0000	0.0000	0.0000	0.0060
NNW	0.0000	0.0060	0.0000	0.0000	0.0000	0.0000	0.0060
CALM	0.2857						



(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose

MTR-PTTGC6-Refinery

Location : North of VCU Area

Monitor period : 13-20 Nov 2023

Wind Speed Model : NRG Symphonie

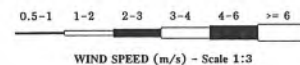
Serial No : A5084

Wind Direction Model : NRG Symphonie

Serial No : A5084

Time	13-14 Nov 2023		14-15 Nov 2023		15-16 Nov 2023		16-17 Nov 2023	
	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD
12:00 - 13:00	1.2	E	0.2	NNE	0.6	S	0.2	E
13:00 - 14:00	0.2	NNE	0.6	ENE	1.4	SSW	0.4	NE
14:00 - 15:00	0.3	NNE	0.4	NNE	0.2	SSW	0.3	ENE
15:00 - 16:00	0.6	ENE	0.2	NE	1.1	SSE	1.7	SW
16:00 - 17:00	1.5	ESE	0.6	ENE	0.4	SE	1.9	SSE
17:00 - 18:00	0.6	WSW	0.4	NE	2.0	WSW	1.0	ENE
18:00 - 19:00	1.0	NW	0.4	NE	0.7	S	0.3	NNE
19:00 - 20:00	0.6	WNW	1.8	SSW	0.9	SSW	0.5	NE
20:00 - 21:00	0.8	SSE	0.4	S	1.3	NNE	0.3	NE
21:00 - 22:00	1.7	WNW	0.3	SW	0.3	NNE	0.2	E
22:00 - 23:00	1.2	S	0.4	SSW	1.0	S	0.5	ENE
23:00 - 24:00	0.3	S	0.5	SSW	0.6	S	0.2	ENE
00:00 - 01:00	0.5	S	2.0	SSE	0.9	SE	0.5	NNE
01:00 - 02:00	0.5	S	1.7	SSW	1.8	S	0.2	ENE
02:00 - 03:00	1.5	SSW	0.3	S	1.6	NNE	0.5	NE
03:00 - 04:00	0.7	NE	2.0	S	0.5	E	0.5	NE
04:00 - 05:00	0.7	S	1.4	NNE	0.6	S	0.5	ENE
05:00 - 06:00	1.8	S	1.7	S	0.6	S	0.5	ENE
06:00 - 07:00	1.0	SSW	0.6	S	1.2	NE	0.6	NE
07:00 - 08:00	1.2	ENE	0.7	NE	0.2	NNE	0.2	NNE
08:00 - 09:00	0.6	ENE	0.9	S	0.6	SSW	0.6	NNE
09:00 - 10:00	0.4	NNE	1.9	NE	1.3	NNE	0.5	E
10:00 - 11:00	0.5	NE	0.6	ENE	0.6	NE	0.3	ENE
11:00 - 12:00	0.4	N	0.5	ENE	0.4	ENE	0.5	ENE

Wind Rose



(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose

MTR-PTTGC6-Refinery

Location : North of VCU Area

Monitor period : 13-20 Nov 2023

Wind Speed Model : NRG Symphonie

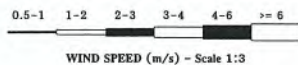
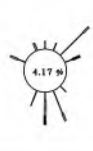
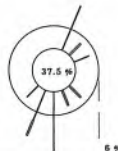
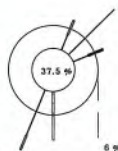
Serial No : A5084

Wind Direction Model : NRG Symphonie

Serial No : A5084

Time	17-18 Nov 2023		18-19 Nov 2023		19-20 Nov 2023		
	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD	
12:00 - 13:00	0.4	NNE	1.9	SSE	1.3	S	
13:00 - 14:00	0.6	NE	0.4	S	1.0	NE	
14:00 - 15:00	0.2	NNE	0.2	SSE	0.5	NNE	
15:00 - 16:00	0.3	NNE	0.3	SE	0.5	ENE	
16:00 - 17:00	0.5	NNE	1.1	NE	0.6	NE	
17:00 - 18:00	0.6	NE	0.7	SSW	0.5	NE	
18:00 - 19:00	0.4	NE	0.8	NNE	0.6	NE	
19:00 - 20:00	1.4	S	0.9	S	0.3	ENE	
20:00 - 21:00	2.0	ENE	1.7	SSW	0.6	NE	
21:00 - 22:00	0.5	NE	0.3	SSW	1.6	WNW	
22:00 - 23:00	0.9	SSW	0.6	SW	2.0	S	
23:00 - 24:00	1.8	NNE	0.5	S	0.6	SE	
00:00 - 01:00	0.2	NNE	0.5	S	1.5	S	
01:00 - 02:00	0.4	NE	0.3	SSW	0.7	SSE	
02:00 - 03:00	0.3	NNE	0.8	ENE	0.5	SSE	
03:00 - 04:00	0.6	ENE	1.6	SE	1.2	NNW	
04:00 - 05:00	0.2	E	0.3	SSE	0.5	N	
05:00 - 06:00	0.4	NNE	0.3	SSE	0.6	WNW	
06:00 - 07:00	1.8	S	0.6	S	1.4	SSE	
07:00 - 08:00	0.6	SSW	0.6	SSW	0.8	SSW	
08:00 - 09:00	0.6	NE	0.9	NNE	0.7	SSE	
09:00 - 10:00	1.1	S	0.2	ENE	0.6	S	
10:00 - 11:00	1.9	SSW	0.6	NNE	2.0	ENE	
11:00 - 12:00	0.5	SSW	0.2	NNE	0.9	SSW	

Wind Rose



File Control : R:\Database\Windrose\FileControl\Win-223010-North of VCU Area 13-20 Nov 2023

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose

MTR-PTTGC6-Refinery

Location : Takuan-Ao Pradu Community 1

Monitor period : 13-20 Nov 2023

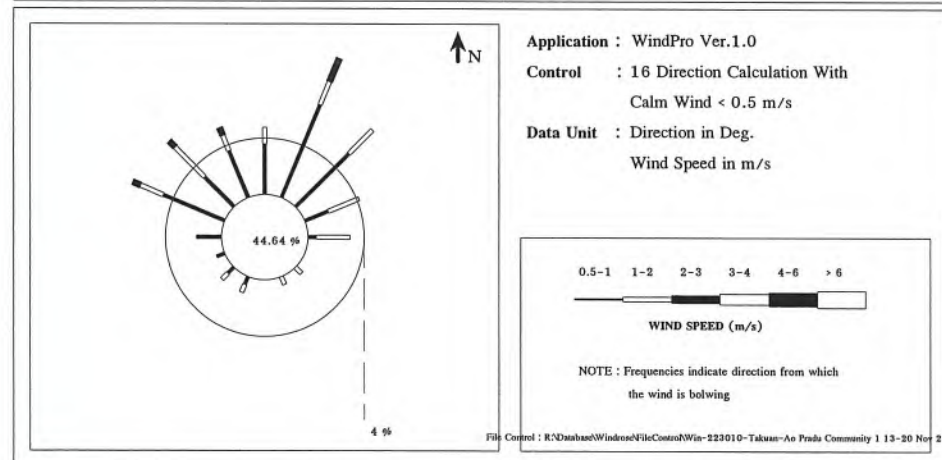
Wind Speed Model : NRG Symphonie

Serial No : A4904

Wind Direction Model : NRG Symphonie

Serial No : A4904

Direction	Percentage of Occurrence of Wind Direct Grouped in Various Wind Speed						Total
	0.5-1 m/s	1-2 m/s	2-3 m/s	3-4 m/s	4-6 m/s	More than 6	
N	0.0357	0.0119	0.0000	0.0000	0.0000	0.0000	0.0476
NNE	0.0714	0.0179	0.0179	0.0000	0.0000	0.0000	0.1071
NE	0.0536	0.0238	0.0000	0.0000	0.0000	0.0000	0.0774
ENE	0.0179	0.0238	0.0000	0.0000	0.0000	0.0000	0.0417
E	0.0060	0.0238	0.0000	0.0000	0.0000	0.0000	0.0298
ESE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SE	0.0000	0.0060	0.0000	0.0000	0.0000	0.0000	0.0060
SSE	0.0000	0.0060	0.0000	0.0000	0.0000	0.0000	0.0060
S	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SSW	0.0060	0.0060	0.0000	0.0000	0.0000	0.0000	0.0119
SW	0.0060	0.0060	0.0000	0.0000	0.0000	0.0000	0.0119
WSW	0.0060	0.0000	0.0000	0.0000	0.0000	0.0000	0.0060
W	0.0179	0.0000	0.0000	0.0000	0.0000	0.0000	0.0179
WNW	0.0476	0.0179	0.0060	0.0000	0.0000	0.0000	0.0714
NW	0.0298	0.0298	0.0060	0.0000	0.0000	0.0000	0.0655
NNW	0.0357	0.0119	0.0060	0.0000	0.0000	0.0000	0.0536
CALM	0.4464						



(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team

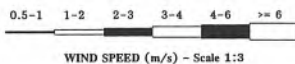


Meteorological Monitoring Results : Wind Rose

MTR-PTTGC6-Refinery

Location : Takuan-Ao Pradu Community 1	Monitor period : 13-20 Nov 2023
Wind Speed Model : NRG Symphonie	Serial No : A4904
Wind Direction Model : NRG Symphonie	Serial No : A4904

Time	13-14 Nov 2023		14-15 Nov 2023		15-16 Nov 2023		16-17 Nov 2023	
	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD
13:00 - 14:00	0.6	NE	0.2	ENE	0.5	SW	0.6	NE
14:00 - 15:00	0.6	NE	0.2	NNE	0.4	WSW	0.2	NNE
15:00 - 16:00	1.2	SE	0.3	NNE	0.5	SSW	1.2	NW
16:00 - 17:00	0.3	SE	0.2	ENE	0.4	W	1.4	E
17:00 - 18:00	1.3	SSW	0.6	NE	0.7	NNW	0.4	E
18:00 - 19:00	0.9	NNW	0.4	ENE	2.0	NNE	0.3	NNE
19:00 - 20:00	0.2	NW	1.8	N	1.5	WNW	0.4	ENE
20:00 - 21:00	1.9	E	0.4	W	2.0	NNE	0.4	NE
21:00 - 22:00	1.0	NW	0.5	NW	0.6	NNE	0.6	NNE
22:00 - 23:00	0.4	NNW	0.2	NW	0.6	WNW	0.5	NE
23:00 - 24:00	0.5	NW	0.2	NW	0.4	N	0.4	NE
00:00 - 01:00	0.3	WNW	0.3	NW	0.5	NW	0.4	E
01:00 - 02:00	0.5	NNW	0.2	NW	0.4	NNW	0.5	ENE
02:00 - 03:00	0.2	WNW	0.3	NNW	1.2	NNE	0.6	N
03:00 - 04:00	1.1	E	0.5	WNW	0.4	NE	0.5	NNE
04:00 - 05:00	0.9	WNW	0.6	NNE	2.0	NNW	0.2	NE
05:00 - 06:00	0.3	NNW	0.6	NNW	0.2	N	0.4	NNE
06:00 - 07:00	0.3	WNW	0.3	NNW	2.0	NNE	0.6	NNE
07:00 - 08:00	1.8	ENE	1.6	E	0.2	NE	0.3	ENE
08:00 - 09:00	0.2	ENE	1.3	NW	0.6	N	0.5	N
09:00 - 10:00	0.5	NE	1.7	ENE	1.5	NNE	0.4	N
10:00 - 11:00	0.2	E	0.6	NNE	0.4	ENE	0.6	NNE
11:00 - 12:00	0.5	NE	1.5	SSE	0.4	N	0.2	NNE
12:00 - 13:00	0.5	NE	0.8	WSW	0.3	ENE	0.6	NNE
Wind Rose								



(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team

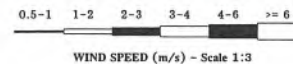


Meteorological Monitoring Results : Wind Rose

MTR-PTTGC6-Refinery

Location : Takuan-Ao Pradu Community 1	Monitor period : 13-20 Nov 2023
Wind Speed Model : NRG Symphonie	Serial No : A4904
Wind Direction Model : NRG Symphonie	Serial No : A4904

Time	17-18 Nov 2023		18-19 Nov 2023		19-20 Nov 2023	
	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD
13:00 - 14:00	0.4	E	0.6	WNW	1.8	NNE
14:00 - 15:00	0.3	NNE	0.2	W	0.4	NNE
15:00 - 16:00	0.3	NE	0.2	NW	0.2	NE
16:00 - 17:00	0.5	NNE	1.9	NE	0.3	ENE
17:00 - 18:00	0.4	NNE	0.7	NNW	0.2	ENE
18:00 - 19:00	0.3	E	1.9	ENE	0.6	ENE
19:00 - 20:00	1.3	WNW	1.3	NNW	0.6	ENE
20:00 - 21:00	1.2	N	0.6	WNW	0.2	NNE
21:00 - 22:00	0.6	E	0.3	WNW	1.2	NW
22:00 - 23:00	1.8	NW	0.5	W	0.2	NW
23:00 - 24:00	1.2	NE	0.6	WNW	0.4	NW
00:00 - 01:00	0.5	N	0.5	NW	0.4	WNW
01:00 - 02:00	0.3	NNE	0.6	W	0.2	W
02:00 - 03:00	0.6	NNE	0.9	NNE	0.5	N
03:00 - 04:00	0.4	ENE	1.9	WNW	0.2	WNW
04:00 - 05:00	0.3	NE	0.5	N	0.4	NW
05:00 - 06:00	0.5	NNE	0.5	WNW	0.5	WNW
06:00 - 07:00	2.0	NW	0.6	NW	0.6	NNW
07:00 - 08:00	0.3	NW	0.2	W	0.4	N
08:00 - 09:00	1.3	NE	1.6	ENE	0.2	N
09:00 - 10:00	2.0	WNW	0.4	ENE	0.2	NW
10:00 - 11:00	0.4	W	0.5	NE	1.9	NE
11:00 - 12:00	0.6	W	0.2	ENE	0.3	NNE
12:00 - 13:00	0.3	NW	1.8	NNW	1.2	SW
Wind Rose						



(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose

MTR-PTTGC6-Refinery

Location : Takuan-Ao Pradu Community 2

Monitor period : 13-20 Nov 2023

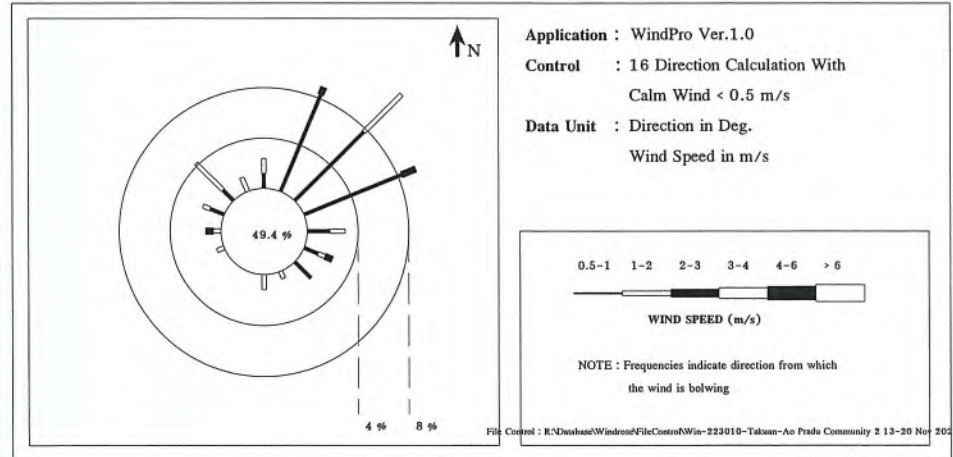
Wind Speed Model : NRG Symphonie

Serial No : A5092

Wind Direction Model : NRG Symphonie

Serial No : A5092

Direction	Percentage of Occurrence of Wind Direct Grouped in Various Wind Speed						Total
	0.5-1 m/s	1-2 m/s	2-3 m/s	3-4 m/s	4-6 m/s	More than 6	
N	0.0119	0.0119	0.0000	0.0000	0.0000	0.0000	0.0238
NNE	0.0833	0.0000	0.0060	0.0000	0.0000	0.0000	0.0893
NE	0.0774	0.0417	0.0000	0.0000	0.0000	0.0000	0.1190
ENE	0.0833	0.0000	0.0119	0.0000	0.0000	0.0000	0.0952
E	0.0179	0.0119	0.0000	0.0000	0.0000	0.0000	0.0298
ESE	0.0119	0.0060	0.0060	0.0000	0.0000	0.0000	0.0238
SE	0.0179	0.0000	0.0000	0.0000	0.0000	0.0000	0.0179
SSE	0.0000	0.0060	0.0000	0.0000	0.0000	0.0000	0.0060
S	0.0000	0.0119	0.0000	0.0000	0.0000	0.0000	0.0119
SSW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
WSW	0.0000	0.0060	0.0000	0.0000	0.0000	0.0000	0.0060
W	0.0000	0.0060	0.0060	0.0000	0.0000	0.0000	0.0119
WNW	0.0119	0.0060	0.0000	0.0000	0.0000	0.0000	0.0179
NW	0.0119	0.0298	0.0000	0.0000	0.0000	0.0000	0.0417
NNW	0.0000	0.0119	0.0000	0.0000	0.0000	0.0000	0.0119
CALM	0.4940						



(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose

MTR-PTTGC6-Refinery

Location : Takuan-Ao Pradu Community 2

Monitor period : 13-20 Nov 2023

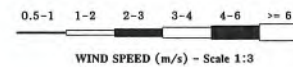
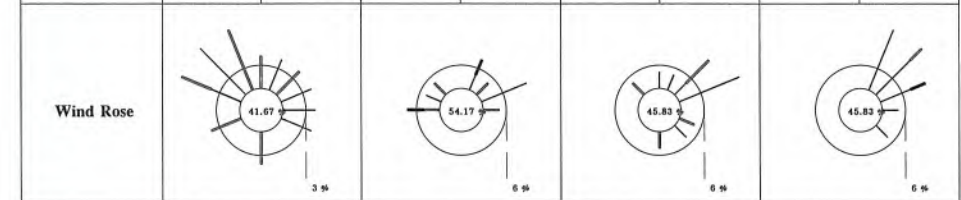
Wind Speed Model : NRG Symphonie

Serial No : A5092

Wind Direction Model : NRG Symphonie

Serial No : A5092

Time	13-14 Nov 2023		14-15 Nov 2023		15-16 Nov 2023		16-17 Nov 2023	
	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD
12:00 - 13:00	0.3	NE	0.4	NNE	0.3	SW	0.5	SE
13:00 - 14:00	0.4	ENE	0.6	ENE	0.6	SE	0.4	SE
14:00 - 15:00	0.3	NNE	0.2	NE	0.3	SSE	1.1	NE
15:00 - 16:00	1.1	S	0.6	ENE	0.3	W	0.6	NNE
16:00 - 17:00	0.5	ESE	0.3	NNE	0.3	W	0.4	NNE
17:00 - 18:00	1.3	WSW	0.5	NNE	0.6	ENE	0.5	NNE
18:00 - 19:00	1.8	NNW	0.2	E	0.5	ENE	0.4	NNE
19:00 - 20:00	0.2	WNW	1.4	W	0.5	ENE	0.6	NNE
20:00 - 21:00	1.0	NE	0.2	NNW	0.5	ENE	0.3	NE
21:00 - 22:00	1.3	WNW	0.5	WNW	0.4	ENE	0.3	NE
22:00 - 23:00	0.6	NW	0.4	W	0.4	ENE	0.3	NNE
23:00 - 24:00	0.2	N	0.2	NNW	0.4	N	0.6	NE
00:00 - 01:00	0.4	WNW	0.2	W	0.6	N	0.5	NE
01:00 - 02:00	0.3	NW	0.2	NW	0.6	NNE	0.5	NNE
02:00 - 03:00	0.5	WNW	0.3	NNW	1.7	NW	0.2	NE
03:00 - 04:00	1.6	N	0.2	NNW	0.2	NW	0.6	NE
04:00 - 05:00	1.9	NNW	1.0	E	1.8	NE	0.2	NE
05:00 - 06:00	0.3	WNW	2.0	W	1.5	S	0.5	ENE
06:00 - 07:00	0.6	NW	0.4	N	0.3	S	0.4	NNE
07:00 - 08:00	0.8	ENE	1.2	NE	1.2	NE	0.9	E
08:00 - 09:00	0.6	NNE	1.2	NW	0.2	N	2.0	ENE
09:00 - 10:00	0.2	ENE	2.0	NNE	0.4	NE	0.5	ENE
10:00 - 11:00	0.4	E	0.5	ENE	0.6	NE	0.3	NE
11:00 - 12:00	0.5	E	0.4	SSE	1.3	ESE	0.2	ENE



(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose

MTR-PTTGC6-Refinery

Location : Takuan-Ao Pradu Community 2	Monitor period : 13-20 Nov 2023
Wind Speed Model : NRG Symphonie	Serial No : A5092
Wind Direction Model : NRG Symphonie	Serial No : A5092

Time	17-18 Nov 2023		18-19 Nov 2023		19-20 Nov 2023		
	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD	
12:00 - 13:00	1.7	SSE	0.8	SE	0.5	NNE	
13:00 - 14:00	2.0	ENE	0.8	ENE	0.6	NE	
14:00 - 15:00	0.3	NE	0.6	ENE	0.5	NE	
15:00 - 16:00	0.6	NE	0.2	NNE	0.3	ENE	
16:00 - 17:00	0.6	ENE	0.4	NE	0.3	NNE	
17:00 - 18:00	0.3	NNE	0.4	NNE	2.0	ESE	
18:00 - 19:00	0.4	NNE	0.3	ENE	0.4	ESE	
19:00 - 20:00	0.2	NNE	0.5	NE	0.6	ESE	
20:00 - 21:00	0.3	ENE	0.3	NE	0.2	ESE	
21:00 - 22:00	0.5	NNE	0.4	NNE	0.3	ESE	
22:00 - 23:00	0.5	NE	0.2	NNE	1.8	N	
23:00 - 24:00	0.6	NNE	0.2	NNE	0.4	N	
00:00 - 01:00	0.3	NE	0.5	N	0.2	NNE	
01:00 - 02:00	0.6	NE	0.5	NNE	0.3	NNE	
02:00 - 03:00	0.4	NNE	0.2	NNE	0.5	NNE	
03:00 - 04:00	0.6	NE	0.3	NNE	0.3	NNE	
04:00 - 05:00	0.4	NNE	0.5	NNE	0.4	NNE	
05:00 - 06:00	0.3	NE	0.4	NNE	0.3	NNE	
06:00 - 07:00	0.6	NE	0.3	NE	0.3	NE	
07:00 - 08:00	0.3	E	0.4	NNE	0.2	N	
08:00 - 09:00	1.6	NW	0.6	NNE	0.6	ENE	
09:00 - 10:00	1.3	E	1.2	NW	0.5	NE	
10:00 - 11:00	1.8	NW	1.1	NE	0.2	E	
11:00 - 12:00	1.2	NE	0.2	NNE	0.6	E	
Wind Rose							



WIND SPEED (m/s) - Scale 1:3

File Control : R:\Database\Windrose\FileControl\Win-223010-Takuan-Ao Pradu Community 2 13-20 Nov 2023

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team

คุณภาพอากาศจากปล่องระบายอากาศ



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STACK EMISSION ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Co., Ltd. REF. NO. : PTTGC6 (Refinery)_222310_Cert-Stk/Main
Branch 6 (Refinery) SAMPLING DATE : 13/11/2023
SAMPLING BY : SECOT Co., Ltd. ANALYTICAL DATE : 14-15/11/2023
RECEIVED DATE : 14/11/2023 SAMPLE CONDITION : Normal
REPORT DATE : 16/11/2023 OPERATOR : Mr. Song Hangchhankun
STACK LOCATION : Main Stack SOURCE DESCRIPTION : Combustion
FUEL TYPE : Fuel gas and Fuel Oil

STACK DESCRIPTION

Height : 140.0 m Gas Velocity : 10.6 m/s
Diameter : 4.5 m Flow rate ^{1/} : 5,882 Ncu.m/min
Temperature : 207 °C Excess Oxygen : 4.4 %

PARAMETER	UNIT	RESULTS		ASSIGN VALUE ^{2/}	STANDARD ^{3/}	REFERENCE METHODS
		4.4%O ₂	7%O ₂			
Particulate Matter	mg/Ncu.m	8.54	7.18	240	240	US EPA Method 5

Phatchara Samanchan

(Miss Phatchara Samanchan)

Analyst

REG.NO. 7-239-9-0021

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO. 7-239-9-0010

Remark : 1. Reported analysis refers to submitted sample only.

2. This report shall not be reproduced, except in full, without official approval.

3. ^{1/} At standard pressure of 760 mmHg and temperature of 25 °C, dry basis.

4. ^{2/} The assign value in EIA report.

5. ^{3/} Notification of the Ministry of Natural Resources and Environment B.E.2554.



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STACK EMISSION ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Co., Ltd. REF. NO. : PTTGC6 (Refinery)_223010_Cert-Stk/Main
Branch 6 (Refinery) SAMPLING DATE : 13/11/2023
SAMPLING BY : SECOT Co., Ltd. ANALYTICAL DATE : 14-20/11/2023
RECEIVED DATE : 14/11/2023 SAMPLE CONDITION : Normal
REPORT DATE : 21/11/2023 OPERATOR : Mr. Song Hangchhankun
STACK LOCATION : Main Stack SOURCE DESCRIPTION : Combustion
FUEL TYPE : Fuel gas and Fuel Oil

STACK DESCRIPTION

Height : 140.0 m Gas Velocity : 10.6 m/s
Diameter : 4.5 m Flow rate ^{1/} : 5,882 Ncu.m/min
Temperature : 207 °C Excess Oxygen : 4.4 %

PARAMETER	UNIT	ND Non-detectable	RESULTS		ASSIGN VALUE ^{2/}	STANDARD ^{3/}	REFERENCE METHODS
			4.4%O ₂	7%O ₂			
Lead	mg/m ³	<0.02	ND	ND	5.0	5.0	US EPA Method 29
Mercury	mg/m ³	<0.0003	ND	ND	2.4	2.4	US EPA Method 29

Krisana Chanthoom

(Miss Krisana Chanthoom)

Analyst

REG.NO. 7-239-9-0017

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO. 7-239-9-0010

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STACK EMISSION ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Co., Ltd. REF. NO. : PTTGC6 (Refinery)_223010_Cert-Stk/Main
Branch 6 (Refinery) SAMPLING DATE : 13/11/2023
SAMPLING BY : SECOT Co., Ltd. ANALYTICAL DATE : 15/11/2023
RECEIVED DATE : 14/11/2023 SAMPLE CONDITION : Normal
REPORT DATE : 21/11/2023 OPERATOR : Mr. Song Hangchhankun
STACK LOCATION : Main Stack SOURCE DESCRIPTION : Combustion
FUEL TYPE : Fuel gas and Fuel Oil

STACK DESCRIPTION

Height : 140.0 m Gas Velocity : 10.6 m/s
Diameter : 4.5 m Flow rate ^{1/} : 5,882 Ncu.m/min
Temperature : 207 °C Excess Oxygen : 4.4 %

PARAMETER	UNIT	ND	RESULTS		ASSIGN	STANDARD ^{3/}	REFERENCE METHODS
		Non-detectable	4.4%O ₂	7%O ₂	VALUE ^{2/}		
TVOC	ppm	-	0.85	0.71	-	-	US EPA Method 25A

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

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STACK EMISSION ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Co., Ltd. REF. NO. : PTTGC6 (Refinery)_223010_Cert-Stk/Main
Branch 6 (Refinery) SAMPLING DATE : 13/11/2023
SAMPLING BY : SECOT Co., Ltd. ANALYTICAL DATE : 14/11/2023
RECEIVED DATE : 14/11/2023 SAMPLE CONDITION : Normal
REPORT DATE : 21/11/2023 OPERATOR : Mr. Song Hangchhankun
STACK LOCATION : Main Stack SOURCE DESCRIPTION : Combustion
FUEL TYPE : Fuel gas and Fuel Oil

STACK DESCRIPTION

Height : 140.0 m Gas Velocity : 10.6 m/s
Diameter : 4.5 m Flow rate ^{1/} : 5,882 Ncu.m/min
Temperature : 207 °C Excess Oxygen : 4.4 %

PARAMETER	UNIT	ND	RESULTS		ASSIGN	STANDARD ^{3/}	REFERENCE METHODS
		Non-detectable	4.4%O ₂	7%O ₂	VALUE ^{2/}		
Hydrogen Sulfide	ppm	<0.30	ND	-	60	-	US EPA Method 16
(H ₂ S)	ppm	<0.25	-	ND			

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

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4. ^{2/} The assign value in EIA report.

5. ^{3/} Notification of the Ministry of Natural Resources and Environment B.E.2554.

The Monitoring Result of Emission Concentration
Main Stack
PTT Global Chemical Public Company Limited
November 13, 2023

Run Number	Oxygen content (%)		Oxide of Nitrogen (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O2	Corrected Gas Conc @7% O2
1	4.49	4.51	40.56	40.57	34.41
2	4.30	4.31	40.60	40.62	34.03
3	4.26	4.27	40.25	40.28	33.67
Average	4.35	4.36	40.47	40.49	34.03

Run Number	Oxygen content (%)		Sulfur dioxide (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O2	Corrected Gas Conc @7% O2
1	4.49	4.51	16.70	16.68	14.15
2	4.30	4.31	13.60	13.57	11.37
3	4.26	4.27	16.70	16.67	13.93
Average	4.35	4.36	15.67	15.64	13.15

Run Number	Oxygen content (%)		Carbonmonoxide (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O2	Corrected Gas Conc @7% O2
1	4.49	4.51	37.14	37.17	31.52
2	4.30	4.31	38.71	38.74	32.46
3	4.26	4.27	30.08	30.10	25.16
Average	4.35	4.36	35.31	35.34	29.70

PTT Global Chemical Public Company Limited
EMISSION TEST RESULT

Date: November 13, 2023
 Start time: 11:50 AM
 O₂ instrument Model: AMI 70
 NO_x instrument Model: TELEDYNE 200 EH
 SO₂ instrument Model: API 100 AH
 CO instrument Model: API 300 A
 Fuel Type : Fuel Gas and Fuel Oil

Run # : 1
 Location : Main Stack
 Finish time : 12:10 PM
 Serial No.: 161212-14
 Serial No.: 435
 Serial No.: 058
 Serial No.: 1070
 Test Operator : Song H.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
11:50 AM	4.51	40.53	18.16	39.27
11:51 AM	4.52	40.53	18.63	37.75
11:52 AM	4.50	40.19	19.06	36.42
11:53 AM	4.42	40.15	19.32	35.52
11:54 AM	4.54	40.24	19.38	34.51
11:55 AM	4.46	40.74	19.37	34.22
11:56 AM	4.52	40.90	19.21	34.73
11:57 AM	4.55	40.75	18.88	36.71
11:58 AM	4.45	40.69	18.27	38.31
11:59 AM	4.44	40.69	17.98	38.21
12:00 PM	4.51	40.87	17.68	38.72
12:01 PM	4.54	41.05	17.29	38.04
12:02 PM	4.46	40.95	16.65	37.08
12:03 PM	4.53	40.67	16.03	35.72
12:04 PM	4.46	40.53	15.10	36.12
12:05 PM	4.57	40.47	14.42	36.08
12:06 PM	4.56	40.44	13.82	36.99
12:07 PM	4.49	40.44	13.39	38.34
12:08 PM	4.46	40.44	13.00	38.80
12:09 PM	4.37	40.35	12.72	39.22
12:10 PM	4.38	40.17	12.35	39.28
Average	4.49	40.56	16.70	37.14

Signature

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

PTT Global Chemical Public Company Limited

EMISSION TEST RESULT

Date: November 13, 2023
Start time: 12:11 PM
O₂ instrument Model: AMI 70
NO_x instrument Model: TELEDYNE 200 EH
SO₂ instrument Model: API 100 AH
CO instrument Model: API 300 A
Fuel Type : Fuel Gas and Fuel Oil

Run # : 2
Location : Main Stack
Finish time : 12:31 PM
Serial No.: 161212-14
Serial No.: 435
Serial No.: 058
Serial No.: 1070
Test Operator : Song H.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
12:11 PM	4.44	39.99	12.24	38.25
12:12 PM	4.40	39.89	12.21	37.54
12:13 PM	4.32	39.87	12.16	37.44
12:14 PM	4.11	40.01	12.17	37.05
12:15 PM	4.26	40.22	12.26	36.49
12:16 PM	4.37	40.57	12.40	35.97
12:17 PM	4.31	41.16	12.57	37.38
12:18 PM	4.29	41.24	12.72	38.00
12:19 PM	4.23	40.80	12.94	38.38
12:20 PM	4.33	40.45	13.21	39.58
12:21 PM	4.37	40.42	13.53	39.91
12:22 PM	4.38	40.65	13.75	39.43
12:23 PM	4.27	40.75	14.05	38.60
12:24 PM	4.33	40.86	14.17	38.43
12:25 PM	4.38	41.15	14.44	38.70
12:26 PM	4.42	41.24	14.75	39.39
12:27 PM	4.32	41.21	14.99	39.98
12:28 PM	4.29	41.10	15.12	40.72
12:29 PM	4.18	40.70	15.25	40.76
12:30 PM	4.22	40.29	15.36	40.22
12:31 PM	4.18	39.96	15.40	40.60
Average	4.30	40.60	13.60	38.71

Signature



(Miss Katesarin Vorradetwittaya)

Environmental Scientist

PTT Global Chemical Public Company Limited

EMISSION TEST RESULT

Date: November 13, 2023
Start time: 12:32 PM
O₂ instrument Model: AMI 70
NO_x instrument Model: TELEDYNE 200 EH
SO₂ instrument Model: API 100 AH
CO instrument Model: API 300 A
Fuel Type : Fuel Gas and Fuel Oil

Run # : 3
Location : Main Stack
Finish time : 12:52 PM
Serial No.: 161212-14
Serial No.: 435
Serial No.: 058
Serial No.: 1070
Test Operator : Song H.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
12:32 PM	4.13	40.02	15.63	41.62
12:33 PM	4.40	40.17	15.66	42.20
12:34 PM	4.25	40.02	15.86	43.03
12:35 PM	4.24	39.91	16.06	40.26
12:36 PM	4.27	39.94	16.23	39.00
12:37 PM	4.33	40.11	16.51	38.93
12:38 PM	4.38	40.26	16.57	38.62
12:39 PM	4.30	40.24	16.64	24.17
12:40 PM	4.33	40.29	16.83	24.12
12:41 PM	4.24	40.38	16.91	24.59
12:42 PM	4.30	40.52	16.97	25.08
12:43 PM	4.30	40.52	17.00	25.72
12:44 PM	4.24	40.47	16.97	26.36
12:45 PM	4.25	40.31	17.03	26.21
12:46 PM	4.08	40.03	16.97	25.60
12:47 PM	4.26	39.97	16.92	25.06
12:48 PM	4.30	40.34	16.91	24.44
12:49 PM	4.21	40.72	17.04	24.36
12:50 PM	4.19	40.64	17.21	23.80
12:51 PM	4.24	40.29	17.33	24.24
12:52 PM	4.30	40.06	17.42	24.37
Average	4.26	40.25	16.70	30.08

Signature



(Miss Katesarin Vorradetwittaya)

Environmental Scientist



บริษัท ซีคอต จำกัด

SECOT CO., LTD.

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TEL : +66(0) 2959-3600 FAX : +66(0) 2959-3535 E-mail : envserv@secot.co.th

STACK EMISSION ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Co., Ltd. REF. NO. : PTTGC6 (Refinery)_223010_Cert-Stk/CRS
Branch 6 (Refinery) SAMPLING DATE : 15/11/2023
SAMPLING BY : SECOT Co., Ltd. ANALYTICAL DATE : 20/11/2023
RECEIVED DATE : 17/11/2023 SAMPLE CONDITION : Normal
REPORT DATE : 04/12/2023 OPERATOR : Mr. Song Hangchhwanun
STACK LOCATION : CRS Stack SOURCE DESCRIPTION : Combustion
FUEL TYPE : Fuel gas

STACK DESCRIPTION

Height : 100 m Gas Velocity : 9.5 m/s
Diameter : 1.66 m Flow rate ^{1/} : 778 Nm³/min
Temperature : 153 °C Excess Oxygen : 4.4 %

PARAMETER	UNIT	ND	RESULTS		STANDARD	REFERENCE METHODS
		Non-detectable	4.4% O ₂	7% O ₂		
TVOC	ppm	-	7.48	6.31	-	US EPA Method 25A

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

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3. ^{1/} At standard pressure of 760 mmHg and temperature of 25 °C, dry basis.

The Monitoring Result of Emission Concentration CRS Stack PTT Global Chemical Public Company Limited November 15, 2023

Run Number	Oxygen content (%)		Oxide of Nitrogen (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O ₂	Corrected Gas Conc @7% O ₂
1	4.40	4.43	27.20	27.22	22.97
2	4.34	4.36	26.55	26.57	22.33
3	4.45	4.47	26.28	26.30	22.25
Average	4.40	4.42	26.68	26.70	22.52

Run Number	Oxygen content (%)		Sulfur dioxide (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O ₂	Corrected Gas Conc @7% O ₂
1	4.40	4.43	0.64	0.60	0.51
2	4.34	4.36	0.64	0.60	0.50
3	4.45	4.47	0.68	0.64	0.54
Average	4.40	4.42	0.65	0.61	0.52

Run Number	Oxygen content (%)		Carbonmonoxide (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O ₂	Corrected Gas Conc @7% O ₂
1	4.40	4.43	0.98	0.93	0.78
2	4.34	4.36	0.84	0.80	0.67
3	4.45	4.47	0.83	0.79	0.67
Average	4.40	4.42	0.89	0.84	0.71

PTT Global Chemical Public Company Limited

EMISSION TEST RESULT

Date: November 15, 2023
Start time: 10:50 AM
O₂ instrument Model: AMI 70
NO_x instrument Model: Teledyne 200 EM
SO₂ instrument Model: API 100 AH
CO instrument Model: API 300 A
Fuel Type : Fuel Gas

Run # : 1
Location : CRS Stack
Finish time : 11:10 AM
Serial No.: 161212-14
Serial No.: 435
Serial No.: 058
Serial No.: 1070
Test Operator : Song H.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
10:50 AM	4.53	27.32	0.72	0.97
10:51 AM	4.37	27.35	0.56	0.96
10:52 AM	4.31	27.40	0.47	1.01
10:53 AM	4.35	27.27	0.45	1.05
10:54 AM	4.43	27.37	0.49	1.09
10:55 AM	4.44	27.57	0.48	1.02
10:56 AM	4.47	27.57	0.52	1.04
10:57 AM	4.43	27.46	0.65	0.89
10:58 AM	4.42	27.46	0.72	0.66
10:59 AM	4.39	27.39	0.72	0.74
11:00 AM	4.47	27.22	0.67	1.16
11:01 AM	4.44	27.28	0.73	1.25
11:02 AM	4.41	27.09	0.56	1.31
11:03 AM	4.42	27.04	0.67	1.14
11:04 AM	4.35	27.03	0.79	1.05
11:05 AM	4.30	26.81	0.76	0.97
11:06 AM	4.31	26.87	0.80	0.85
11:07 AM	4.41	27.01	0.81	1.02
11:08 AM	4.41	26.92	0.72	0.94
11:09 AM	4.42	26.91	0.63	0.75
11:10 AM	4.42	26.95	0.55	0.79
Average	4.40	27.20	0.64	0.98

Signature

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

PTT Global Chemical Public Company Limited

EMISSION TEST RESULT

Date: November 15, 2023
Start time: 11:11 AM
O₂ instrument Model: AMI 70
NO_x instrument Model: Teledyne 200 EM
SO₂ instrument Model: API 100 AH
CO instrument Model: API 300 A
Fuel Type : Fuel Gas

Run # : 2
Location : CRS Stack
Finish time : 11:31 AM
Serial No.: 161212-14
Serial No.: 435
Serial No.: 058
Serial No.: 1070
Test Operator : Song H.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
11:11 AM	4.43	26.92	0.86	0.93
11:12 AM	4.42	26.88	0.51	0.92
11:13 AM	4.39	26.79	0.60	0.81
11:14 AM	4.25	26.76	0.74	0.71
11:15 AM	4.19	26.51	0.72	0.81
11:16 AM	4.21	26.36	0.76	1.04
11:17 AM	4.26	26.19	0.69	1.06
11:18 AM	4.39	26.31	0.66	0.99
11:19 AM	4.39	26.50	0.69	0.80
11:20 AM	4.37	26.59	0.67	0.79
11:21 AM	4.38	26.63	0.75	0.88
11:22 AM	4.41	26.70	0.74	0.72
11:23 AM	4.41	26.78	0.63	0.74
11:24 AM	4.41	26.61	0.46	0.71
11:25 AM	4.41	26.63	0.41	0.67
11:26 AM	4.38	26.70	0.46	0.86
11:27 AM	4.34	26.56	0.52	0.86
11:28 AM	4.24	26.46	0.52	0.81
11:29 AM	4.22	26.36	0.67	0.77
11:30 AM	4.27	26.11	0.72	0.85
11:31 AM	4.44	26.22	0.67	0.94
Average	4.34	26.55	0.64	0.84

Signature

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

PTT Global Chemical Public Company Limited

EMISSION TEST RESULT

Date: November 15, 2023
Start time: 11:32 AM
O₂ instrument Model: AMI 70
NO_x instrument Model: Teledyne 200 EM
SO₂ instrument Model: API 100 AH
CO instrument Model: API 300 A
Fuel Type : Fuel Gas

Run # : 3
Location : CRS Stack
Finish time : 11:52 AM
Serial No.: 161212-14
Serial No.: 435
Serial No.: 058
Serial No.: 1070
Test Operator : Song H.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
11:32 AM	4.51	26.38	0.69	0.85
11:33 AM	4.52	26.50	0.70	0.72
11:34 AM	4.56	26.62	0.77	0.93
11:35 AM	4.61	26.72	0.76	0.75
11:36 AM	4.38	26.55	0.69	0.67
11:37 AM	4.28	26.29	0.58	0.62
11:38 AM	4.32	26.03	0.57	0.64
11:39 AM	4.35	25.85	0.68	0.78
11:40 AM	4.45	26.00	0.75	0.79
11:41 AM	4.51	26.22	0.79	0.90
11:42 AM	4.46	26.14	0.71	1.00
11:43 AM	4.40	26.12	0.66	0.93
11:44 AM	4.25	25.97	0.57	1.05
11:45 AM	4.50	26.00	0.68	0.89
11:46 AM	4.51	26.11	0.65	0.84
11:47 AM	4.49	26.33	0.63	0.84
11:48 AM	4.53	26.28	0.61	0.81
11:49 AM	4.47	26.44	0.67	0.80
11:50 AM	4.42	26.64	0.65	0.81
11:51 AM	4.48	26.58	0.71	0.90
11:52 AM	4.50	26.16	0.71	0.92
Average	4.45	26.28	0.68	0.83

Signature

(Miss Katesarin Vorradetwittaya)

Environmental Scientist



บริษัท ซีคอต จำกัด

SECOT CO., LTD.

239 ถนนริมคลองประปา แขวงบางซื่อ เขตบางซื่อ กรุงเทพฯ 10800

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TEL : +66(0) 2959-3600 FAX : +66(0) 2959-3535 E-mail : envserv@secot.co.th

STACK EMISSION ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Co., Ltd. REF. NO. : PTTGC6 (Refinery)_223010_Cert-Stk/HCU
Branch 6 (Refinery)
SAMPLING DATE : 13/11/2023
SAMPLING BY : SECOT Co., Ltd. **ANALYTICAL DATE :** 15/11/2023
RECEIVED DATE : 14/11/2023 **SAMPLE CONDITION :** Normal
REPORT DATE : 21/11/2023 **OPERATOR :** Mr. Song Hanghchwankun
STACK LOCATION : HCU Stack **SOURCE DESCRIPTION :** Combustion
FUEL TYPE : Fuel gas

STACK DESCRIPTION

Height : 61.0 m **Gas Velocity :** 8.8 m/s
Diameter : 1.7 m **Flow rate ^{1/} :** 634 Ncu.m/min
Temperature : 233 °C **Excess Oxygen :** 2.8 %

PARAMETER	UNIT	ND	RESULTS		STANDARD	REFERENCE METHODS
		Non-detectable	2.8%O ₂	7%O ₂		
TVOC	ppm	-	1.80	1.38	-	US EPA Method 25A

Suchpam S.

(Miss Sudaporn Soonthorn)

Analyst

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

Remark : 1. Reported analysis refers to submitted sample only.

2. This report shall not be reproduced, except in full, without official approval.

3. ^{1/} At standard pressure of 760 mmHg and temperature of 25 °C, dry basis.

The Monitoring Result of Emission Concentration
HCU Stack
PTT Global Chemical Public Company Limited
November 13, 2023

Run Number	Oxygen content (%)		Oxide of Nitrogen (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O2	Corrected Gas Conc @7% O2
1	2.97	2.95	36.49	36.55	28.30
2	2.77	2.75	38.51	38.59	29.55
3	2.78	2.75	38.66	38.74	29.67
Average	2.84	2.82	37.89	37.96	29.18

Run Number	Oxygen content (%)		Sulfur dioxide (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O2	Corrected Gas Conc @7% O2
1	2.97	2.95	1.56	1.47	1.14
2	2.77	2.75	1.92	1.84	1.41
3	2.78	2.75	1.79	1.71	1.31
Average	2.84	2.82	1.76	1.67	1.29

Run Number	Oxygen content (%)		Carbonmonoxide (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O2	Corrected Gas Conc @7% O2
1	2.97	2.95	2.12	2.04	1.58
2	2.77	2.75	2.15	2.07	1.59
3	2.78	2.75	2.20	2.12	1.62
Average	2.84	2.82	2.16	2.08	1.60

PTT Global Chemical Public Company Limited
EMISSION TEST RESULT

Date: November 13, 2023
 Start time: 12:10 PM
 O₂ instrument Model: AMI 70
 NO_x instrument Model: Teledyne 200 EM
 SO₂ instrument Model: API 100 AH
 CO instrument Model: THERMO 48 C
 Fuel Type : Fuel Gas

Run # : 1
 Location : HCU Stack
 Finish time : 12:30 PM
 Serial No.: 071023-47
 Serial No.: 433
 Serial No.: 118
 Serial No.: 388
 Test Operator : Kittipong T.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
12:10 PM	3.40	33.39	0.89	2.15
12:11 PM	3.42	33.28	0.92	2.32
12:12 PM	3.41	33.65	1.10	2.13
12:13 PM	3.13	33.63	1.11	2.15
12:14 PM	3.12	34.14	1.33	2.32
12:15 PM	2.99	34.90	1.62	2.10
12:16 PM	2.93	35.55	1.85	2.06
12:17 PM	2.89	36.07	1.03	2.16
12:18 PM	2.84	36.37	1.10	2.02
12:19 PM	2.84	36.50	1.19	1.99
12:20 PM	2.90	36.91	1.32	2.07
12:21 PM	2.92	37.58	1.50	2.03
12:22 PM	3.02	38.18	1.66	2.07
12:23 PM	2.82	38.64	1.78	2.08
12:24 PM	2.77	38.52	1.89	2.18
12:25 PM	2.77	38.21	2.01	2.07
12:26 PM	2.91	38.29	2.14	2.13
12:27 PM	2.93	38.61	2.07	2.13
12:28 PM	2.81	38.61	2.07	2.16
12:29 PM	2.73	38.00	2.12	2.13
12:30 PM	2.78	37.33	2.15	2.02
Average	2.97	36.49	1.56	2.12

Signature



(Miss Katesarin Vorradetwittaya)

Environmental Scientist

PTT Global Chemical Public Company Limited

EMISSION TEST RESULT

Date: November 13, 2023
Start time: 12:31 PM
O₂ instrument Model: AMI 70
NO_x instrument Model: Teledyne 200 EM
SO₂ instrument Model: API 100 AH
CO instrument Model: THERMO 48 C
Fuel Type : Fuel Gas

Run # : 2
Location : HCU Stack
Finish time : 12:51 PM
Serial No.: 071023-47
Serial No.: 433
Serial No.: 118
Serial No.: 388
Test Operator : Kittipong T.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
12:31 PM	2.76	37.43	2.25	2.12
12:32 PM	2.69	37.62	2.25	2.18
12:33 PM	2.62	37.00	2.04	2.19
12:34 PM	2.69	36.97	2.26	2.32
12:35 PM	2.69	37.09	2.28	2.18
12:36 PM	2.80	37.66	2.38	2.13
12:37 PM	2.84	38.53	2.35	2.22
12:38 PM	2.79	39.06	2.28	2.12
12:39 PM	2.74	38.80	1.92	2.11
12:40 PM	2.82	38.59	1.78	2.12
12:41 PM	2.73	38.65	1.66	2.15
12:42 PM	2.85	38.55	1.62	2.14
12:43 PM	2.82	38.56	1.68	2.09
12:44 PM	2.76	38.91	1.70	2.10
12:45 PM	2.79	38.98	1.64	2.07
12:46 PM	2.83	39.03	1.69	2.22
12:47 PM	2.82	39.47	1.66	2.13
12:48 PM	2.70	39.60	1.66	2.20
12:49 PM	2.73	39.44	1.71	2.13
12:50 PM	2.84	39.33	1.71	2.19
12:51 PM	2.83	39.41	1.71	2.12
Average	2.77	38.51	1.92	2.15

Signature



(Miss Katesarin Vorradetwittaya)

Environmental Scientist

PTT Global Chemical Public Company Limited

EMISSION TEST RESULT

Date: November 13, 2023
Start time: 12:52 PM
O₂ instrument Model: AMI 70
NO_x instrument Model: Teledyne 200 EM
SO₂ instrument Model: API 100 AH
CO instrument Model: THERMO 48 C
Fuel Type : Fuel Gas

Run # : 3
Location : HCU Stack
Finish time : 1:12 PM
Serial No.: 071023-47
Serial No.: 433
Serial No.: 118
Serial No.: 388
Test Operator : Kittipong T.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
12:52 PM	2.83	39.49	1.75	2.15
12:53 PM	2.85	39.61	1.72	2.13
12:54 PM	2.92	39.97	1.66	2.22
12:55 PM	2.73	39.74	1.69	2.18
12:56 PM	2.67	38.98	1.68	2.20
12:57 PM	2.68	38.35	1.70	2.15
12:58 PM	2.64	38.00	1.75	2.23
12:59 PM	2.75	38.31	1.79	2.18
1:00 PM	2.78	38.84	1.85	2.17
1:01 PM	2.77	38.90	1.89	2.15
1:02 PM	2.80	38.63	1.86	2.16
1:03 PM	2.80	38.49	1.86	2.24
1:04 PM	2.83	38.53	1.78	2.19
1:05 PM	2.73	38.37	1.83	2.15
1:06 PM	2.73	38.09	1.83	2.09
1:07 PM	2.81	38.02	1.83	2.16
1:08 PM	2.80	38.13	1.79	2.26
1:09 PM	2.83	38.24	1.75	2.30
1:10 PM	2.75	38.32	1.88	2.23
1:11 PM	2.77	38.25	1.83	2.40
1:12 PM	2.86	38.50	1.86	2.31
Average	2.78	38.66	1.79	2.20

Signature



(Miss Katesarin Vorradetwittaya)

Environmental Scientist



บริษัท ซีคอต จำกัด
SECOT CO., LTD.

239 ถนนวิภาวดีรังสิต แขวงบางซื่อ เขตบางซื่อ กรุงเทพฯ 10800

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STACK EMISSION ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Co., Ltd. REF. NO. : PTTGC6 (Refinery)_223010_Cert-Stk/HMU
Branch 6 (Refinery) SAMPLING DATE : 14/11/2023
SAMPLING BY : SECOT Co., Ltd. ANALYTICAL DATE : 15/11/2023
RECEIVED DATE : 15/11/2023 SAMPLE CONDITION : Normal
REPORT DATE : 27/11/2023 OPERATOR : Mr. Song Hangchhankun
STACK LOCATION : HMU Stack SOURCE DESCRIPTION : Combustion
FUEL TYPE : Fuel gas

STACK DESCRIPTION

Height : 60.0 m Gas Velocity : 12.7 m/s
Diameter : 2.4 m Flow rate^{1/} : 2,119 Ncu.m/min
Temperature : 165 °C Excess Oxygen : 4.6 %

PARAMETER	UNIT	ND	RESULTS		STANDARD	REFERENCE METHODS
		Non-detectable	4.6%O ₂	7%O ₂		
TVOC	ppm	-	0.79	0.67	-	US EPA Method 25A

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

Remark : 1. Reported analysis refers to submitted sample only.

2. This report shall not be reproduced, except in full, without official approval.

3. ^{1/} At standard pressure of 760 mmHg and temperature of 25 °C, dry basis.

The Monitoring Result of Emission Concentration HMU Stack

PTT Global Chemical Public Company Limited
November 14, 2023

Run Number	Oxygen content (%)		Oxide of Nitrogen (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O2	Corrected Gas Conc @7% O2
1	4.69	4.71	29.29	29.30	25.16
2	4.53	4.55	29.02	29.03	24.68
3	4.49	4.51	28.99	29.00	24.59
Average	4.57	4.59	29.10	29.11	24.81

Run Number	Oxygen content (%)		Sulfur dioxide (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O2	Corrected Gas Conc @7% O2
1	4.69	4.71	0.11	0.08	0.07
2	4.53	4.55	0.34	0.30	0.26
3	4.49	4.51	0.38	0.34	0.29
Average	4.57	4.59	0.28	0.24	0.20

Run Number	Oxygen content (%)		Carbonmonoxide (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O2	Corrected Gas Conc @7% O2
1	4.69	4.71	0.71	0.66	0.57
2	4.53	4.55	0.69	0.64	0.54
3	4.49	4.51	0.80	0.76	0.64
Average	4.57	4.59	0.73	0.69	0.59

PTT Global Chemical Public Company Limited
EMISSION TEST RESULT

Date: November 14, 2023	Run # : 1
Start time: 10:30 AM	Location : HMU Stack
O₂ instrument Model: AMI 70	Finish time : 10:50 AM
NO_x instrument Model: TELEDYNE 200 EM	Serial No.: 161212-14
SO₂ instrument Model: API 100 AH	Serial No.: 435
CO instrument Model: API 300 A	Serial No.: 058
Fuel Type : Fuel Gas	Serial No.: 1070
	Test Operator : Song H.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
10:30 AM	5.01	28.82	0.34	0.74
10:31 AM	4.73	29.59	0.24	0.74
10:32 AM	4.57	29.94	0.22	0.74
10:33 AM	4.75	29.45	0.20	0.74
10:34 AM	4.49	29.48	0.17	0.74
10:35 AM	4.75	29.51	0.12	0.84
10:36 AM	4.98	29.47	0.08	0.76
10:37 AM	4.62	29.72	0.10	0.66
10:38 AM	4.79	29.28	0.07	0.35
10:39 AM	4.49	28.96	0.04	0.42
10:40 AM	4.44	29.17	0.07	0.74
10:41 AM	4.94	29.02	0.09	0.74
10:42 AM	4.47	29.56	0.07	0.74
10:43 AM	4.60	29.24	0.03	0.74
10:44 AM	4.57	28.82	0.06	0.74
10:45 AM	4.40	29.03	0.07	0.74
10:46 AM	4.86	28.85	0.04	0.74
10:47 AM	4.70	29.07	0.08	0.74
10:48 AM	4.66	29.41	0.08	0.75
10:49 AM	5.01	29.15	0.12	0.75
10:50 AM	4.58	29.65	0.07	0.75
Average	4.69	29.29	0.11	0.71

Signature



(Miss Katesarin Vorradetwittaya)

Environmental Scientist

PTT Global Chemical Public Company Limited
EMISSION TEST RESULT

Date: November 14, 2023	Run # : 2
Start time: 10:51 AM	Location : HMU Stack
O₂ instrument Model: AMI 70	Finish time : 11:11 AM
NO_x instrument Model: TELEDYNE 200 EM	Serial No.: 161212-14
SO₂ instrument Model: API 100 AH	Serial No.: 435
CO instrument Model: API 300 A	Serial No.: 058
Fuel Type : Fuel Gas	Serial No.: 1070
	Test Operator : Song H.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
10:51 AM	4.68	29.49	0.11	0.75
10:52 AM	4.84	29.09	0.10	0.75
10:53 AM	4.41	29.30	0.07	0.74
10:54 AM	4.63	28.83	0.36	0.77
10:55 AM	4.36	28.71	0.15	0.65
10:56 AM	4.59	28.87	0.32	0.62
10:57 AM	4.90	28.94	0.60	0.50
10:58 AM	4.46	29.48	0.45	0.45
10:59 AM	4.63	29.26	0.16	0.48
11:00 AM	4.40	29.06	0.50	0.49
11:01 AM	4.31	29.05	0.33	0.50
11:02 AM	4.75	28.80	0.22	0.75
11:03 AM	4.61	30.00	0.21	0.75
11:04 AM	4.39	28.71	0.44	0.76
11:05 AM	4.48	28.65	0.97	0.76
11:06 AM	4.22	28.75	0.25	0.76
11:07 AM	4.56	28.58	0.83	0.79
11:08 AM	4.61	29.03	0.42	0.82
11:09 AM	4.35	29.33	0.40	0.76
11:10 AM	4.62	28.73	0.05	0.79
11:11 AM	4.26	28.80	0.25	0.76
Average	4.53	29.02	0.34	0.69

Signature



(Miss Katesarin Vorradetwittaya)

Environmental Scientist

PTT Global Chemical Public Company Limited

EMISSION TEST RESULT

Date: November 14, 2023
Start time: 11:12 AM
O₂ instrument Model: AMI 70
NO_x instrument Model: TELEDYNE 200 EM
SO₂ instrument Model: API 100 AH
CO instrument Model: API 300 A
Fuel Type: Fuel Gas

Run #: 3
Location: HMU Stack
Finish time: 11:32 AM
Serial No.: 161212-14
Serial No.: 435
Serial No.: 058
Serial No.: 1070
Test Operator: Song H.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
11:12 AM	4.43	28.64	0.88	0.84
11:13 AM	4.57	28.54	0.50	0.93
11:14 AM	4.33	29.07	0.31	0.94
11:15 AM	4.55	28.99	0.58	0.76
11:16 AM	4.52	29.16	0.05	0.78
11:17 AM	4.27	28.59	0.19	0.81
11:18 AM	4.68	28.40	0.24	0.76
11:19 AM	4.28	28.91	0.24	0.83
11:20 AM	4.44	28.27	0.27	0.76
11:21 AM	4.47	28.03	0.38	0.88
11:22 AM	4.33	28.42	0.22	0.78
11:23 AM	4.89	28.63	0.61	0.91
11:24 AM	4.59	29.59	0.55	0.81
11:25 AM	4.62	29.69	0.72	0.76
11:26 AM	4.60	29.23	0.65	0.76
11:27 AM	4.37	29.23	0.31	0.76
11:28 AM	4.66	29.07	0.32	0.76
11:29 AM	4.66	29.41	0.40	0.76
11:30 AM	4.25	29.96	0.09	0.76
11:31 AM	4.50	29.57	0.14	0.79
11:32 AM	4.25	29.46	0.36	0.76
Average	4.49	28.99	0.38	0.80

Signature

(Miss Katesarin Vorradetwittaya)

Environmental Scientist



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STACK EMISSION ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Co., Ltd. **REF. NO. :** PTTGC6 (Refinery)_223010_Cert-Stk/DHDS
Branch 6 (Refinery)
SAMPLING DATE : 14/11/2023
SAMPLING BY : SECOT Co., Ltd. **ANALYTICAL DATE :** 15-20/11/2023
RECEIVED DATE : 15/11/2023 **SAMPLE CONDITION :** Normal
REPORT DATE : 27/11/2023 **OPERATOR :** Mr. Song Hangchhwankun
STACK LOCATION : DHDS Stack **SOURCE DESCRIPTION :** Combustion
FUEL TYPE : Fuel gas

STACK DESCRIPTION

Height : 80.0 m **Gas Velocity :** 5.0 m/s
Diameter : 1.2 m **Flow rate^{1/} :** 194 Ncu.m/min
Temperature : 183 °C **Excess Oxygen :** 4.4 %

PARAMETER	UNIT	ND	RESULTS		STANDARD	REFERENCE METHODS
		Non-detectable	4.4%O ₂	7%O ₂		
Lead	mg/m ³	<0.02	0.17	0.14	-	US EPA Method 29
Mercury	mg/m ³	<0.0003	ND	ND	-	US EPA Method 29

(Miss Krisana Chanthoom)

Analyst

REG.NO. 2-239-ก-0017

(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO. 2-239-ก-0010

Remark : 1. Reported analysis refers to submitted sample only.

2. This report shall not be reproduced, except in full, without official approval.

3. ^{1/} At standard pressure of 760 mmHg and temperature of 25 °C, dry basis.



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STACK EMISSION ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Co., Ltd. REF. NO. : PTTGC6 (Refinery)_223010_Cert-Stk/DHDS
Branch 6 (Refinery) SAMPLING DATE : 14/11/2023
SAMPLING BY : SECOT Co., Ltd. ANALYTICAL DATE : 15/11/2023
RECEIVED DATE : 15/11/2023 SAMPLE CONDITION : Normal
REPORT DATE : 27/11/2023 OPERATOR : Mr. Song Hangchwanun
STACK LOCATION : DHDS Stack SOURCE DESCRIPTION : Combustion
FUEL TYPE : Fuel gas

STACK DESCRIPTION

Height : 80.0 m Gas Velocity : 5.0 m/s
Diameter : 1.2 m Flow rate^{1/} : 194 Ncu.m/min
Temperature : 183 °C Excess Oxygen : 4.4 %

PARAMETER	UNIT	ND	RESULTS		STANDARD	REFERENCE METHODS
		Non-detectable	4.4%O ₂	7%O ₂		
TVOC	ppm	-	1.32	1.11	-	US EPA Method 25A

Suchporn S.

(Miss Sudaporn Soonthorn)

Analyst

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

Remark : 1. Reported analysis refers to submitted sample only.

2. This report shall not be reproduced, except in full, without official approval.

3. ^{1/} At standard pressure of 760 mmHg and temperature of 25 °C, dry basis.

The Monitoring Result of Emission Concentration
DHDS Stack

PTT Global Chemical Public Company Limited
November 14, 2023

Run Number	Oxygen content (%)		Oxide of Nitrogen (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O2	Corrected Gas Conc @7% O2
1	4.48	4.48	30.33	30.37	25.71
2	4.33	4.32	30.08	30.12	25.25
3	4.28	4.27	29.93	29.98	25.06
Average	4.37	4.36	30.12	30.16	25.34

Run Number	Oxygen content (%)		Sulfur dioxide (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O2	Corrected Gas Conc @7% O2
1	4.48	4.48	1.85	1.66	1.41
2	4.33	4.32	2.26	2.07	1.74
3	4.28	4.27	2.23	2.04	1.71
Average	4.37	4.36	2.11	1.92	1.62

Run Number	Oxygen content (%)		Carbonmonoxide (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O2	Corrected Gas Conc @7% O2
1	4.48	4.48	1.09	0.99	0.84
2	4.33	4.32	1.23	1.13	0.95
3	4.28	4.27	1.23	1.14	0.95
Average	4.37	4.36	1.18	1.09	0.91

PTT Global Chemical Public Company Limited
EMISSION TEST RESULT

Date:	November 14, 2023	Run # : 1	
Start time:	10:30 AM	Location :	DHDS Stack
O ₂ instrument Model:	AMI 70	Finish time :	10:50 AM
NO _x instrument Model:	API 200 AH	Serial No.:	111117-2
SO ₂ instrument Model:	API 100 AH	Serial No.:	441
CO instrument Model:	THERMO 48 C	Serial No.:	060
Fuel Type :	Fuel Gas	Serial No.:	365
		Test Operator :	Kittipong T.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
10:30 AM	4.52	30.48	1.84	1.06
10:31 AM	4.61	30.61	1.74	1.04
10:32 AM	4.51	30.57	1.49	1.04
10:33 AM	4.42	30.53	1.22	1.04
10:34 AM	4.42	30.26	1.37	1.04
10:35 AM	4.45	30.05	1.82	1.04
10:36 AM	4.61	30.08	1.96	1.04
10:37 AM	4.66	30.43	2.02	1.03
10:38 AM	4.67	30.50	2.04	1.03
10:39 AM	4.53	30.50	2.03	1.03
10:40 AM	4.49	30.51	2.04	1.03
10:41 AM	4.58	30.33	2.02	1.03
10:42 AM	4.58	30.60	1.99	1.03
10:43 AM	4.48	30.82	1.95	1.03
10:44 AM	4.35	30.50	1.91	1.03
10:45 AM	4.35	30.15	1.93	1.22
10:46 AM	4.35	29.88	1.85	1.20
10:47 AM	4.40	29.90	1.89	1.23
10:48 AM	4.44	30.06	1.85	1.23
10:49 AM	4.37	30.15	1.92	1.23
10:50 AM	4.37	30.02	1.87	1.23
Average	4.48	30.33	1.85	1.09

Signature

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

PTT Global Chemical Public Company Limited
EMISSION TEST RESULT

Date:	November 14, 2023	Run # : 2	
Start time:	10:51 AM	Location :	DHDS Stack
O ₂ instrument Model:	AMI 70	Finish time :	11:11 AM
NO _x instrument Model:	API 200 AH	Serial No.:	111117-2
SO ₂ instrument Model:	API 100 AH	Serial No.:	441
CO instrument Model:	THERMO 48 C	Serial No.:	060
Fuel Type :	Fuel Gas	Serial No.:	365
		Test Operator :	Kittipong T.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
10:51 AM	4.35	29.84	1.96	1.23
10:52 AM	4.46	29.98	1.98	1.23
10:53 AM	4.57	30.31	2.03	1.23
10:54 AM	4.48	30.72	2.01	1.23
10:55 AM	4.39	30.50	2.06	1.23
10:56 AM	4.38	30.22	1.93	1.23
10:57 AM	4.42	30.11	2.12	1.23
10:58 AM	4.47	30.30	2.25	1.23
10:59 AM	4.43	30.62	2.28	1.23
11:00 AM	4.29	30.46	2.28	1.23
11:01 AM	4.24	30.03	2.30	1.23
11:02 AM	4.29	29.94	2.33	1.23
11:03 AM	4.37	30.09	2.32	1.23
11:04 AM	4.37	30.15	2.33	1.23
11:05 AM	4.29	30.24	2.39	1.23
11:06 AM	4.18	29.96	2.31	1.23
11:07 AM	4.24	29.59	2.38	1.23
11:08 AM	4.37	29.69	2.52	1.23
11:09 AM	4.21	30.00	2.65	1.23
11:10 AM	4.13	29.76	2.61	1.23
11:11 AM	4.10	29.25	2.48	1.23
Average	4.33	30.08	2.26	1.23

Signature

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

PTT Global Chemical Public Company Limited

EMISSION TEST RESULT

Date: November 14, 2023
Start time: 11:12 AM
O₂ instrument Model: AMI 70
NO_x instrument Model: API 200 AH
SO₂ instrument Model: API 100 AH
CO instrument Model: THERMO 48 C
Fuel Type : Fuel Gas

Run # : 3
Location : DHDS Stack
Finish time : 11:32 AM
Serial No.: 111117-2
Serial No.: 441
Serial No.: 060
Serial No.: 365
Test Operator : Kittipong T.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
11:12 AM	4.22	29.33	2.40	1.23
11:13 AM	4.36	29.74	2.52	1.23
11:14 AM	4.39	30.25	2.47	1.23
11:15 AM	4.33	30.51	2.19	1.23
11:16 AM	4.29	30.22	2.00	1.23
11:17 AM	4.27	29.87	2.28	1.23
11:18 AM	4.30	29.79	2.63	1.23
11:19 AM	4.29	29.82	2.51	1.23
11:20 AM	4.15	29.92	2.20	1.23
11:21 AM	4.15	29.35	1.88	1.23
11:22 AM	4.12	29.22	1.63	1.23
11:23 AM	4.33	29.64	1.64	1.23
11:24 AM	4.44	30.20	1.89	1.23
11:25 AM	4.38	30.39	2.08	1.23
11:26 AM	4.28	30.17	2.26	1.23
11:27 AM	4.27	29.83	2.44	1.23
11:28 AM	4.29	29.57	2.50	1.23
11:29 AM	4.30	29.92	2.34	1.23
11:30 AM	4.27	30.22	2.28	1.23
11:31 AM	4.26	30.39	2.30	1.23
11:32 AM	4.20	30.23	2.34	1.23
Average	4.28	29.93	2.23	1.23

Signature

(Miss Katesarin Vorradetwittaya)

Environmental Scientist



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STACK EMISSION ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Co., Ltd. **REF. NO. :** PTTGC6 (Refinery)_223010_Cert-Stk/GT1
Branch 6 (Refinery) **SAMPLING DATE :** 27/12/2023
SAMPLING BY : SECOT Co., Ltd. **ANALYTICAL DATE :** 02-03/01/2024
RECEIVED DATE : 28/12/2023 **SAMPLE CONDITION :** Normal
REPORT DATE : 06/01/2024 **OPERATOR :** Mr. Song Hangchhwan
STACK LOCATION : Gas Turbine 1 **SOURCE DESCRIPTION :** Combustion
FUEL TYPE : Natural Gas

STACK DESCRIPTION

Height : 60.0 m **Gas Velocity :** 17.6 m/s
Diameter : 2.5 m **Flow rate^{1/} :** 2,838 Ncu.m/min
Temperature : 202 °C **Excess Oxygen :** 13.3 %

PARAMETER	UNIT	RESULTS		STANDARD ^{2/}	REFERENCE METHODS
		13.3%O ₂	7%O ₂		
Particulate Matter	mg/Ncu.m	1.63	3.00	60.0	US. EPA Method 5

(Miss Pornnapa Budthum)

Analyst

REG.NO. 2-239-0-0018

(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO. 2-239-0-0010

Remark : 1. Reported analysis refers to submitted sample only.

2. This report shall not be reproduced, except in full, without official approval.

3. ^{1/} At standard pressure of 760 mmHg and temperature of 25 °C, dry basis.

4. ^{2/} Notification of the Ministry of Natural Resources and Environment B.E.2554.

**The Monitoring Result of Emission Concentration
GAS Turbine 1
PTT Global Chemical Public Company Limited
December 27, 2023**

Run Number	Oxygen content (%)		Oxide of Nitrogen (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O2	Corrected Gas Conc @7% O2
1	13.27	13.34	42.14	42.21	77.61
2	13.25	13.34	43.17	43.25	79.52
3	13.22	13.32	43.63	43.72	80.17
Average	13.25	13.33	42.98	43.06	79.10

Run Number	Oxygen content (%)		Sulfur dioxide (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O2	Corrected Gas Conc @7% O2
1	13.27	13.34	0.32	0.27	0.50
2	13.25	13.34	0.35	0.30	0.55
3	13.22	13.32	0.33	0.27	0.50
Average	13.25	13.33	0.33	0.28	0.51

Run Number	Oxygen content (%)		Carbonmonoxide (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O2	Corrected Gas Conc @7% O2
1	13.27	13.34	207.80	208.50	383.35
2	13.25	13.34	208.65	209.38	384.97
3	13.22	13.32	204.62	205.37	376.60
Average	13.25	13.33	207.03	207.75	381.64

**PTT Global Chemical Public Company Limited
EMISSION TEST RESULT**

Date: December 27, 2023
 Start time: 11:00 AM
 O₂ instrument Model: AMI 70
 NO_x instrument Model: API 200 AH
 SO₂ instrument Model: API 100 AH
 CO instrument Model: THERMO 48 C
 Fuel Type: Natural Gas

Run #: 1
 Location: GAS Turbine 1
 Finish time: 11:20 AM
 Serial No.: 071023-47
 Serial No.: 342
 Serial No.: 060
 Serial No.: 49
 Test Operator: Kittipong T.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
11:00 AM	13.34	40.47	0.29	206.55
11:01 AM	13.31	41.12	0.33	207.00
11:02 AM	13.29	41.95	0.29	207.37
11:03 AM	13.29	41.23	0.29	206.93
11:04 AM	13.28	41.21	0.29	205.49
11:05 AM	13.28	41.52	0.30	208.52
11:06 AM	13.28	41.74	0.31	208.52
11:07 AM	13.25	41.94	0.31	208.52
11:08 AM	13.24	42.03	0.30	208.02
11:09 AM	13.26	42.20	0.35	207.60
11:10 AM	13.28	42.32	0.30	207.52
11:11 AM	13.29	42.58	0.30	208.02
11:12 AM	13.29	42.73	0.30	209.29
11:13 AM	13.25	42.78	0.30	210.39
11:14 AM	13.18	42.68	0.35	209.89
11:15 AM	13.22	42.39	0.32	208.95
11:16 AM	13.26	42.28	0.33	207.68
11:17 AM	13.27	42.55	0.32	206.44
11:18 AM	13.26	42.98	0.35	205.77
11:19 AM	13.26	43.03	0.35	206.77
11:20 AM	13.27	43.15	0.39	208.62
Average	13.27	42.14	0.32	207.80

Signature



(Miss Katesarin Vorradetwittaya)

Environmental Scientist

PTT Global Chemical Public Company Limited
EMISSION TEST RESULT

Date: December 27, 2023
Start time: 11:21 AM
O₂ instrument Model: AMI 70
NO_x instrument Model: API 200 AH
SO₂ instrument Model: API 100 AH
CO instrument Model: THERMO 48 C
Fuel Type : Natural Gas

Run # : 2
Location : GAS Turbine 1
Finish time : 11:41 AM
Serial No.: 071023-47
Serial No.: 342
Serial No.: 060
Serial No.: 49
Test Operator : Kittipong T.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
11:21 AM	13.27	43.04	0.37	209.81
11:22 AM	13.25	42.86	0.36	209.90
11:23 AM	13.26	42.91	0.36	209.73
11:24 AM	13.21	42.83	0.34	208.80
11:25 AM	13.26	42.66	0.36	208.46
11:26 AM	13.26	42.81	0.36	208.29
11:27 AM	13.29	43.30	0.36	208.80
11:28 AM	13.29	43.36	0.36	209.82
11:29 AM	13.27	43.36	0.36	211.17
11:30 AM	13.26	43.24	0.36	211.76
11:31 AM	13.23	43.08	0.36	211.09
11:32 AM	13.20	43.20	0.35	209.65
11:33 AM	13.25	43.21	0.34	207.79
11:34 AM	13.25	43.09	0.33	205.78
11:35 AM	13.27	43.18	0.34	205.01
11:36 AM	13.29	43.22	0.36	205.60
11:37 AM	13.28	43.35	0.35	207.35
11:38 AM	13.24	43.65	0.36	208.37
11:39 AM	13.20	43.59	0.36	208.54
11:40 AM	13.25	43.35	0.34	208.28
11:41 AM	13.25	43.26	0.34	207.61
Average	13.25	43.17	0.35	208.65

Signature

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

PTT Global Chemical Public Company Limited
EMISSION TEST RESULT

Date: December 27, 2023
Start time: 11:42 AM
O₂ instrument Model: AMI 70
NO_x instrument Model: API 200 AH
SO₂ instrument Model: API 100 AH
CO instrument Model: THERMO 48 C
Fuel Type : Natural Gas

Run # : 3
Location : GAS Turbine 1
Finish time : 12:02 PM
Serial No.: 071023-47
Serial No.: 342
Serial No.: 060
Serial No.: 49
Test Operator : Kittipong T.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
11:42 AM	13.26	43.42	0.30	206.69
11:43 AM	13.26	43.37	0.34	206.45
11:44 AM	13.23	43.23	0.32	207.43
11:45 AM	13.24	43.41	0.31	207.85
11:46 AM	13.20	43.29	0.36	207.43
11:47 AM	13.21	43.37	0.33	206.28
11:48 AM	13.24	43.39	0.30	205.59
11:49 AM	13.26	43.44	0.34	205.68
11:50 AM	13.27	43.66	0.33	206.35
11:51 AM	13.24	44.05	0.33	207.09
11:52 AM	13.17	43.85	0.30	207.18
11:53 AM	13.18	43.26	0.36	205.68
11:54 AM	13.22	43.31	0.30	204.58
11:55 AM	13.25	43.81	0.30	203.65
11:56 AM	13.24	44.20	0.33	202.89
11:57 AM	13.20	44.04	0.35	202.81
11:58 AM	13.18	43.85	0.34	203.48
11:59 AM	13.16	43.87	0.33	202.56
12:00 PM	13.17	43.79	0.33	201.03
12:01 PM	13.17	43.76	0.32	197.92
12:02 PM	13.19	43.88	0.33	198.50
Average	13.22	43.63	0.33	204.62

Signature

(Miss Katesarin Vorradetwittaya)

Environmental Scientist



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STACK EMISSION ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Co., Ltd. REF. NO. : PTTGC6 (Refinery)_223010_Cert-Stk/GT2
Branch 6 (Refinery) SAMPLING DATE : 13/12/2023
SAMPLING BY : SECOT Co., Ltd. ANALYTICAL DATE : 15-16/12/2023
RECEIVED DATE : 15/12/2023 SAMPLE CONDITION : Normal
REPORT DATE : 19/12/2023 OPERATOR : Mr. Song Hanghchwankun
STACK LOCATION : Gas Turbine 2 SOURCE DESCRIPTION : Combustion
FUEL TYPE : Natural Gas

STACK DESCRIPTION

Height : 60.0 m Gas Velocity : 14.6 m/s
Diameter : 2.5 m Flow rate^{1/} : 2,512 Ncu.m/min
Temperature : 176 °C Excess Oxygen : 9.5 %

PARAMETER	UNIT	RESULTS		STANDARD ^{2/}	REFERENCE METHODS
		9.5%O ₂	7%O ₂		
Particulate Matter	mg/Ncu.m	2.00	2.45	60.0	US EPA Method 5

Phatchara Samanchan
(Miss Phatchara Samanchan)

Analyst

REG.NO. 2-239-0-0021

Narisa Poowasanpetch
(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO. 2-239-0-0010

Remark : 1. Reported analysis refers to submitted sample only.

2. This report shall not be reproduced, except in full, without official approval.

3. ^{1/} At standard pressure of 760 mmHg and temperature of 25 °C, dry basis.

4. ^{2/} Notification of the Ministry of Natural Resources and Environment B.E.2554.

The Monitoring Result of Emission Concentration GAS Turbine 2

PTT Global Chemical Public Company Limited
December 13, 2023

Run Number	Oxygen content (%)		Oxide of Nitrogen (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O2	Corrected Gas Conc @7% O2
1	9.48	9.54	43.20	43.28	52.96
2	9.48	9.52	42.74	42.80	52.28
3	9.48	9.50	41.99	42.03	51.25
Average	9.48	9.52	42.64	42.70	52.16

Run Number	Oxygen content (%)		Sulfur dioxide (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O2	Corrected Gas Conc @7% O2
1	9.48	9.54	0.15	0.13	0.16
2	9.48	9.52	0.15	0.12	0.15
3	9.48	9.50	0.15	0.11	0.13
Average	9.48	9.52	0.15	0.12	0.15

Run Number	Oxygen content (%)		Carbonmonoxide (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O2	Corrected Gas Conc @7% O2
1	9.48	9.54	4.19	4.17	5.10
2	9.48	9.52	4.12	4.10	5.01
3	9.48	9.50	4.40	4.38	5.34
Average	9.48	9.52	4.24	4.22	5.15

PTT Global Chemical Public Company Limited
EMISSION TEST RESULT

Date: December 13, 2023	Run # : 1
Start time: 10:50 AM	Location : GAS Turbine 2
O₂ instrument Model: AMI 70	Finish time : 11:10 AM
NO_x instrument Model: TELEDYNE 200 EM	Serial No.: 161212-14
SO₂ instrument Model: API 100 AH	Serial No.: 435
CO instrument Model: THERMO 48 C	Serial No.: 058
Fuel Type : Natural Gas	Serial No.: 412106049
	Test Operator : Song H.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
10:50 AM	9.67	42.94	0.15	4.05
10:51 AM	9.69	43.03	0.15	4.01
10:52 AM	9.67	43.05	0.15	4.01
10:53 AM	9.57	43.20	0.15	4.04
10:54 AM	9.56	43.41	0.15	4.21
10:55 AM	9.50	43.63	0.15	4.21
10:56 AM	9.54	43.63	0.15	4.38
10:57 AM	9.48	43.30	0.15	4.28
10:58 AM	9.43	43.05	0.15	4.21
10:59 AM	9.42	43.11	0.15	4.21
11:00 AM	9.35	43.18	0.15	4.18
11:01 AM	9.36	43.11	0.15	4.21
11:02 AM	9.31	43.18	0.15	4.21
11:03 AM	9.31	43.21	0.15	4.21
11:04 AM	9.38	43.06	0.15	4.38
11:05 AM	9.38	42.98	0.15	4.41
11:06 AM	9.45	42.99	0.15	4.41
11:07 AM	9.46	43.07	0.15	4.36
11:08 AM	9.48	43.28	0.15	4.21
11:09 AM	9.52	43.48	0.15	4.24
11:10 AM	9.50	43.34	0.15	3.65
Average	9.48	43.20	0.15	4.19

Signature



(Miss Katesarin Vorradetwittaya)

Environmental Scientist

PTT Global Chemical Public Company Limited
EMISSION TEST RESULT

Date: December 13, 2023	Run # : 2
Start time: 11:11 AM	Location : GAS Turbine 2
O₂ instrument Model: AMI 70	Finish time : 11:31 AM
NO_x instrument Model: TELEDYNE 200 EM	Serial No.: 161212-14
SO₂ instrument Model: API 100 AH	Serial No.: 435
CO instrument Model: THERMO 48 C	Serial No.: 058
Fuel Type : Natural Gas	Serial No.: 412106049
	Test Operator : Song H.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
11:11 AM	9.50	43.15	0.15	3.16
11:12 AM	9.52	43.21	0.15	3.06
11:13 AM	9.54	43.53	0.15	3.08
11:14 AM	9.52	43.83	0.15	3.93
11:15 AM	9.54	43.85	0.15	3.86
11:16 AM	9.51	43.73	0.15	3.96
11:17 AM	9.54	43.71	0.15	4.19
11:18 AM	9.57	43.54	0.15	4.21
11:19 AM	9.56	43.38	0.15	4.02
11:20 AM	9.52	43.20	0.15	4.20
11:21 AM	9.48	42.83	0.15	4.40
11:22 AM	9.44	42.41	0.15	4.40
11:23 AM	9.41	42.18	0.15	4.40
11:24 AM	9.45	42.08	0.15	4.40
11:25 AM	9.40	41.96	0.15	4.40
11:26 AM	9.41	41.95	0.15	4.40
11:27 AM	9.41	42.00	0.15	4.46
11:28 AM	9.37	41.82	0.15	4.42
11:29 AM	9.40	41.79	0.15	4.47
11:30 AM	9.43	41.79	0.15	4.50
11:31 AM	9.49	41.53	0.15	4.60
Average	9.48	42.74	0.15	4.12

Signature



(Miss Katesarin Vorradetwittaya)

Environmental Scientist

PTT Global Chemical Public Company Limited

EMISSION TEST RESULT

Date: December 13, 2023
 Start time: 11:32 AM
 O₂ instrument Model: AMI 70
 NO_x instrument Model: TELEDYNE 200 EM
 SO₂ instrument Model: API 100 AH
 CO instrument Model: THERMO 48 C
 Fuel Type : Natural Gas

Run # : 3
 Location : GAS Turbine 2
 Finish time : 11:52 AM
 Serial No.: 161212-14
 Serial No.: 435
 Serial No.: 058
 Serial No.: 412106049
 Test Operator : Song H.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
11:32 AM	9.48	41.38	0.15	4.55
11:33 AM	9.51	41.57	0.15	4.38
11:34 AM	9.50	41.85	0.15	4.24
11:35 AM	9.49	42.12	0.15	4.46
11:36 AM	9.50	42.06	0.15	4.47
11:37 AM	9.56	42.09	0.15	4.32
11:38 AM	9.54	42.25	0.15	4.29
11:39 AM	9.53	42.16	0.15	4.32
11:40 AM	9.51	41.90	0.15	4.32
11:41 AM	9.54	41.91	0.15	4.35
11:42 AM	9.53	42.00	0.15	4.32
11:43 AM	9.52	42.03	0.15	4.28
11:44 AM	9.51	42.17	0.15	4.32
11:45 AM	9.46	42.29	0.15	4.40
11:46 AM	9.45	42.34	0.15	4.28
11:47 AM	9.41	42.41	0.15	4.39
11:48 AM	9.41	42.27	0.15	4.40
11:49 AM	9.42	41.93	0.15	4.48
11:50 AM	9.45	41.63	0.15	4.60
11:51 AM	9.36	41.54	0.15	4.60
11:52 AM	9.38	41.85	0.15	4.55
Average	9.48	41.99	0.15	4.40

Signature

(Miss Katesarin Vorradetwittaya)

Environmental Scientist



บริษัท ซีคอต จำกัด
 SECOT CO., LTD.

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STACK EMISSION ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Co., Ltd. REF. NO. : PTTGC6 (Refinery)_223010_Cert-Stk/GT3
 Branch 6 (Refinery) SAMPLING DATE : 14/12/2023
 SAMPLING BY : SECOT Co., Ltd. ANALYTICAL DATE : 15-16/12/2023
 RECEIVED DATE : 15/12/2023 SAMPLE CONDITION : Normal
 REPORT DATE : 19/12/2023 OPERATOR : Mr. Song Hanghchwankun
 STACK LOCATION : Gas Turbine 3 SOURCE DESCRIPTION : Combustion
 FUEL TYPE : Natural Gas

STACK DESCRIPTION

Height : 60.0 m Gas Velocity : 17.8 m/s
 Diameter : 2.5 m Flow rate ^{1/} : 3,068 Neu.m/min
 Temperature : 175 °C Excess Oxygen : 9.4 %

PARAMETER	UNIT	RESULTS		STANDARD ^{2/}	REFERENCE METHODS
		9..4%O ₂	7%O ₂		
Particulate Matter	mg/Neu.m	1.89	2.28	60.0	US EPA Method 5

Phatchara Samanchan

(Miss Phatchara Samanchan)

Analyst

REG.NO. 7-239-0-0021

(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO. 7-239-0-0010

Remark : 1. Reported analysis refers to submitted sample only.

2. This report shall not be reproduced, except in full, without official approval.

3. ^{1/} At standard pressure of 760 mmHg and temperature of 25 °C, dry basis.4. ^{2/} Notification of the Ministry of Natural Resources and Environment B.E.2554.

The Monitoring Result of Emission Concentration
GAS Turbine 3
PTT Global Chemical Public Company Limited
December 14, 2023

Run Number	Oxygen content (%)		Oxide of Nitrogen (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O2	Corrected Gas Conc @7% O2
1	9.39	9.42	44.05	44.09	53.38
2	9.36	9.36	44.42	44.46	53.55
3	9.42	9.39	43.38	43.42	52.44
Average	9.39	9.39	43.95	43.99	53.12

Run Number	Oxygen content (%)		Sulfur dioxide (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O2	Corrected Gas Conc @7% O2
1	9.39	9.42	0.13	0.08	0.10
2	9.36	9.36	0.14	0.10	0.12
3	9.42	9.39	0.16	0.13	0.16
Average	9.39	9.39	0.14	0.10	0.12

Run Number	Oxygen content (%)		Carbonmonoxide (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O2	Corrected Gas Conc @7% O2
1	9.39	9.42	8.11	8.09	9.80
2	9.36	9.36	7.72	7.70	9.27
3	9.42	9.39	9.21	9.18	11.09
Average	9.39	9.39	8.34	8.32	10.05

PTT Global Chemical Public Company Limited
EMISSION TEST RESULT

Date: December 14, 2023
 Start time: 10:40 AM
 O₂ instrument Model: AMI 70
 NO_x instrument Model: Teledyne 200 EM
 SO₂ instrument Model: API 100 AH
 CO instrument Model: THERMO 48 C
 Fuel Type : Natural Gas

Run # : 1
 Location : GAS Turbine 3
 Finish time : 11:00 AM
 Serial No.: 161212-14
 Serial No.: 435
 Serial No.: 058
 Serial No.: 412106049
 Test Operator : Song H.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
10:40 AM	9.56	42.17	0.13	12.15
10:41 AM	9.55	42.54	0.13	11.19
10:42 AM	9.54	42.83	0.13	10.86
10:43 AM	9.47	42.97	0.13	10.02
10:44 AM	9.39	43.47	0.13	8.23
10:45 AM	9.30	44.23	0.13	7.13
10:46 AM	9.26	44.74	0.13	6.33
10:47 AM	9.25	45.09	0.12	5.79
10:48 AM	9.25	45.16	0.12	5.70
10:49 AM	9.25	45.01	0.12	5.79
10:50 AM	9.25	44.92	0.12	5.89
10:51 AM	9.23	44.94	0.12	5.73
10:52 AM	9.28	44.76	0.12	6.29
10:53 AM	9.40	44.28	0.13	7.29
10:54 AM	9.43	43.75	0.13	8.59
10:55 AM	9.38	43.76	0.13	8.43
10:56 AM	9.37	44.30	0.13	8.06
10:57 AM	9.40	44.55	0.13	7.89
10:58 AM	9.43	44.42	0.13	8.33
10:59 AM	9.56	43.94	0.13	9.42
11:00 AM	9.58	43.17	0.13	11.12
Average	9.39	44.05	0.13	8.11

Signature



(Miss Katesarin Vorradetwittaya)

Environmental Scientist

PTT Global Chemical Public Company Limited
EMISSION TEST RESULT

Date: December 14, 2023
Start time: 11:01 AM
O₂ instrument Model: AMI 70
NO_x instrument Model: Teledyne 200 EM
SO₂ instrument Model: API 100 AH
CO instrument Model: THERMO 48 C
Fuel Type : Natural Gas

Run # : 2
Location : GAS Turbine 3
Finish time : 11:21 AM
Serial No.: 161212-14
Serial No.: 435
Serial No.: 058
Serial No.: 412106049
Test Operator : Song H.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
11:01 AM	9.65	42.59	0.13	12.28
11:02 AM	9.57	42.47	0.13	11.98
11:03 AM	9.45	42.85	0.13	10.35
11:04 AM	9.47	43.44	0.13	9.19
11:05 AM	9.40	43.83	0.13	8.66
11:06 AM	9.42	43.87	0.13	8.49
11:07 AM	9.34	44.16	0.13	7.79
11:08 AM	9.30	44.73	0.13	6.79
11:09 AM	9.33	45.02	0.13	6.85
11:10 AM	9.29	45.11	0.14	6.42
11:11 AM	9.31	45.03	0.14	6.42
11:12 AM	9.30	44.84	0.15	6.62
11:13 AM	9.25	45.03	0.15	6.15
11:14 AM	9.23	45.39	0.16	5.59
11:15 AM	9.25	45.46	0.16	5.56
11:16 AM	9.28	45.28	0.16	5.99
11:17 AM	9.28	45.09	0.16	6.55
11:18 AM	9.29	44.84	0.16	7.02
11:19 AM	9.33	44.70	0.16	6.95
11:20 AM	9.40	44.71	0.16	7.45
11:21 AM	9.48	44.47	0.16	8.98
Average	9.36	44.42	0.14	7.72

Signature



(Miss Katesarin Vorradetwittaya)

Environmental Scientist

PTT Global Chemical Public Company Limited
EMISSION TEST RESULT

Date: December 14, 2023
Start time: 11:22 AM
O₂ instrument Model: AMI 70
NO_x instrument Model: Teledyne 200 EM
SO₂ instrument Model: API 100 AH
CO instrument Model: THERMO 48 C
Fuel Type : Natural Gas

Run # : 3
Location : GAS Turbine 3
Finish time : 11:42 AM
Serial No.: 161212-14
Serial No.: 435
Serial No.: 058
Serial No.: 412106049
Test Operator : Song H.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
11:22 AM	9.56	43.86	0.16	10.45
11:23 AM	9.53	43.33	0.16	11.21
11:24 AM	9.51	42.94	0.16	11.65
11:25 AM	9.49	42.54	0.16	11.81
11:26 AM	9.41	42.58	0.16	10.22
11:27 AM	9.38	42.64	0.16	9.52
11:28 AM	9.40	42.62	0.16	9.48
11:29 AM	9.38	42.81	0.16	8.92
11:30 AM	9.32	43.10	0.16	8.55
11:31 AM	9.37	43.68	0.16	7.42
11:32 AM	9.33	44.18	0.17	7.69
11:33 AM	9.35	44.48	0.16	7.12
11:34 AM	9.37	44.59	0.16	7.45
11:35 AM	9.36	44.35	0.16	7.82
11:36 AM	9.41	43.87	0.16	8.25
11:37 AM	9.37	43.39	0.16	8.56
11:38 AM	9.36	43.19	0.16	8.46
11:39 AM	9.42	43.24	0.16	9.02
11:40 AM	9.50	43.30	0.16	9.49
11:41 AM	9.49	43.09	0.16	10.48
11:42 AM	9.45	43.20	0.16	9.79
Average	9.42	43.38	0.16	9.21

Signature



(Miss Katesarin Vorradetwittaya)

Environmental Scientist



บริษัท ซีคอต จำกัด

SECOT CO., LTD.

239 ถนนวิมลทองประไพ แขวงบางซื่อ เขตบางซื่อ กรุงเทพฯ 10800

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STACK EMISSION ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Co., Ltd. REF. NO. : PTTGC6 (Refinery)_223010_Cert-Stk/Scrubber
Branch 6 (Refinery) SAMPLING DATE : 13/11/2023
SAMPLING BY : SECOT Co., Ltd. ANALYTICAL DATE : 14/11/2023
RECEIVED DATE : 14/11/2023 SAMPLE CONDITION : Normal
REPORT DATE : 21/11/2023 OPERATOR : Mr. Song Hanghchwankun
STACK LOCATION : Inlet Sulfur Scrubber SOURCE DESCRIPTION : Process

STACK DESCRIPTION

Height : 5.0 m Gas Velocity : 2.7 m/s
Diameter : 0.5 m Flow rate ^{1/} : 24.4 Ncu.m/min
Temperature : 94.0 °C Excess Oxygen : 20.7 %

PARAMETER	UNIT	ND	RESULTS	STANDARD	REFERENCE METHOD
		Non-detectable	Inlet		
Hydrogen Sulfide (H ₂ S)	ppm	<0.30	ND	-	US EPA Method 16

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

Remark : 1. Reported analysis refers to submitted sample only.

2. This report shall not be reproduced, except in full, without official approval.

3. ^{1/} At standard pressure of 760 mmHg and temperature of 25 °C, dry basis.

The Monitoring Result of Emission Concentration
Sulfur scrubber (Inlet)
PTT Global Chemical Public Company Limited
November 13, 2023

Run Number	Oxygen content (%)		Sulfur dioxide (ppm)	
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O2
1	20.59	20.63	13.33	13.30
2	20.73	20.77	18.36	18.35
3	20.74	20.78	19.42	19.42
Average	20.69	20.73	17.04	17.02

PTT Global Chemical Public Company Limited
EMISSION TEST RESULT

Date: November 13, 2023
Start time: 2:40 PM
O₂ instrument Model: AMI 70
SO₂ instrument Model: API 100 AH
Fuel Type : -

Run # : 1
Location : Sulfur scrubber (Inlet)
Finish time : 3:00 PM
Serial No.: 071023-47
Serial No.: 118
Test Operator : Kittipong T.

Time, min	O ₂ (%)	SO ₂ (ppm)
2:40 PM	20.34	9.40
2:41 PM	20.31	10.25
2:42 PM	20.31	10.47
2:43 PM	20.37	10.78
2:44 PM	20.47	11.72
2:45 PM	20.57	10.75
2:46 PM	20.60	11.35
2:47 PM	20.62	11.91
2:48 PM	20.62	12.31
2:49 PM	20.64	12.92
2:50 PM	20.64	13.28
2:51 PM	20.65	13.69
2:52 PM	20.67	14.38
2:53 PM	20.69	14.80
2:54 PM	20.69	15.11
2:55 PM	20.70	15.48
2:56 PM	20.71	15.75
2:57 PM	20.72	16.18
2:58 PM	20.72	16.24
2:59 PM	20.72	16.43
3:00 PM	20.72	16.81
Average	20.59	13.33

Signature

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

PTT Global Chemical Public Company Limited
EMISSION TEST RESULT

Date: November 13, 2023
Start time: 3:01 PM
O₂ instrument Model: AMI 70
SO₂ instrument Model: API 100 AH
Fuel Type : -

Run # : 2
Location : Sulfur scrubber (Inlet)
Finish time : 3:21 PM
Serial No.: 071023-47
Serial No.: 118
Test Operator : Kittipong T.

Time, min	O ₂ (%)	SO ₂ (ppm)
3:01 PM	20.73	16.96
3:02 PM	20.74	17.23
3:03 PM	20.74	17.40
3:04 PM	20.74	17.59
3:05 PM	20.74	17.64
3:06 PM	20.75	17.84
3:07 PM	20.74	17.92
3:08 PM	20.75	17.97
3:09 PM	20.75	18.17
3:10 PM	20.75	18.30
3:11 PM	20.74	18.49
3:12 PM	20.74	18.56
3:13 PM	20.73	18.76
3:14 PM	20.73	18.67
3:15 PM	20.72	18.88
3:16 PM	20.72	19.07
3:17 PM	20.72	19.18
3:18 PM	20.72	19.30
3:19 PM	20.72	19.17
3:20 PM	20.72	19.24
3:21 PM	20.72	19.25
Average	20.73	18.36

Signature

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

PTT Global Chemical Public Company Limited

EMISSION TEST RESULT

Date: November 13, 2023
Start time: 3:22 PM
O₂ instrument Model: AMI 70
SO₂ instrument Model: API 100 AH
Fuel Type: -

Run #: 3
Location: Sulfur scrubber (Inlet)
Finish time: 3:42 PM
Serial No.: 071023-47
Serial No.: 118
Test Operator: Kittipong T.

Time, min	O ₂ (%)	SO ₂ (ppm)
3:22 PM	20.72	19.16
3:23 PM	20.72	18.82
3:24 PM	20.73	18.45
3:25 PM	20.75	18.87
3:26 PM	20.75	19.01
3:27 PM	20.75	19.15
3:28 PM	20.75	19.39
3:29 PM	20.74	19.39
3:30 PM	20.74	19.29
3:31 PM	20.74	19.52
3:32 PM	20.74	19.57
3:33 PM	20.74	19.49
3:34 PM	20.73	19.62
3:35 PM	20.73	19.88
3:36 PM	20.73	19.84
3:37 PM	20.73	19.91
3:38 PM	20.74	19.93
3:39 PM	20.74	19.96
3:40 PM	20.74	19.87
3:41 PM	20.75	19.68
3:42 PM	20.77	19.00
Average	20.74	19.42

Signature

(Miss Katesarin Vorradetwittaya)

Environmental Scientist



บริษัท ซีคอต จำกัด

SECOT CO., LTD.

239 ถนนริมคลองประปา แขวงบางซื่อ เขตบางซื่อ กรุงเทพฯ 10800

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STACK EMISSION ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Co., Ltd. **REF. NO.** : PTTGC6 (Refinery)_223010_Cert-Stk/Scrubber
Branch 6 (Refinery) **SAMPLING DATE** : 13/11/2023
SAMPLING BY : SECOT Co., Ltd. **ANALYTICAL DATE** : 14/11/2023
RECEIVED DATE : 14/11/2023 **SAMPLE CONDITION** : Normal
REPORT DATE : 21/11/2023 **OPERATOR** : Mr. Song Hanghchwankun
STACK LOCATION : Out Sulfur Scrubber **SOURCE DESCRIPTION** : Process

STACK DESCRIPTION

Height : 5.0 m **Gas Velocity** : 2.5 m/s
Diameter : 0.5 m **Flow rate^{1/}** : 27.5 Ncu.m/min
Temperature : 30.0 °C **Excess Oxygen** : 21.0 %

PARAMETER	UNIT	ND	RESULTS	STANDARD ^{2/}	REFERENCE METHOD
		Non-detecable	Outlet		
Hydrogen Sulfide (H ₂ S)	ppm	<0.30	ND	60	US EPA Method 16

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

Narisra Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

- Remark :**
1. Reported analysis refers to submitted sample only.
 2. This report shall not be reproduced, except in full, without official approval.
 3. ^{1/} At standard pressure of 760 mmHg and temperature of 25 °C, dry basis.
 4. ^{2/} Notification of the Ministry of Natural Resources and Environment B.E.2554.

The Monitoring Result of Emission Concentration
Sulfur scrubber (Outlet)
PTT Global Chemical Public Company Limited
November 13, 2023

Run Number	Oxygen content (%)		Sulfur dioxide (ppm)	
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O2
1	20.78	20.94	0.22	0.14
2	20.90	21.06	0.33	0.25
3	20.93	21.09	0.35	0.27
Average	20.87	21.03	0.30	0.22

PTT Global Chemical Public Company Limited
EMISSION TEST RESULT

Date: November 13, 2023
 Start time: 2:40 PM
 O₂ instrument Model: AMI 70
 SO₂ instrument Model: API 100 AH
 Fuel Type: -

Run #: 1
 Location: Sulfur scrubber (Outlet)
 Finish time: 3:00 PM
 Serial No.: 111117-2
 Serial No.: 060
 Test Operator: Kittipong T.

Time, min	O ₂ (%)	SO ₂ (ppm)
2:40 PM	20.65	0.10
2:41 PM	20.69	0.09
2:42 PM	20.72	0.14
2:43 PM	20.72	0.14
2:44 PM	20.74	0.16
2:45 PM	20.75	0.21
2:46 PM	20.77	0.21
2:47 PM	20.77	0.21
2:48 PM	20.77	0.21
2:49 PM	20.78	0.21
2:50 PM	20.79	0.27
2:51 PM	20.80	0.22
2:52 PM	20.80	0.25
2:53 PM	20.80	0.26
2:54 PM	20.82	0.27
2:55 PM	20.82	0.28
2:56 PM	20.82	0.29
2:57 PM	20.82	0.28
2:58 PM	20.82	0.31
2:59 PM	20.82	0.29
3:00 PM	20.82	0.29
Average	20.78	0.22

Signature



(Miss Katesarin Vorradetwittaya)

Environmental Scientist

PTT Global Chemical Public Company Limited
EMISSION TEST RESULT

Date: November 13, 2023
 Start time: 3:01 PM
 O₂ instrument Model: AMI 70
 SO₂ instrument Model: API 100 AH
 Fuel Type : -

Run # : 2
 Location : Sulfur scrubber (Outlet)
 Finish time : 3:21 PM
 Serial No.: 111117-2
 Serial No.: 060
 Test Operator : Kittipong T.

Time, min	O ₂ (%)	SO ₂ (ppm)
3:01 PM	20.84	0.31
3:02 PM	20.84	0.33
3:03 PM	20.87	0.33
3:04 PM	20.88	0.33
3:05 PM	20.89	0.33
3:06 PM	20.89	0.33
3:07 PM	20.89	0.33
3:08 PM	20.89	0.33
3:09 PM	20.89	0.33
3:10 PM	20.89	0.33
3:11 PM	20.90	0.34
3:12 PM	20.91	0.34
3:13 PM	20.91	0.34
3:14 PM	20.91	0.34
3:15 PM	20.92	0.34
3:16 PM	20.92	0.34
3:17 PM	20.92	0.34
3:18 PM	20.92	0.34
3:19 PM	20.92	0.34
3:20 PM	20.92	0.34
3:21 PM	20.92	0.35
Average	20.90	0.33

Signature

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

PTT Global Chemical Public Company Limited
EMISSION TEST RESULT

Date: November 13, 2023
 Start time: 3:22 PM
 O₂ instrument Model: AMI 70
 SO₂ instrument Model: API 100 AH
 Fuel Type : -

Run # : 3
 Location : Sulfur scrubber (Outlet)
 Finish time : 3:42 PM
 Serial No.: 111117-2
 Serial No.: 060
 Test Operator : Kittipong T.

Time, min	O ₂ (%)	SO ₂ (ppm)
3:22 PM	20.92	0.34
3:23 PM	20.92	0.34
3:24 PM	20.92	0.35
3:25 PM	20.92	0.35
3:26 PM	20.92	0.35
3:27 PM	20.92	0.34
3:28 PM	20.92	0.34
3:29 PM	20.92	0.34
3:30 PM	20.92	0.34
3:31 PM	20.93	0.35
3:32 PM	20.93	0.34
3:33 PM	20.93	0.35
3:34 PM	20.93	0.34
3:35 PM	20.94	0.34
3:36 PM	20.94	0.37
3:37 PM	20.94	0.36
3:38 PM	20.94	0.36
3:39 PM	20.95	0.36
3:40 PM	20.96	0.38
3:41 PM	20.97	0.34
3:42 PM	20.97	0.34
Average	20.93	0.35

Signature

(Miss Katesarin Vorradetwittaya)

Environmental Scientist



บริษัท ซีคอต จำกัด
SECOT CO., LTD.

239 ถนนวิมลคลองประปา แขวงบางซื่อ เขตบางซื่อ กรุงเทพฯ 10800
239 RIMKLONGPRAPA ROAD, BANGSUE, BANGKOK 10800, THAILAND
TEL : +66(0) 2959-3600 FAX : +66(0) 2959-3535 E-mail : envserv@secot.co.th

STACK EMISSION ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Co., Ltd. REF. NO. : PTTGC6 (Refinery)_223010_Cert-Stk/VRU RTF
Branch 6 (Refinery) SAMPLING DATE : 15/11/2023
SAMPLING BY : SECOT Co., Ltd. ANALYTICAL DATE : 20/11/2023
RECEIVED DATE : 17/11/2023 SAMPLE CONDITION : Normal
REPORT DATE : 27/11/2023 OPERATOR : Mr. Song Hanghchwankun
STACK LOCATION : VRU Stack of Tank Farm SOURCE DESCRIPTION : Process

PARAMETER	UNIT	ND	RESULT*			STANDARD	REFERENCE METHOD
		Non-detectable	Inlet (V5202)	Outlet (V5204)	Outlet (V5205)		
TVOC as propane	ppm	-	73,834	73.2	70.1	-	US EPA Method
	mg/l	-	133	0.13	0.13	-	25A

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

Narisa Poowasanpetch.

(Miss Narisa Poowasanpetch)

Technical Management Team

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3. * At standard pressure of 760 mmHg and temperature of 25 °C, dry basis.



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STACK EMISSION ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Co., Ltd. REF. NO. : PTTGC6 (Refinery)_223010_Cert-Stk/VRU RTF
Branch 6 (Refinery) SAMPLING DATE : 15/11/2023
SAMPLING BY : SECOT Co., Ltd. ANALYTICAL DATE : 21-22/11/2023
RECEIVED DATE : 17/11/2023 SAMPLE CONDITION : Normal
REPORT DATE : 27/11/2023 OPERATOR : Mr. Song Hanghchwankun
STACK LOCATION : VRU Stack of Tank Farm SOURCE DESCRIPTION : Process

PARAMETER	UNIT	ND	RESULT*			STANDARD	REFERENCE METHOD
		Non-detectable	Inlet (V5202)	Outlet (V5204)	Outlet (V5205)		
Benzene	ppm	<0.06	590	0.20	ND	-	US EPA Method 18
	mg/l	<0.0002	1.88	0.001	ND	-	

Sudaporn S.

(Miss Sudaporn Soonthorn)

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STACK EMISSION ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical Public Co., Ltd.	REF. NO.	: PTTGC6 (Refinery)_223010_Cert-Stk/VRU RTL
	Branch 6 (Refinery)	SAMPLING DATE	: 15/11/2023
SAMPLING BY	: SECOT Co., Ltd.	ANALYTICAL DATE	: 20/11/2023
RECEIVED DATE	: 17/11/2023	SAMPLE CONDITION	: Normal
REPORT DATE	: 27/11/2023	OPERATOR	: Mr. Song Hangchhwanun
STACK LOCATION	: VRU Stack of Truck Loading	SOURCE DESCRIPTION	: Process

PARAMETER	UNIT	ND	RESULT*		ASSIGN VALUE ^{1/}	STANDARD ^{2/}	REFERENCE METHOD
		Non-detectable	Inlet	Outlet			
TVOC as propane	ppm	-	19,484	225	-	-	US EPA Method
	mg/l	-	35.14	0.41	15.0	17.0	25A

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

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4. ^{1/} The assign value in EIA report.

5. ^{2/} Notification of the Ministry of Natural Resources and Environment B.E.2553.



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STACK EMISSION ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical Public Co., Ltd.	REF. NO.	: PTTGC6 (Refinery)_223010_Cert-Stk/VRU RTL
	Branch 6 (Refinery)	SAMPLING DATE	: 15/11/2023
SAMPLING BY	: SECOT Co., Ltd.	ANALYTICAL DATE	: 21-22/11/2023
RECEIVED DATE	: 17/11/2023	SAMPLE CONDITION	: Normal
REPORT DATE	: 27/11/2023	OPERATOR	: Mr. Song Hangchhwanun
STACK LOCATION	: VRU Stack of Truck Loading	SOURCE DESCRIPTION	: Process

PARAMETER	UNIT	ND	RESULT*		ASSIGN VALUE ^{1/}	STANDARD ^{2/}	REFERENCE METHOD
		Non-detectable	Inlet	Outlet			
Benzene	ppm	-	57.26	0.40	-	-	US EPA Method
	mg/l	-	0.18	0.001	0.21	-	18

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

Narisa Poowasanpetch

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Technical Management Team

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ระดับเสียง



Noise Monitoring Result : Community Noise

MTR-PTTGC6-Refinery

Location : North of Refinery	Monitor Period : 13-20 Nov 2023
SLM Model : RION NL-21	Serial No : 00521703
Site Operator : Mr. Siwanon Kulawong	
Calibrator Model : RION NC-74	Serial No : 34283648
Calibration Ref dB(A) : 94.0	Certified Date : 13 Jan 2023
SLM Reading / Adjust dB(A) : 93.9/0.1	Expire Date : 12 Jan 2024
Cal Sheet No.: NC-74-2023-051	


Time	Equivalent Sound Pressure Level (dB(A))						
	13-14 Nov 2023	14-15 Nov 2023	15-16 Nov 2023	16-17 Nov 2023	17-18 Nov 2023	18-19 Nov 2023	19-20 Nov 2023
12:00 - 13:00	66.7	66.4	68.1	66.3	66.4	66.0	65.8
13:00 - 14:00	67.2	66.4	66.8	65.8	66.2	66.5	66.0
14:00 - 15:00	67.3	66.5	67.0	66.3	66.3	66.2	66.2
15:00 - 16:00	67.2	66.9	67.3	66.6	66.0	66.3	66.1
16:00 - 17:00	67.1	66.8	66.7	66.5	66.1	66.4	66.2
17:00 - 18:00	66.9	66.8	66.9	66.1	66.5	66.4	66.3
18:00 - 19:00	66.8	66.5	66.7	66.1	66.5	66.5	66.3
19:00 - 20:00	66.7	66.5	66.5	66.4	66.2	66.3	66.0
20:00 - 21:00	66.9	66.4	66.0	65.9	66.1	65.8	65.7
21:00 - 22:00	66.9	67.5	66.2	65.8	66.0	65.6	65.6
22:00 - 23:00	66.8	66.6	66.2	65.8	66.0	65.9	65.8
23:00 - 00:00	66.8	66.4	66.0	65.7	65.8	65.6	65.9
00:00 - 01:00	66.6	66.4	65.8	65.6	65.8	65.3	65.5
01:00 - 02:00	66.8	66.3	65.6	65.3	65.5	65.2	65.2
02:00 - 03:00	67.0	66.5	65.6	65.2	64.9	65.2	65.1
03:00 - 04:00	67.0	66.4	65.7	65.5	65.4	65.2	64.7
04:00 - 05:00	66.8	66.3	65.8	65.4	65.6	65.2	64.8
05:00 - 06:00	66.8	66.3	65.7	65.3	65.7	65.1	65.0
06:00 - 07:00	66.4	66.3	65.7	65.3	64.3	64.9	65.3
07:00 - 08:00	66.5	66.2	65.7	65.3	64.6	65.0	65.4
08:00 - 09:00	67.6	66.3	65.6	65.3	64.8	65.1	65.2
09:00 - 10:00	67.2	66.4	66.3	65.8	65.0	65.3	65.0
10:00 - 11:00	66.7	68.4	66.2	65.9	65.8	65.4	65.0
11:00 - 12:00	66.8	67.3	66.4	66.0	65.4	65.5	65.8

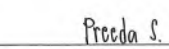
Leq(24)*	66.9	66.6	66.3	65.8	65.7	65.7	65.6
Ldn	73.2	72.9	72.3	72.0	71.9	71.8	71.8
Lmax **	86.0	95.6	86.6	83.6	93.1	85.1	78.6

Standard-24Hr	70 dB(A)
Standard-Max	115 dB(A)

Remark : * Average time between 12:00-12:00

** Maximum Sound Pressure Level between 12:00-12:00


 (Miss Katesarin Vorradetwittaya)
 Environmental Scientist


 (Miss Preeda Somjai)
 Technical Management Team



Noise Monitoring Result : Background Noise


MTR-PTTGC6-Refinery

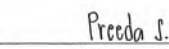
Location : North of Refinery	Monitor Period : 13-20 Nov 2023
SLM Model : RION NL-21	Serial No : 00521703
Site Operator : Mr. Siwanon Kulawong	
Calibrator Model : RION NC-74	Serial No : 34283648
Calibration Ref dB(A) : 94.0	Certified Date : 13 Jan 2023
SLM Reading / Adjust dB(A) : 93.9/0.1	Expire Date : 12 Jan 2024
Cal Sheet No.: NC-74-2023-051	

Time	L90 (dB(A))						
	13-14 Nov 2023	14-15 Nov 2023	15-16 Nov 2023	16-17 Nov 2023	17-18 Nov 2023	18-19 Nov 2023	19-20 Nov 2023
12:00 - 13:00	66.0	65.7	66.1	65.5	65.7	65.1	65.1
13:00 - 14:00	66.7	65.7	66.2	65.1	65.5	65.6	65.3
14:00 - 15:00	66.7	65.9	66.4	65.8	65.3	65.5	65.5
15:00 - 16:00	66.7	66.2	66.6	66.0	65.2	65.5	65.5
16:00 - 17:00	66.6	66.2	66.1	66.0	65.4	65.8	65.5
17:00 - 18:00	66.4	66.3	66.3	65.5	65.6	65.7	65.6
18:00 - 19:00	66.3	65.9	66.0	65.6	65.6	65.8	65.7
19:00 - 20:00	66.3	66.0	65.9	65.5	65.5	65.5	65.4
20:00 - 21:00	66.6	65.9	65.6	65.4	65.5	65.2	65.1
21:00 - 22:00	66.5	66.1	65.8	65.4	65.5	65.1	65.2
22:00 - 23:00	66.5	66.1	65.6	65.4	65.5	65.3	65.4
23:00 - 00:00	66.4	66.0	65.6	65.3	65.3	64.9	65.4
00:00 - 01:00	66.3	66.0	65.4	65.1	65.2	64.7	65.0
01:00 - 02:00	66.4	65.9	65.2	64.8	64.5	64.7	64.7
02:00 - 03:00	66.7	66.1	65.2	64.8	64.1	64.8	64.5
03:00 - 04:00	66.6	66.0	65.3	65.1	64.2	64.8	64.2
04:00 - 05:00	66.5	65.9	65.4	65.0	64.7	64.6	64.2
05:00 - 06:00	66.3	65.9	65.3	64.9	64.8	64.7	64.3
06:00 - 07:00	65.9	65.8	65.3	64.8	63.6	64.5	64.5
07:00 - 08:00	65.9	65.7	65.1	64.8	63.9	64.5	64.4
08:00 - 09:00	66.3	65.8	65.1	64.7	64.1	64.6	64.4
09:00 - 10:00	66.5	65.8	65.6	65.0	64.3	64.6	64.3
10:00 - 11:00	65.4	67.0	65.5	65.0	64.9	64.6	64.3
11:00 - 12:00	66.1	66.3	65.6	65.3	64.6	64.8	64.9

L90(avg)*	66.4	66.0	65.7	65.3	65.0	65.1	65.0
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Remark : * Average time between 12:00-12:00


 (Miss Katesarin Vorradetwittaya)
 Environmental Scientist


 (Miss Preeda Somjai)
 Technical Management Team



Noise Monitoring Result : Community Noise

MTR-PTTGC6-Refinery

Location : Takuan-Ao Pradu Community-1				Monitor Period : 13-20 Nov 2023			
SLM Model : RION NL-21				Serial No : 00187505			
Site Operator : Mr. Siwanon Kulawong							
Calibrator Model : RION NC-74				Serial No : 34283648			
Calibration Ref dB(A) : 94.0				Certified Date : 13 Jan 2023			
SLM Reading / Adjust dB(A) : 94.0/0.0				Expire Date : 12 Jan 2024			
Cal Sheet No.: NC-74-2023-051							
Time	Equivalent Sound Pressure Level (dB(A))						
	13-14 Nov 2023	14-15 Nov 2023	15-16 Nov 2023	16-17 Nov 2023	17-18 Nov 2023	18-19 Nov 2023	19-20 Nov 2023
15:00 - 16:00	58.2	55.5	55.2	54.7	55.7	55.1	54.3
16:00 - 17:00	69.7	68.7	69.0	58.2	54.3	55.5	54.6
17:00 - 18:00	60.7	61.3	68.3	67.5	67.8	57.2	56.3
18:00 - 19:00	60.9	59.4	61.1	59.0	68.9	57.7	59.3
19:00 - 20:00	59.5	58.7	61.1	62.2	59.2	60.9	59.8
20:00 - 21:00	58.9	55.6	59.8	58.3	59.2	60.8	60.3
21:00 - 22:00	58.7	55.0	58.4	59.2	58.7	61.6	55.8
22:00 - 23:00	58.9	55.0	57.5	59.0	61.7	59.8	57.2
23:00 - 00:00	58.8	56.4	53.4	56.7	55.9	56.4	57.5
00:00 - 01:00	58.7	57.7	53.4	52.8	54.9	54.2	53.1
01:00 - 02:00	58.5	56.5	53.5	52.8	53.2	53.0	51.4
02:00 - 03:00	58.1	56.8	51.6	55.3	53.0	51.9	51.8
03:00 - 04:00	58.3	56.7	50.5	59.3	53.1	53.7	50.8
04:00 - 05:00	58.5	58.1	52.3	59.1	53.6	52.7	51.2
05:00 - 06:00	60.3	56.6	53.3	53.5	53.3	53.1	51.0
06:00 - 07:00	62.4	60.3	57.2	57.2	53.9	53.1	52.7
07:00 - 08:00	65.0	60.5	60.1	60.1	58.1	56.1	57.0
08:00 - 09:00	69.3	67.9	67.6	66.6	60.8	59.8	59.3
09:00 - 10:00	58.7	55.0	63.7	71.8	60.5	59.2	65.1
10:00 - 11:00	58.9	55.6	54.7	54.3	56.5	56.1	69.0
11:00 - 12:00	55.0	56.3	55.0	60.0	54.3	56.3	56.2
12:00 - 13:00	67.9	56.6	67.8	59.0	55.9	55.0	54.2
13:00 - 14:00	55.7	56.1	57.7	68.6	55.9	55.3	64.0
14:00 - 15:00	53.7	57.7	61.0	56.6	54.6	55.8	66.8
Leq(24)*	62.5	60.4	62.1	62.8	60.2	57.2	60.5
Ldn	66.7	64.7	64.0	65.5	63.7	62.0	62.8
Lmax **	86.9	91.7	90.0	92.8	90.4	98.1	86.9
Standard-24Hr	70 dB(A)						
Standard-Max	115 dB(A)						

Remark : * Average time between 15:00-15:00

** Maximum Sound Pressure Level between 15:00-15:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team



Noise Monitoring Result : Background Noise

MTR-PTTGC6-Refinery

Location : Takuan-Ao Pradu Community-1				Monitor Period : 13-20 Nov 2023			
SLM Model : RION NL-21				Serial No : 00187505			
Site Operator : Mr. Siwanon Kulawong							
Calibrator Model : RION NC-74				Serial No : 34283648			
Calibration Ref dB(A) : 94.0				Certified Date : 13 Jan 2023			
SLM Reading / Adjust dB(A) : 94.0/0.0				Expire Date : 12 Jan 2024			
Cal Sheet No.: NC-74-2023-051							
Time	L90 (dB(A))						
	13-14 Nov 2023	14-15 Nov 2023	15-16 Nov 2023	16-17 Nov 2023	17-18 Nov 2023	18-19 Nov 2023	19-20 Nov 2023
15:00 - 16:00	47.3	49.3	50.4	48.9	50.7	50.2	49.3
16:00 - 17:00	57.4	50.9	52.5	49.6	49.5	51.8	49.5
17:00 - 18:00	56.5	51.3	54.2	52.5	51.0	50.1	49.8
18:00 - 19:00	57.2	51.5	52.7	50.6	52.5	51.4	50.2
19:00 - 20:00	55.9	52.5	58.9	55.8	52.3	51.5	50.8
20:00 - 21:00	55.5	51.0	58.0	55.3	52.4	55.0	52.3
21:00 - 22:00	56.4	51.1	52.1	55.6	52.0	53.7	51.4
22:00 - 23:00	56.9	50.8	50.3	51.8	51.8	53.1	50.5
23:00 - 00:00	56.9	52.6	51.0	50.7	51.6	51.5	50.0
00:00 - 01:00	57.0	55.7	51.2	48.7	51.6	51.2	49.5
01:00 - 02:00	56.7	51.8	50.3	49.3	51.6	51.2	50.0
02:00 - 03:00	56.4	55.1	49.1	49.6	51.0	50.5	50.0
03:00 - 04:00	56.2	54.9	48.5	49.7	51.2	50.5	49.7
04:00 - 05:00	54.8	50.2	48.9	50.8	52.2	50.7	50.0
05:00 - 06:00	56.5	51.2	49.8	49.6	51.4	50.2	49.8
06:00 - 07:00	56.5	51.7	50.6	50.4	51.2	50.7	49.9
07:00 - 08:00	56.8	52.1	52.2	52.9	52.1	51.1	50.2
08:00 - 09:00	56.6	50.5	50.4	53.0	53.0	52.5	51.9
09:00 - 10:00	54.1	49.4	48.8	51.0	51.7	51.7	52.8
10:00 - 11:00	49.9	49.2	50.4	50.6	50.9	50.9	51.5
11:00 - 12:00	48.5	49.4	49.5	50.2	49.5	50.4	50.2
12:00 - 13:00	49.1	49.8	49.5	51.1	49.8	49.7	49.9
13:00 - 14:00	48.5	48.2	48.5	50.5	48.8	50.5	49.5
14:00 - 15:00	48.4	47.3	48.8	50.8	49.2	50.0	49.1
L90(avg)*	55.4	51.6	52.2	51.7	51.3	51.5	50.4

Remark : * Average time between 15:00-15:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team



Noise Monitoring Result : Community Noise

MTR-PTTGC6-Refinery

Location : Takuan-Ao Pradu Community-2	Monitor Period : 13-20 Nov 2023
SLM Model : RION NL-21	Serial No : 00487723
Site Operator : Mr. Siwanon Kulawong	

Calibrator Model : RION NC-74	Serial No : 34283648
Calibration Ref dB(A) : 94.0	Certified Date : 13 Jan 2023
SLM Reading / Adjust dB(A) : 94.0/0.0	Expire Date : 12 Jan 2024
Cal Sheet No.: NC-74-2023-051	

Time	Equivalent Sound Pressure Level (dB(A))						
	13-14 Nov 2023	14-15 Nov 2023	15-16 Nov 2023	16-17 Nov 2023	17-18 Nov 2023	18-19 Nov 2023	19-20 Nov 2023
16:00 - 17:00	53.5	58.4	49.8	52.1	52.2	47.9	48.0
17:00 - 18:00	55.1	50.4	55.2	54.5	51.4	47.0	52.4
18:00 - 19:00	49.7	51.0	59.3	48.8	59.0	60.7	58.9
19:00 - 20:00	50.3	51.0	49.8	49.1	51.6	57.8	58.7
20:00 - 21:00	50.4	50.1	50.1	49.2	50.8	50.9	49.9
21:00 - 22:00	50.3	49.2	51.7	48.9	47.6	47.2	45.6
22:00 - 23:00	50.3	48.9	49.6	48.4	47.5	52.8	45.0
23:00 - 00:00	50.3	49.3	48.9	48.7	47.2	47.7	45.0
00:00 - 01:00	52.2	48.3	48.5	48.5	47.8	48.3	45.0
01:00 - 02:00	51.2	48.3	49.5	48.7	50.0	48.6	44.3
02:00 - 03:00	51.3	47.7	50.5	48.7	48.2	47.3	45.2
03:00 - 04:00	50.1	48.0	50.7	47.8	49.1	46.9	48.0
04:00 - 05:00	52.8	47.7	51.4	48.6	49.4	46.3	44.3
05:00 - 06:00	51.9	57.3	51.1	51.4	49.0	46.4	43.3
06:00 - 07:00	51.4	55.5	52.4	50.7	48.6	46.7	48.2
07:00 - 08:00	53.2	58.8	52.9	52.8	49.4	50.6	46.9
08:00 - 09:00	53.2	66.6	55.0	52.6	50.1	48.2	48.3
09:00 - 10:00	62.9	66.5	52.9	53.8	49.5	49.3	51.5
10:00 - 11:00	60.2	57.7	51.7	53.8	50.6	49.6	51.3
11:00 - 12:00	60.4	58.5	52.4	51.2	49.3	50.1	50.0
12:00 - 13:00	55.7	57.9	50.8	50.4	48.5	48.9	50.5
13:00 - 14:00	52.1	51.6	53.4	52.7	47.9	49.1	50.0
14:00 - 15:00	55.5	51.4	51.8	51.9	51.8	50.5	54.2
15:00 - 16:00	53.8	51.3	49.6	51.7	50.5	47.2	49.3

Leq(24)*	55.1	57.9	52.5	51.1	50.9	51.6	51.3
Ldn	59.0	60.5	57.4	56.1	55.7	55.8	54.2
Lmax **	81.2	85.1	74.0	73.2	78.8	81.2	81.3

Standard-24Hr	70 dB(A)
Standard-Max	115 dB(A)

Remark : * Average time between 16:00-16:00

** Maximum Sound Pressure Level between 16:00-16:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



Noise Monitoring Result : Background Noise

MTR-PTTGC6-Refinery

Location : Takuan-Ao Pradu Community-2	Monitor Period : 13-20 Nov 2023
SLM Model : RION NL-21	Serial No : 00487723
Site Operator : Mr. Siwanon Kulawong	

Calibrator Model : RION NC-74	Serial No : 34283648
Calibration Ref dB(A) : 94.0	Certified Date : 13 Jan 2023
SLM Reading / Adjust dB(A) : 94.0/0.0	Expire Date : 12 Jan 2024
Cal Sheet No.: NC-74-2023-051	

Time	L90 (dB(A))						
	13-14 Nov 2023	14-15 Nov 2023	15-16 Nov 2023	16-17 Nov 2023	17-18 Nov 2023	18-19 Nov 2023	19-20 Nov 2023
16:00 - 17:00	49.8	49.9	47.9	48.6	49.7	45.2	45.5
17:00 - 18:00	48.8	47.0	47.5	47.7	48.5	45.5	45.9
18:00 - 19:00	48.7	47.5	47.3	47.1	49.1	45.9	46.1
19:00 - 20:00	49.6	48.4	49.0	47.7	48.2	46.3	47.3
20:00 - 21:00	49.8	48.4	49.2	47.8	47.5	46.5	44.7
21:00 - 22:00	49.7	48.3	49.7	47.0	46.7	46.4	43.7
22:00 - 23:00	49.7	48.1	48.5	46.7	46.3	46.2	43.3
23:00 - 00:00	49.7	47.6	48.2	47.0	46.0	45.9	43.1
00:00 - 01:00	49.9	47.3	47.7	46.8	46.6	47.1	42.7
01:00 - 02:00	49.3	47.4	47.9	46.7	46.7	47.0	42.7
02:00 - 03:00	49.3	46.6	48.9	46.4	46.8	46.5	42.2
03:00 - 04:00	49.4	46.8	49.6	45.9	45.9	45.4	42.1
04:00 - 05:00	49.5	46.3	48.1	46.6	47.2	45.5	41.7
05:00 - 06:00	49.3	48.9	48.4	46.6	46.9	45.7	41.9
06:00 - 07:00	49.6	49.0	48.2	47.6	46.7	45.8	42.3
07:00 - 08:00	50.6	53.1	50.9	48.6	46.5	45.7	42.9
08:00 - 09:00	50.8	53.5	50.4	49.7	46.3	46.7	44.4
09:00 - 10:00	54.6	50.3	50.8	51.0	47.7	47.8	47.3
10:00 - 11:00	50.3	51.8	50.4	49.8	48.5	47.4	46.3
11:00 - 12:00	50.3	53.7	49.6	48.8	47.2	47.3	46.3
12:00 - 13:00	51.1	49.5	46.9	48.4	45.8	46.8	45.3
13:00 - 14:00	50.6	47.6	48.5	48.8	44.3	46.4	44.7
14:00 - 15:00	51.0	48.8	47.4	49.3	45.7	45.3	46.6
15:00 - 16:00	51.2	49.0	47.4	49.9	45.4	44.8	43.1

L90(avg)*	50.3	49.5	48.8	48.1	47.1	46.3	44.6
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Remark : * Average time between 16:00-16:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team

คุณภาพน้ำทิ้ง



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SECOT CO., LTD.

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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1116/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 06/07/2023	SAMPLING TIME	: 10:10
RECEIVED DATE	: 07/07/2023	ANALYTICAL DATE	: 07-15/07/2023
REPORT DATE	: 15/07/2023	SITE OPERATOR	: Mr. Baworn Deechaiya
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_WW_July

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD
				น้ำเสียก่อนผ่านเข้า		
				Neutralization Basin		
Flow Rate ^{1/}	m ³ /hr	-	-	40	-	-
Temperature	°C	2550 B	< 0.5	41.4	-	-
pH	-	4500-H ⁺ B	< 0.10	7.06	-	-
Total Dissolved Solids	mg/l	2540 C	< 50	1,098	-	-
Total Suspended Solids	mg/l	2540 D	< 5	44	-	-
Fat Oil & Grease	mg/l	5520 B	< 0.50	12.1	-	-
Sulfide as H ₂ S	mg/l	4500-S ²⁻ F	< 0.20	0.71	-	-
Phenols	mg/l	5530 B,D	< 0.10	0.83	-	-
BOD ₅	mg/l	5210 B	< 1.0	289	-	-
COD	mg/l	5220 C	< 15.00	337	-	-
Ammonia Nitrogen	mg/l	4500-NH ₃ B,C	< 0.02	39.3	-	-
Arsenic (As)	mg/l	3114 C	< 0.0001	3.16	-	-
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	-	-
Lead (Pb)	mg/l	3120 B	< 0.008	ND	-	-
Mercury (Hg)	mg/l	3112 B	< 0.0005	0.0261	-	-

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23rd ED. 2017 (AWWA/APHA, WEF)

Khemchuda Insorn

(Miss Khemchuda Insorn)

Analyst

REG. NO. 2-239-ก-5976

Araya Tipparuk

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 2-239-ก-5863

Remark : 1. Reported analysis refers to submitted sample only.

2. This report shall not be reproduced, except in full, without official approval.

3. ^{1/} Data from PTT Global Chemical Public Company Limited, Branch 6 (Refinery)

4. - Not available.



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SECOT CO., LTD.

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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1116/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 06/07/2023	SAMPLING TIME	: 10:24
RECEIVED DATE	: 07/07/2023	ANALYTICAL DATE	: 07-15/07/2023
REPORT DATE	: 15/07/2023	SITE OPERATOR	: Mr. Baworn Deechaiya
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_WW_July

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD
				น้ำเสียก่อนผ่านเข้า	CPI	
Flow Rate ^{1/}	m ³ /hr	-	-	39	-	-
Temperature	°C	2550 B	< 0.5	48.1	-	-
pH	-	4500-H ⁺ B	< 0.10	7.02	-	-
Total Dissolved Solids	mg/l	2540 C	< 50	532	-	-
Total Suspended Solids	mg/l	2540 D	< 5	20	-	-
Fat Oil & Grease	mg/l	5520 B	< 0.50	14.3	-	-
Sulfide as H ₂ S	mg/l	4500-S ²⁻ F	< 0.20	2.0	-	-
Phenols	mg/l	5530 B,D	< 0.10	0.44	-	-
BOD ₅	mg/l	5210 B	< 1.0	458	-	-
COD	mg/l	5220 C	< 15.00	813	-	-
Ammonia Nitrogen	mg/l	4500-NH ₃ B,C	< 0.02	42.2	-	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.4448	-	-
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	-	-
Lead (Pb)	mg/l	3120 B	< 0.008	ND	-	-
Mercury (Hg)	mg/l	3112 B	< 0.0005	0.0017	-	-

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23rd ED. 2017 (AWWA/APHA, WEF)

Khemchuda Insorn

(Miss Khemchuda Insorn)

Analyst

REG. NO. 2-239-ก-5976

Araya Tipparuk

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 2-239-ก-5863

Remark : 1. Reported analysis refers to submitted sample only.

2. This report shall not be reproduced, except in full, without official approval.

3. ^{1/} Data from PTT Global Chemical Public Company Limited, Branch 6 (Refinery)

4. - Not available.



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1116/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 06/07/2023	SAMPLING TIME	: 09:58
RECEIVED DATE	: 07/07/2023	ANALYTICAL DATE	: 07-15/07/2023
REPORT DATE	: 15/07/2023	SITE OPERATOR	: Mr. Baworn Deechaiya
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_WW_July

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD ^{1/}
				น้ำทิ้งหลังผ่านการบำบัดที่ Observation Basin	
Flow Rate ^{2/}	m ³ /hr	-	-	51	-
Temperature	°C	2550 B	< 0.5	31.4	≤ 40
pH	-	4500-H ³ B	< 0.10	7.98	5.5-9.0
Total Dissolved Solids	mg/l	2540 C	< 50	1,990	≤ 40,340 ^{3/}
Total Suspended Solids	mg/l	2540 D	< 5	< 5	≤ 50
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	≤ 5
Sulfide as H ₂ S	mg/l	4500-S ^{2/} F	< 0.20	ND	≤ 1
Phenols	mg/l	5530 B ₃ C	< 0.001	ND	≤ 1
BOD ₅	mg/l	5210 B	< 1.0	< 1.0	≤ 20
COD	mg/l	5220 C	< 15.00	< 15.00	≤ 120
Ammonia Nitrogen	mg/l	Method 350.2	< 0.02	0.06	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0936	≤ 0.25
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	≤ 0.03
Lead (Pb)	mg/l	3120 B	< 0.008	ND	≤ 0.2
Mercury (Hg)	mg/l	3112 B	< 0.0005	ND	≤ 0.005
Benzene	µg/l	5030 C / 8260 D	< 0.20	ND	-

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (AWWA, APHA, WEF)

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3rd ED. 2020

Khemchuda Insorn

(Miss Khemchuda Insorn)

Analyst

REG. NO. 2-239-ก-5976

Mrs. Araya Tipparuk

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 2-239-ก-5863

Remark : 1. Reported analysis refers to submitted sample only.

2. This report shall not be reproduced, except in full, without official approval.

3. ^{1/} Notification of the Ministry of Industry, B.E.2560 (2017).

4. ^{2/} Data from PTT Global Chemical Public Company Limited, Branch 6 (Refinery)

5. ^{3/} In case of discharging effluent into water resources containing TDS of more than 3,000 mg/l, TDS in the effluent to be discharged must exceed TDS in the water resources by not more than 5,000 mg/l (Measurement Results of Coastal Water on July 06,2023 found to be 35,340 mg/l therefore the Standard of TDS found to be 40,340 mg/l).

6. - Not available.



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1116/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 06/07/2023	SAMPLING TIME	: 09:49
RECEIVED DATE	: 07/07/2023	ANALYTICAL DATE	: 07-15/07/2023
REPORT DATE	: 15/07/2023	SITE OPERATOR	: Mr. Baworn Deechaiya
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_WW_July

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD ^{1/}
				น้ำ LLOD-S	
Temperature	°C	2550 B	< 0.5	31.8	≤ 40
pH	-	4500-H ³ B	< 0.10	8.13	5.5-9.0
Total Dissolved Solids	mg/l	2540 C	< 50	1,322	≤ 40,340 ^{3/}
Total Suspended Solids	mg/l	2540 D	< 5	14	≤ 50
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	≤ 5
BOD ₅	mg/l	5210 B	< 1.0	5.1	≤ 20
COD	mg/l	5220 C	< 15.00	27.20	≤ 120

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (AWWA, APHA, WEF)

Khemchuda Insorn

(Miss Khemchuda Insorn)

Analyst

REG. NO. 2-239-ก-5976

Mrs. Araya Tipparuk

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 2-239-ก-5863

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2. This report shall not be reproduced, except in full, without official approval.

3. ^{1/} Notification of the Ministry of Industry, B.E.2560 (2017).

4. ^{2/} In case of discharging effluent into water resources containing TDS of more than 3,000 mg/l, TDS in the effluent to be discharged must exceed TDS in the water resources by not more than 5,000 mg/l (Measurement Results of Coastal Water on July 06,2023 found to be 35,340 mg/l therefore the Standard of TDS found to be 40,340 mg/l).

4. - Not available.



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TEL. (662) 959-3600 FAX (662) 959-3535 Website : secot.co.th E-mail : envserv@secot.co.th

WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1338/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 10/08/2023	SAMPLING TIME	: 14:18
RECEIVED DATE	: 11/08/2023	ANALYTICAL DATE	: 11-18/08/2023
REPORT DATE	: 21/08/2023	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_WW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD
				น้ำเสียก่อนผ่านเข้า	Neutralization Basin	
Flow Rate ^{1/}	m ³ /hr	-	-	44	-	-
Temperature	°C	2550 B	< 0.5	47.5	-	-
pH	-	4500-H ⁺ B	< 0.10	6.46	-	-
Total Dissolved Solids	mg/l	2540 C	< 50	686	-	-
Total Suspended Solids	mg/l	2540 D	< 5	26	-	-
Fat Oil & Grease	mg/l	5520 B	< 0.50	17.3	-	-
Sulfide as H ₂ S	mg/l	4500-S ²⁻ F	< 0.20	2.9	-	-
Phenols	mg/l	5530 B,D	< 0.10	1.6	-	-
BOD ₅	mg/l	5210 B	< 1.0	338	-	-
COD	mg/l	5220 C	< 15.00	573	-	-
Ammonia Nitrogen	mg/l	4500-NH ₃ B,C	< 0.02	46.4	-	-
Arsenic (As)	mg/l	3114 C	< 0.0001	4.30	-	-
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	-	-
Lead (Pb)	mg/l	3120 B	< 0.008	ND	-	-
Mercury (Hg)	mg/l	3112 B	< 0.0005	0.0592	-	-

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (AWWA/APHA, WEF)

Khemchuda Insorn

(Miss Khemchuda Insorn)

Analyst

REG. NO. 7-239-ก-0005

Araya Tipparuk

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-ก-0004

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3. ^{1/} Data from PTT Global Chemical Public Company Limited, Branch 6 (Refinery)

4. - Not available.



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SECOT CO., LTD.

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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1338/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 10/08/2023	SAMPLING TIME	: 14:25
RECEIVED DATE	: 11/08/2023	ANALYTICAL DATE	: 11-18/08/2023
REPORT DATE	: 21/08/2023	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_WW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD
				น้ำเสียก่อนผ่านเข้า	CPI	
Flow Rate ^{1/}	m ³ /hr	-	-	53	-	-
Temperature	°C	2550 B	< 0.5	51.4	-	-
pH	-	4500-H ⁺ B	< 0.10	5.81	-	-
Total Dissolved Solids	mg/l	2540 C	< 50	638	-	-
Total Suspended Solids	mg/l	2540 D	< 5	< 5	-	-
Fat Oil & Grease	mg/l	5520 B	< 0.50	5.3	-	-
Sulfide as H ₂ S	mg/l	4500-S ²⁻ F	< 0.20	0.83	-	-
Phenols	mg/l	5530 B,D	< 0.10	2.1	-	-
BOD ₅	mg/l	5210 B	< 1.0	348	-	-
COD	mg/l	5220 C	< 15.00	579	-	-
Ammonia Nitrogen	mg/l	4500-NH ₃ B,C	< 0.02	56.3	-	-
Arsenic (As)	mg/l	3114 C	< 0.0001	6.31	-	-
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	-	-
Lead (Pb)	mg/l	3120 B	< 0.008	ND	-	-
Mercury (Hg)	mg/l	3112 B	< 0.0005	0.0040	-	-

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (AWWA/APHA, WEF)

Khemchuda Insorn

(Miss Khemchuda Insorn)

Analyst

REG. NO. 7-239-ก-0005

Araya Tipparuk

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-ก-0004

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3. ^{1/} Data from PTT Global Chemical Public Company Limited, Branch 6 (Refinery)

4. - Not available.



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical PCL, Branch 6 (Refinery) REQUEST SERVICE No. : 1338/66
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Grab
SAMPLING DATE : 10/08/2023 SAMPLING TIME : 13:50
RECEIVED DATE : 11/08/2023 ANALYTICAL DATE : 11-18/08/2023
REPORT DATE : 21/08/2023 SITE OPERATOR : Mr. Jeerawat Khothamhan
SAMPLE CONDITION : Normal FILE CODE : 223010_WW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD ^{1/}
				น้ำทิ้งหลังผ่านการบำบัด Observation Basin	
Flow Rate ^{2/}	m ³ /hr	-	-	80	-
Temperature	°C	2550 B	< 0.5	34.9	≤ 40
pH	-	4500-H ⁺ B	< 0.10	7.80	5.5-9.0
Total Dissolved Solids	mg/l	2540 C	< 50	2,714	< 38,760 ^{3/}
Total Suspended Solids	mg/l	2540 D	< 5	< 5	≤ 50
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	≤ 5
Sulfide as H ₂ S	mg/l	4500-S ²⁻ F	< 0.20	ND	≤ 1
Phenols	mg/l	5530 B ₂ C	< 0.001	ND	≤ 1
BOD ₅	mg/l	5210 B	< 1.0	< 1.0	≤ 20
COD	mg/l	5220 C	< 15.00	54.76	≤ 120
Ammonia Nitrogen	mg/l	Method 350.2	< 0.02	0.06	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0840	≤ 0.25
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	≤ 0.03
Lead (Pb)	mg/l	3120 B	< 0.008	ND	≤ 0.2
Mercury (Hg)	mg/l	3112 B	< 0.0005	ND	≤ 0.005
Benzene	µg/l	5030 C / 8260 D	< 0.20	ND	-

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23rd ED. 2017 (AWWA APHA WEF)

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE 3rd ED. 2020

Khemchuda Insorn

(Miss Khemchuda Insorn)

Analyst

REG. NO. 2-239-n-0005

NT

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 2-239-n-0004

Remark : 1. Reported analysis refers to submitted sample only.

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3. ^{1/} Notification of the Ministry of Industry, B.E.2560 (2017).

4. ^{2/} Data from PTT Global Chemical Public Company Limited, Branch 6 (Refinery)

5. ^{3/} In case of discharging effluent into water resources containing TDS of more than 3,000 mg/l, TDS in the effluent to be discharged must exceed TDS in the water resources by not more than 5,000 mg/l (Measurement Results of Coastal Water on August 10, 2023 found to be 33,760 mg/l therefore the Standard of TDS found to be 38,760 mg/l).

6. - Not available.



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical PCL, Branch 6 (Refinery) REQUEST SERVICE No. : 1338/66
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Grab
SAMPLING DATE : 10/08/2023 SAMPLING TIME : 13:40
RECEIVED DATE : 11/08/2023 ANALYTICAL DATE : 11-18/08/2023
REPORT DATE : 21/08/2023 SITE OPERATOR : Mr. Jeerawat Khothamhan
SAMPLE CONDITION : Normal FILE CODE : 223010_WW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD ^{1/}
				น้ำ LLOD-S	
Temperature	°C	2550 B	< 0.5	35.8	≤ 40
pH	-	4500-H ⁺ B	< 0.10	8.42	5.5-9.0
Total Dissolved Solids	mg/l	2540 C	< 50	986	≤ 38,760 ^{2/}
Total Suspended Solids	mg/l	2540 D	< 5	< 5	≤ 50
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	≤ 5
BOD ₅	mg/l	5210 B	< 1.0	3.1	≤ 20
COD	mg/l	5220 C	< 15.00	38.89	≤ 120

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23rd ED. 2017 (AWWA APHA WEF)

Khemchuda Insorn

(Miss Khemchuda Insorn)

Analyst

REG. NO. 2-239-n-0005

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(Mrs. Araya Tipparuk)

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4. - Not available.



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No. :	1566/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 07/09/2023	SAMPLING TIME	: 09:27
RECEIVED DATE	: 08/09/2023	ANALYTICAL DATE	: 08-15/09/2023
REPORT DATE	: 15/09/2023	SITE OPERATOR	: Miss Salisa Ainree
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_WW_September

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD
				น้ำเสียก่อนผ่านเข้า Neutralization Basin	
Flow Rate ^{1/}	m ³ /hr	-	-	60	-
Temperature	°C	2550 B	< 0.5	36.0	-
pH	-	4500-H ⁺ B	< 0.10	6.74	-
Total Dissolved Solids	mg/l	2540 C	< 50	1,052	-
Total Suspended Solids	mg/l	2540 D	< 5	76	-
Fat Oil & Grease	mg/l	5520 B	< 0.50	14.8	-
Sulfide as H ₂ S	mg/l	4500-S ²⁻ F	< 0.20	3.1	-
Phenols	mg/l	5530 B,D	< 0.10	2.6	-
BOD ₅	mg/l	5210 B	< 1.0	252	-
COD	mg/l	5220 C	< 15.00	466	-
Ammonia Nitrogen	mg/l	4500-NH ₃ B,C	< 0.02	66.6	-
Arsenic (As)	mg/l	3114 C	< 0.0001	2.75	-
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	-
Lead (Pb)	mg/l	3120 B	< 0.008	ND	-
Mercury (Hg)	mg/l	3112 B	< 0.0005	0.0091	-

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23rd ED. 2017 (AWWA, APHA, WEF)

Khemchuda Insorn

(Miss Khemchuda Insorn)

Analyst

REG. NO. ๖-239-ก-0005

(Mrs. Araya Tipparuk)

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. ๖-239-ก-0004

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4. - Not available.



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No. :	1566/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 07/09/2023	SAMPLING TIME	: 09:35
RECEIVED DATE	: 08/09/2023	ANALYTICAL DATE	: 08-15/09/2023
REPORT DATE	: 15/09/2023	SITE OPERATOR	: Miss Salisa Ainree
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_WW_September

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD
				น้ำเสียก่อนผ่านเข้า CPI	
Flow Rate ^{1/}	m ³ /hr	-	-	60	-
Temperature	°C	2550 B	< 0.5	33.0	-
pH	-	4500-H ⁺ B	< 0.10	6.21	-
Total Dissolved Solids	mg/l	2540 C	< 50	932	-
Total Suspended Solids	mg/l	2540 D	< 5	44	-
Fat Oil & Grease	mg/l	5520 B	< 0.50	21.6	-
Sulfide as H ₂ S	mg/l	4500-S ²⁻ F	< 0.20	2.1	-
Phenols	mg/l	5530 B,D	< 0.10	2.6	-
BOD ₅	mg/l	5210 B	< 1.0	362	-
COD	mg/l	5220 C	< 15.00	408	-
Ammonia Nitrogen	mg/l	4500-NH ₃ B,C	< 0.02	66.6	-
Arsenic (As)	mg/l	3114 C	< 0.0001	1.56	-
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	-
Lead (Pb)	mg/l	3120 B	< 0.008	ND	-
Mercury (Hg)	mg/l	3112 B	< 0.0005	0.0063	-

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23rd ED. 2017 (AWWA, APHA, WEF)

Khemchuda Insorn

(Miss Khemchuda Insorn)

Analyst

REG. NO. ๖-239-ก-0005

(Mrs. Araya Tipparuk)

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. ๖-239-ก-0004

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4. - Not available.



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1566/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 07/09/2023	SAMPLING TIME	: 09:30
RECEIVED DATE	: 08/09/2023	ANALYTICAL DATE	: 08-15/09/2023
REPORT DATE	: 15/09/2023	SITE OPERATOR	: Miss Salisa Ainree
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_WW_September

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD ^{1/}
				น้ำทิ้งหลังผ่านการบำบัดที่ Observation Basin	
Flow Rate ^{2/}	m ³ /hr	-	-	60	-
Temperature	°C	2550 B	< 0.5	32.7	≤ 40
pH	-	4500-H ⁺ B	< 0.10	7.80	5.5-9.0
Total Dissolved Solids	mg/l	2540 C	< 50	1,684	≤ 36,240 ^{3/}
Total Suspended Solids	mg/l	2540 D	< 5	12	≤ 50
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	≤ 5
Sulfide as H ₂ S	mg/l	4500-S ²⁻ F	< 0.20	ND	≤ 1
Phenols	mg/l	5530 B,C	< 0.001	ND	≤ 1
BOD ₅	mg/l	5210 B	< 1.0	< 1.0	≤ 20
COD	mg/l	5220 C	< 15.00	17.39	≤ 120
Ammonia Nitrogen	mg/l	Method 350.2	< 0.02	0.07	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.1031	≤ 0.25
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	≤ 0.03
Lead (Pb)	mg/l	3120 B	< 0.008	ND	≤ 0.2
Mercury (Hg)	mg/l	3112 B	< 0.0005	ND	≤ 0.005
Benzene	µg/l	5030 C / 8260 D	< 0.20	ND	-

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (AWWA, APHA, WEF)

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE 3rd ED. 2020

Khemchuda Insorn

(Miss Khemchuda Insorn)

Analyst

REG. NO. 7-239-n-0005

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-n-0004

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3. Notification of the Ministry of Industry, B.E.2560 (2017).

4. ^{2/} Data from PTT Global Chemical Public Company Limited, Branch 6 (Refinery)

5. ^{3/} In case of discharging effluent into water resources containing TDS of more than 3,000 mg/l, TDS in the effluent to be discharged must exceed TDS in the water resources by not more than 5,000 mg/l (Measurement Results of Coastal Water on September 06,2023 found to be 31,240 mg/l therefore the Standard of TDS found to be 36,240 mg/l).

6. - Not available.



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1566/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 07/09/2023	SAMPLING TIME	: 09:18
RECEIVED DATE	: 08/09/2023	ANALYTICAL DATE	: 08-15/09/2023
REPORT DATE	: 15/09/2023	SITE OPERATOR	: Miss Salisa Ainree
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_WW_September

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD ^{1/}
				น้ำ LLOD-S	
Temperature	°C	2550 B	< 0.5	32.9	≤ 40
pH	-	4500-H ⁺ B	< 0.10	7.60	5.5-9.0
Total Dissolved Solids	mg/l	2540 C	< 50	1,260	≤ 36,240
Total Suspended Solids	mg/l	2540 D	< 5	26	≤ 50
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	≤ 5
BOD ₅	mg/l	5210 B	< 1.0	< 1.0	≤ 20
COD	mg/l	5220 C	< 15.00	24.95	≤ 120

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (AWWA, APHA, WEF)

Khemchuda Insorn

(Miss Khemchuda Insorn)

Analyst

REG. NO. 7-239-n-0005

(Mrs. Araya Tipparuk)

Technical Management Team

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3. Notification of the Ministry of Industry, B.E.2560 (2017).

4. ^{2/} In case of discharging effluent into water resources containing TDS of more than 3,000 mg/l, TDS in the effluent to be discharged must exceed TDS in the water resources by not more than 5,000 mg/l (Measurement Results of Coastal Water on September 06,2023 found to be 31,240 mg/l therefore the Standard of TDS found to be 36,240 mg/l).

4. - Not available.



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery) REQUEST SERVICE No. : 1794/66		
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 12/10/2023	SAMPLING TIME	: 11:27
RECEIVED DATE	: 13/10/2023	ANALYTICAL DATE	: 13-20/10/2023
REPORT DATE	: 21/10/2023	SITE OPERATOR	: Miss Wiraya Patchimboon
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_WW_October

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD
				น้ำเสียก่อนผ่านเข้า	Neutralization Basin	
Flow Rate ^{1/}	m ³ /hr	-	-	-	-	-
Temperature	°C	2550 B	< 0.5	38.0	-	-
pH	-	4500-H ⁺ B	< 0.10	6.63	-	-
Total Dissolved Solids	mg/l	2540 C	< 50	614	-	-
Total Suspended Solids	mg/l	2540 D	< 5	45	-	-
Fat Oil & Grease	mg/l	5520 B	< 0.50	5.4	-	-
Sulfide as H ₂ S	mg/l	4500-S ²⁻ F	< 0.20	4.2	-	-
Phenols	mg/l	5530 B,D	< 0.10	1.8	-	-
BOD ₅	mg/l	5210 B	< 1.0	413	-	-
COD	mg/l	5220 C	< 15.00	467	-	-
Ammonia Nitrogen	mg/l	4500-NH ₃ B,C	< 0.02	19.3	-	-
Arsenic (As)	mg/l	3114 C	< 0.0001	5.50	-	-
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	-	-
Lead (Pb)	mg/l	3120 B	< 0.008	ND	-	-
Mercury (Hg)	mg/l	3112 B	< 0.0005	0.0412	-	-

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23rd ED. 2017 (AWWA APHA WEF)

Khemchuda Insorn

(Miss Khemchuda Insorn)

Analyst

REG. NO. 2-239-ก-0005

Araya Tipparuk

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 2-239-ก-0004

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3. ^{1/} Data from PTT Global Chemical Public Company Limited, Branch 6 (Refinery)
4. - Not available.



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery) REQUEST SERVICE No. : 1794/66		
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 12/10/2023	SAMPLING TIME	: 11:39
RECEIVED DATE	: 13/10/2023	ANALYTICAL DATE	: 13-20/10/2023
REPORT DATE	: 21/10/2023	SITE OPERATOR	: Miss Wiraya Patchimboon
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_WW_October

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD
				น้ำเสียก่อนผ่านเข้า	CPI	
Flow Rate ^{1/}	m ³ /hr	-	-	-	-	-
Temperature	°C	2550 B	< 0.5	39.8	-	-
pH	-	4500-H ⁺ B	< 0.10	7.19	-	-
Total Dissolved Solids	mg/l	2540 C	< 50	320	-	-
Total Suspended Solids	mg/l	2540 D	< 5	40	-	-
Fat Oil & Grease	mg/l	5520 B	< 0.50	9.6	-	-
Sulfide as H ₂ S	mg/l	4500-S ²⁻ F	< 0.20	3.4	-	-
Phenols	mg/l	5530 B,D	< 0.10	1.8	-	-
BOD ₅	mg/l	5210 B	< 1.0	186	-	-
COD	mg/l	5220 C	< 15.00	370	-	-
Ammonia Nitrogen	mg/l	4500-NH ₃ B,C	< 0.02	29.0	-	-
Arsenic (As)	mg/l	3114 C	< 0.0001	7.15	-	-
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	-	-
Lead (Pb)	mg/l	3120 B	< 0.008	ND	-	-
Mercury (Hg)	mg/l	3112 B	< 0.0005	0.1471	-	-

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23rd ED. 2017 (AWWA APHA WEF)

Khemchuda Insorn

(Miss Khemchuda Insorn)

Analyst

REG. NO. 2-239-ก-0005

Araya Tipparuk

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 2-239-ก-0004

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4. - Not available.



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical PCL, Branch 6 (Refinery) REQUEST SERVICE No. : 1794/66
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Grab
SAMPLING DATE : 12/10/2023 SAMPLING TIME : 11:21
RECEIVED DATE : 13/10/2023 ANALYTICAL DATE : 13-20/10/2023
REPORT DATE : 21/10/2023 SITE OPERATOR : Miss Wiraya Patchimboon
SAMPLE CONDITION : Normal FILE CODE : 223010_WW_October

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION น้ำทิ้งหลังผ่านการบำบัดที่ Observation Basin	STANDARD ^{1/}
Flow Rate ^{2/}	m ³ /hr	-	-	90	-
Temperature	°C	2550 B	< 0.5	32.6	≤ 40
pH	-	4500-H ⁺ B	< 0.10	7.50	5.5-9.0
Total Dissolved Solids	mg/l	2540 C	< 50	1,884	≤ 31,820 ^{3/}
Total Suspended Solids	mg/l	2540 D	< 5	8	≤ 50
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	≤ 5
Sulfide as H ₂ S	mg/l	4500-S ²⁻ F	< 0.20	ND	≤ 1
Phenols	mg/l	5530 B ₁ C	< 0.001	ND	≤ 1
BOD ₅	mg/l	5210 B	< 1.0	< 1.0	≤ 20
COD	mg/l	5220 C	< 15.00	23.53	≤ 120
Ammonia Nitrogen	mg/l	Method 350.2	< 0.02	0.08	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0755	≤ 0.25
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	≤ 0.03
Lead (Pb)	mg/l	3120 B	< 0.008	ND	≤ 0.2
Mercury (Hg)	mg/l	3112 B	< 0.0005	ND	≤ 0.005
Benzene	µg/l	5030 C / 8260 D	< 0.20	ND	-

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23rd ED. 2017 (AWWA APHA WEF)

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3rd ED. 2020

Khemchuda Insorn

(Miss Khemchuda Insorn)

Analyst

REG. NO. 7-239-n-0005

Araya Tipparuk

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-n-0004

Remark : 1. Reported analysis refers to submitted sample only.

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3. ^{1/} Notification of the Ministry of Industry, B.E.2560 (2017).

4. ^{2/} Data from PTT Global Chemical Public Company Limited, Branch 6 (Refinery)

5. ^{3/} In case of discharging effluent into water resources containing TDS of more than 3,000 mg/l, TDS in the effluent to be discharged must exceed TDS in the water resources by not more than 5,000 mg/l (Measurement Results of Coastal Water on October 12, 2023 found to be 26,820 mg/l therefore the Standard of TDS found to be 31,820 mg/l).

6. - Not available.



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical PCL, Branch 6 (Refinery) REQUEST SERVICE No. : 1794/66
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Grab
SAMPLING DATE : 12/10/2023 SAMPLING TIME : 11:13
RECEIVED DATE : 13/10/2023 ANALYTICAL DATE : 13-20/10/2023
REPORT DATE : 21/10/2023 SITE OPERATOR : Miss Wiraya Patchimboon
SAMPLE CONDITION : Normal FILE CODE : 223010_WW_October

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION น้ำ LLOD-S	STANDARD ^{1/}
Temperature	°C	2550 B	< 0.5	32.2	≤ 40
pH	-	4500-H ⁺ B	< 0.10	7.72	5.5-9.0
Total Dissolved Solids	mg/l	2540 C	< 50	736	≤ 31,820
Total Suspended Solids	mg/l	2540 D	< 5	7	≤ 50
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	≤ 5
BOD ₅	mg/l	5210 B	< 1.0	2.0	≤ 20
COD	mg/l	5220 C	< 15.00	19.85	≤ 120

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23rd ED. 2017 (AWWA APHA WEF)

Khemchuda Insorn

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(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-n-0004

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4. - Not available.



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1901/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 02/11/2023	SAMPLING TIME	: 09:42
RECEIVED DATE	: 03/11/2023	ANALYTICAL DATE	: 03-08/11/2023
REPORT DATE	: 09/11/2023	SITE OPERATOR	: Mr. Aniwat Pimwanna
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_WW_November

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD
				น้ำเสียก่อนผ่านเข้า Neutralization Basin	
Flow Rate ^{1/}	m ³ /hr	-	-	52	-
Temperature	°C	2550 B	< 0.5	42.1	-
pH	-	4500-H ⁺ B	< 0.10	6.77	-
Total Dissolved Solids	mg/l	2540 C	< 50	576	-
Total Suspended Solids	mg/l	2540 D	< 5	14	-
Fat Oil & Grease	mg/l	5520 B	< 0.50	11.9	-
Sulfide as H ₂ S	mg/l	4500-S ²⁻ F	< 0.20	4.3	-
Phenols	mg/l	5530 B,D	< 0.10	1.5	-
BOD ₅	mg/l	5210 B	< 1.0	227	-
COD	mg/l	5220 C	< 15.00	353	-
Ammonia Nitrogen	mg/l	4500-NH ₃ B,C	< 0.02	6.5	-
Arsenic (As)	mg/l	3114 C	< 0.0001	3.23	-
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	-
Lead (Pb)	mg/l	3120 B	< 0.008	ND	-
Mercury (Hg)	mg/l	3112 B	< 0.0005	0.0220	-

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23rd ED.2017 (AWWA.APHA.WEF)

Khemchuda Insorn

(Miss Khemchuda Insorn)

Analyst

REG. NO. 2-239-ก-0005

Araya Tipparuk

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 2-239-ก-0004

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 4. - Not available.



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1901/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 02/11/2023	SAMPLING TIME	: 10:00
RECEIVED DATE	: 03/11/2023	ANALYTICAL DATE	: 03-08/11/2023
REPORT DATE	: 09/11/2023	SITE OPERATOR	: Mr. Aniwat Pimwanna
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_WW_November

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD
				น้ำเสียก่อนผ่านเข้า CPI	
Flow Rate ^{1/}	m ³ /hr	-	-	64	-
Temperature	°C	2550 B	< 0.5	47.9	-
pH	-	4500-H ⁺ B	< 0.10	6.87	-
Total Dissolved Solids	mg/l	2540 C	< 50	532	-
Total Suspended Solids	mg/l	2540 D	< 5	< 5	-
Fat Oil & Grease	mg/l	5520 B	< 0.50	21.1	-
Sulfide as H ₂ S	mg/l	4500-S ²⁻ F	< 0.20	2.2	-
Phenols	mg/l	5530 B,D	< 0.10	1.6	-
BOD ₅	mg/l	5210 B	< 1.0	174	-
COD	mg/l	5220 C	< 15.00	347	-
Ammonia Nitrogen	mg/l	4500-NH ₃ B,C	< 0.02	5.0	-
Arsenic (As)	mg/l	3114 C	< 0.0001	3.45	-
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	-
Lead (Pb)	mg/l	3120 B	< 0.008	ND	-
Mercury (Hg)	mg/l	3112 B	< 0.0005	0.0057	-

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23rd ED.2017 (AWWA.APHA.WEF)

Khemchuda Insorn

(Miss Khemchuda Insorn)

Analyst

REG. NO. 2-239-ก-0005

Araya Tipparuk

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 2-239-ก-0004

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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1901/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 02/11/2023	SAMPLING TIME	: 09:40
RECEIVED DATE	: 03/11/2023	ANALYTICAL DATE	: 03-08/11/2023
REPORT DATE	: 09/11/2023	SITE OPERATOR	: Mr. Aniwat Pimwanna
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_WW_November

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD ^{1/}
				น้ำทิ้งหลังผ่านการบำบัดที่ Observation Basin	
Flow Rate ^{2/}	m ³ /hr	-	-	80	-
Temperature	°C	2550 B	< 0.5	32.1	≤ 40
pH	-	4500-H ⁺ B	< 0.10	7.44	5.5-9.0
Total Dissolved Solids	mg/l	2540 C	< 50	1,522	< 31,300 ^{3/}
Total Suspended Solids	mg/l	2540 D	< 5	6	≤ 50
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	≤ 5
Sulfide as H ₂ S	mg/l	4500-S ²⁻ F	< 0.20	ND	≤ 1
Phenols	mg/l	5530 B,C	< 0.001	ND	≤ 1
BOD ₅	mg/l	5210 B	< 1.0	< 1.0	≤ 20
COD	mg/l	5220 C	< 15.00	31.21	≤ 120
Ammonia Nitrogen	mg/l	Method 350.2	< 0.02	0.08	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0686	≤ 0.25
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	≤ 0.03
Lead (Pb)	mg/l	3120 B	< 0.008	ND	≤ 0.2
Mercury (Hg)	mg/l	3112 B	< 0.0005	ND	≤ 0.005
Benzene	μg/l	5030 C / 8260 D	< 0.20	ND	-

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (AWWA, APHA, WEF)

REFERENCE : US EPA SW-846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE 3rd ED. 2020

(Miss Khemchuda Insorn)

Analyst

REG. NO. ๖-239-๙-0005

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. ๖-239-๙-0004

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3. ^{1/} Notification of the Ministry of Industry, B.E.2560 (2017).

4. ^{2/} Data from PTT Global Chemical Public Company Limited, Branch 6 (Refinery)

5. ^{3/} In case of discharging effluent into water resources containing TDS of more than 3,000 mg/l, TDS in the effluent to be discharged must exceed TDS in the water resources by not more than 5,000 mg/l (Measurement Results of Coastal Water on November 02,2023 found to be 26,300 mg/l therefore the Standard of TDS found to be 31,300 mg/l).

6. - Not available.



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WATER AND WASTEWATER ANALYSIS REPORT

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SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 02/11/2023	SAMPLING TIME	: 09:30
RECEIVED DATE	: 03/11/2023	ANALYTICAL DATE	: 03-08/11/2023
REPORT DATE	: 09/11/2023	SITE OPERATOR	: Mr. Aniwat Pimwanna
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_WW_November

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD ^{1/}
				น้ำ LLOD-S	
Temperature	°C	2550 B	< 0.5	32.3	≤ 40
pH	-	4500-H ⁺ B	< 0.10	7.34	5.5-9.0
Total Dissolved Solids	mg/l	2540 C	< 50	2,028	≤ 31,300
Total Suspended Solids	mg/l	2540 D	< 5	< 5	≤ 50
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	≤ 5
BOD ₅	mg/l	5210 B	< 1.0	1.5	≤ 20
COD	mg/l	5220 C	< 15.00	25.78	≤ 120

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (AWWA, APHA, WEF)

(Miss Khemchuda Insorn)

Analyst

REG. NO. ๖-239-๙-0005

(Mrs. Araya Tipparuk)

Technical Management Team

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4. - Not available.



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery) REQUEST SERVICE No. : 2170/66		
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 07/12/2023	SAMPLING TIME	: 10:08
RECEIVED DATE	: 08/12/2023	ANALYTICAL DATE	: 08-15/12/2023
REPORT DATE	: 15/12/2023	SITE OPERATOR	: Mr.Chanapon Oakkharaplon
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_WW_December

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD
				น้ำเสียก่อนผ่านเข้า Neutralization Basin	
Flow Rate ^{1/}	m ³ /hr	-	-	-	-
Temperature	°C	2550 B	< 0.5	39.0	-
pH	-	4500-H ⁺ B	< 0.10	6.63	-
Total Dissolved Solids	mg/l	2540 C	< 50	660	-
Total Suspended Solids	mg/l	2540 D	< 5	132	-
Fat Oil & Grease	mg/l	5520 B	< 0.50	67.6	-
Sulfide as H ₂ S	mg/l	4500-S ²⁻ F	< 0.20	2.9	-
Phenols	mg/l	5530 B,D	< 0.10	1.3	-
BOD ₅	mg/l	5210 B	< 1.0	302	-
COD	mg/l	5220 C	< 15.00	536	-
Ammonia Nitrogen	mg/l	4500-NH ₃ B,C	< 0.02	34.9	-
Arsenic (As)	mg/l	3114 C	< 0.0001	8.44	-
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	-
Lead (Pb)	mg/l	3120 B	< 0.008	ND	-
Mercury (Hg)	mg/l	3112 B	< 0.0005	0.0486	-

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23rd ED. 2017 (AWWA APHA WEF)

Khemchuda Insorn

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Analyst

REG. NO. 2-239-ก-0005

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 2-239-ก-0004

Remark : 1. Reported analysis refers to submitted sample only.

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3. ^{1/} Data from PTT Global Chemical Public Company Limited, Branch 6 (Refinery)

4. - Not available.



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery) REQUEST SERVICE No. : 2170/66		
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 07/12/2023	SAMPLING TIME	: 10:20
RECEIVED DATE	: 08/12/2023	ANALYTICAL DATE	: 08-15/12/2023
REPORT DATE	: 15/12/2023	SITE OPERATOR	: Mr.Chanapon Oakkharaplon
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_WW_December

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD
				น้ำเสียก่อนผ่านเข้า CPI	
Flow Rate ^{1/}	m ³ /hr	-	-	40.0	-
Temperature	°C	2550 B	< 0.5	42.2	-
pH	-	4500-H ⁺ B	< 0.10	6.14	-
Total Dissolved Solids	mg/l	2540 C	< 50	624	-
Total Suspended Solids	mg/l	2540 D	< 5	8	-
Fat Oil & Grease	mg/l	5520 B	< 0.50	17.4	-
Sulfide as H ₂ S	mg/l	4500-S ²⁻ F	< 0.20	4.6	-
Phenols	mg/l	5530 B,D	< 0.10	1.4	-
BOD ₅	mg/l	5210 B	< 1.0	217	-
COD	mg/l	5220 C	< 15.00	312	-
Ammonia Nitrogen	mg/l	4500-NH ₃ B,C	< 0.02	28.6	-
Arsenic (As)	mg/l	3114 C	< 0.0001	4.56	-
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	-
Lead (Pb)	mg/l	3120 B	< 0.008	ND	-
Mercury (Hg)	mg/l	3112 B	< 0.0005	0.0099	-

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23rd ED. 2017 (AWWA APHA WEF)

Khemchuda Insorn

(Miss Khemchuda Insorn)

Analyst

REG. NO. 2-239-ก-0005

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 2-239-ก-0004

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4. - Not available.



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 2170/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 07/12/2023	SAMPLING TIME	: 09:35
RECEIVED DATE	: 08/12/2023	ANALYTICAL DATE	: 08-15/12/2023
REPORT DATE	: 15/12/2023	SITE OPERATOR	: Mr.Chanapon Oakkharaplon
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_WW_December

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD ^{1/}
				น้ำทิ้งหลังผ่านการบำบัดที่ Observation Basin	
Flow Rate ^{2/}	m ³ /hr	-	-	70.0	-
Temperature	°C	2550 B	< 0.5	32.5	≤ 40
pH	-	4500-H ⁺ B	< 0.10	7.44	5.5-9.0
Total Dissolved Solids	mg/l	2540 C	< 50	2,416	≤ 32,280 ^{3/}
Total Suspended Solids	mg/l	2540 D	< 5	6	≤ 50
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	≤ 5
Sulfide as H ₂ S	mg/l	4500-S ²⁻ F	< 0.20	ND	≤ 1
Phenols	mg/l	5530 B,C	< 0.001	ND	≤ 1
BOD ₅	mg/l	5210 B	< 1.0	< 1.0	≤ 20
COD	mg/l	5220 C	< 15.00	21.48	≤ 120
Ammonia Nitrogen	mg/l	Method 350.2	< 0.02	0.08	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0909	≤ 0.25
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	≤ 0.03
Lead (Pb)	mg/l	3120 B	< 0.008	ND	≤ 0.2
Mercury (Hg)	mg/l	3112 B	< 0.0005	ND	≤ 0.005
Benzene	µg/l	5030 C / 8260 D	< 0.20	ND	-

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23rd ED. 2017 (AWWA APHA WEF)

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE 3rd ED. 2020

Khemchuda Insorn

(Miss Khemchuda Insorn)

Analyst

REG. NO. 2-239-n-0005

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 2-239-n-0004

Remark : 1. Reported analysis refers to submitted sample only.

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3. ^{1/} Notification of the Ministry of Industry, B.E.2560 (2017).

4. ^{2/} Data from PTT Global Chemical Public Company Limited, Branch 6 (Refinery)

5. ^{3/} In case of discharging effluent into water resources containing TDS of more than 3,000 mg/l, TDS in the effluent to be discharged must exceed TDS in the water resources by not more than 5,000 mg/l (Measurement Results of Coastal Water on December 07, 2023 found to be 27,280 mg/l therefore the Standard of TDS found to be 32,280 mg/l).

6. - Not available.



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 2170/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 07/12/2023	SAMPLING TIME	: 11:03
RECEIVED DATE	: 08/12/2023	ANALYTICAL DATE	: 08-15/12/2023
REPORT DATE	: 15/12/2023	SITE OPERATOR	: Mr.Chanapon Oakkharaplon
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_WW_December

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD ^{1/}
				น้ำ LLOD-S	
Temperature	°C	2550 B	< 0.5	33.1	≤ 40
pH	-	4500-H ⁺ B	< 0.10	7.72	5.5-9.0
Total Dissolved Solids	mg/l	2540 C	< 50	1,414	≤ 32,280
Total Suspended Solids	mg/l	2540 D	< 5	< 5	≤ 50
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	≤ 5
BOD ₅	mg/l	5210 B	< 1.0	1.2	≤ 20
COD	mg/l	5220 C	< 15.00	25.63	≤ 120

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23rd ED. 2017 (AWWA APHA WEF)

Khemchuda Insorn

(Miss Khemchuda Insorn)

Analyst

REG. NO. 2-239-n-0005

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 2-239-n-0004

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4. ^{2/} In case of discharging effluent into water resources containing TDS of more than 3,000 mg/l, TDS in the effluent to be discharged must exceed TDS in the water resources by not more than 5,000 mg/l (Measurement Results of Coastal Water on December 07, 2023 found to be 27,280 mg/l therefore the Standard of TDS found to be 32,280 mg/l).

4. - Not available.

คุณภาพน้ำทะเล



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical Public Company Limited ,	REQUEST SERVICE No.	: 1115/66
	Branch 6 (Refinery)	SAMPLING METHOD	: Grab
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING TIME	: 11:29
SAMPLING DATE	: 06/07/2023	ANALYTICAL DATE	: 07-15/07/2023
RECEIVED DATE	: 07/07/2023	SITE OPERATOR	: Mr. Baworn Deechaiya
REPORT DATE	: 15/07/2023	FILE CODE	: 223010_CW_July
SAMPLE CONDITION	: Normal		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non detectable)	STATION
				จุดปล่อยน้ำทิ้งที่ผ่านการบำบัด ทางด้านทิศใต้ของโรงกลั่นน้ำมัน
Temperature	°C	2550 B	< 0.5	34.1
pH	-	4500-H ⁺ B	< 0.10	7.46
Total Dissolved Solids	mg/l	2540 C	< 50	35,340
Total Suspended Solids	mg/l	2540 D	< 5	38
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND
Fat Oil & Grease	-	Visual Testing	-	NV
BOD ₅	mg/l	5210 B	< 1.0	< 1.0
COD	mg/l	5220 C	< 15.00	31.61

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (AWWA, APHA, WEF)

Khemchuda Insorn

(Miss Khemchuda Insorn)

Analyst

(Mrs. Araya Tipparuk)

(Mrs. Araya Tipparuk)

Technical Management Team

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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical Public Company Limited ,	REQUEST SERVICE No.	: 1339/66
	Branch 6 (Refinery)	SAMPLING METHOD	: Grab
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING TIME	: 15:42
SAMPLING DATE	: 10/08/2023	ANALYTICAL DATE	: 11-18/08/2023
RECEIVED DATE	: 11/08/2023	SITE OPERATOR	: Mr. Baworn Deechaiya
REPORT DATE	: 21/08/2023	FILE CODE	: 223010_CW_August
SAMPLE CONDITION	: Normal		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non detectable)	STATION
				จุดปล่อยน้ำทิ้งที่ผ่านการบำบัด ทางด้านทิศใต้ของโรงกลั่นน้ำมัน
Temperature	°C	2550 B	< 0.5	30.6
pH	-	4500-H ⁺ B	< 0.10	8.12
Total Dissolved Solids	mg/l	2540 C	< 50	33,760
Total Suspended Solids	mg/l	2540 D	< 5	27
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND
Fat Oil & Grease	-	Visual Testing	-	NV
BOD ₅	mg/l	5210 B	< 1.0	< 1.0
COD	mg/l	5220 C	< 15.00	51.58

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (AWWA, APHA, WEF)

Khemchuda Insorn

(Miss Khemchuda Insorn)

Analyst

(Mrs. Araya Tipparuk)

(Mrs. Araya Tipparuk)

Technical Management Team

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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical Public Company Limited ,	REQUEST SERVICE No.	: 1556/66
	Branch 6 (Refinery)	SAMPLING METHOD	: Grab
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING TIME	: 11:04
SAMPLING DATE	: 07/09/2023	ANALYTICAL DATE	: 08-14/09/2023
RECEIVED DATE	: 08/09/2023	SITE OPERATOR	: Miss Wiraya Patchimboon
REPORT DATE	: 15/09/2023	FILE CODE	: 223010_CW_September
SAMPLE CONDITION	: Normal		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non detectable)	STATION
				จุดปล่อยน้ำทิ้งที่ผ่านการบำบัด ทางด้านทิศใต้ของโรงกลั่นน้ำมัน
Temperature	°C	2550 B	< 0.5	33.0
pH	-	4500-H ⁺ B	< 0.10	8.41
Total Dissolved Solids	mg/l	2540 C	< 50	31,240
Total Suspended Solids	mg/l	2540 D	< 5	20
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND
Fat Oil & Grease	-	Visual Testing	-	ND
BOD ₅	mg/l	5210 B	< 1.0	2.5
COD	mg/l	5220 C	< 15.00	62.74

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (AWWA, APHA, WEF)

Khemchuda Insorn

(Miss. Khemchuda Insorn)
Analyst

Araya Tipparuk

(Mrs. Araya Tipparuk)
Technical Management Team

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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical Public Company Limited ,	REQUEST SERVICE No.	: 1793/66
	Branch 6 (Refinery)	SAMPLING METHOD	: Grab
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING TIME	: 12:14
SAMPLING DATE	: 12/10/2023	ANALYTICAL DATE	: 08-14/09/2023
RECEIVED DATE	: 13/10/2023	SITE OPERATOR	: Miss Wiraya Patchimboon
REPORT DATE	: 21/10/2023	FILE CODE	: 223010_CW_October
SAMPLE CONDITION	: Normal		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non detectable)	STATION
				จุดปล่อยน้ำทิ้งที่ผ่านการบำบัด ทางด้านทิศใต้ของโรงกลั่นน้ำมัน
Temperature	°C	2550 B	< 0.5	31.3
pH	-	4500-H ⁺ B	< 0.10	8.07
Total Dissolved Solids	mg/l	2540 C	< 50	26,820
Total Suspended Solids	mg/l	2540 D	< 5	19
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND
Fat Oil & Grease	-	Visual Testing	-	NV
BOD ₅	mg/l	5210 B	< 1.0	< 1.0
COD	mg/l	5220 C	< 15.00	49.26

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (AWWA, APHA, WEF)

Khemchuda Insorn

(Miss. Khemchuda Insorn)
Analyst

Araya Tipparuk

(Mrs. Araya Tipparuk)
Technical Management Team

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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical Public Company Limited ,	REQUEST SERVICE No.	: 1900/66
	Branch 6 (Refinery)	SAMPLING METHOD	: Grab
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING TIME	: 11:20
SAMPLING DATE	: 02/11/2023	ANALYTICAL DATE	: 03-08/11/2023
RECEIVED DATE	: 03/11/2023	SITE OPERATOR	: Mr. Aniwat Pimwana
REPORT DATE	: 09/11/2023	FILE CODE	: 223010_CW_November
SAMPLE CONDITION	: Normal		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non detectable)	STATION
				จุดปล่อยน้ำทิ้งที่ผ่านการบำบัด ทางด้านทิศใต้ของโรงกลั่นน้ำมัน
Temperature	°C	2550 B	< 0.5	32.3
pH	-	4500-H ⁺ B	< 0.10	7.79
Total Dissolved Solids	mg/l	2540 C	< 50	26,300
Total Suspended Solids	mg/l	2540 D	< 5	15
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND
Fat Oil & Grease	-	Visual Testing	-	NV
BOD ₅	mg/l	5210 B	< 1.0	3.2
COD	mg/l	5220 C	< 15.00	97.69

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23rd ED. 2017 (AWWA APHA WEF)

Khemchuda Insorn

(Miss Khemchuda Insorn)

Analyst

Araya Tipparuk

(Mrs. Araya Tipparuk)

Technical Management Team

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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical Public Company Limited ,	REQUEST SERVICE No.	: 2169/66
	Branch 6 (Refinery)	SAMPLING METHOD	: Grab
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING TIME	: 14:00
SAMPLING DATE	: 07/12/2023	ANALYTICAL DATE	: 08-15/12/2023
RECEIVED DATE	: 08/12/2023	SITE OPERATOR	: Mr.Chanapon Oakkharaplon
REPORT DATE	: 15/12/2023	FILE CODE	: 223010_CW_December
SAMPLE CONDITION	: Normal		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non detectable)	STATION
				จุดปล่อยน้ำทิ้งที่ผ่านการบำบัด ทางด้านทิศใต้ของโรงกลั่นน้ำมัน
Temperature	°C	2550 B	< 0.5	32.0
pH	-	4500-H ⁺ B	< 0.10	8.32
Total Dissolved Solids	mg/l	2540 C	< 50	27,280
Total Suspended Solids	mg/l	2540 D	< 5	11
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND
Fat Oil & Grease	-	Visual Testing	-	NV
BOD ₅	mg/l	5210 B	< 1.0	2.3
COD	mg/l	5220 C	< 15.00	75.52

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23rd ED. 2017 (AWWA APHA WEF)

Khemchuda Insorn

(Miss Khemchuda Insorn)

Analyst

Araya Tipparuk

(Mrs. Araya Tipparuk)

Technical Management Team

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1476/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 30/08/2023	SAMPLING TIME	: 14:56-15:10, 14:20-14:37
RECEIVED DATE	: 31/08/2023	ANALYTICAL DATE	: 30-31/08/2023, 01-06/09/2023
REPORT DATE	: 14/09/2023	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^u
				MW-01	MW-02	
pH		4500-H ⁺ B	< 0.10	6.65	6.41	//
Conductivity	μS/cm	2510 B	< 1.0	372	461	-
Salinity	ppt	2520 B	< 0.01	0.11	0.16	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0806	0.0532	≤ 0.1
Cadmium (Cd)	mg/l	3120 B	< 0.001	< 0.01	< 0.01	≤ 2.0
Lead (Pb)	mg/l	3120 B	< 0.008	ND	ND	≤ 4.0
Mercury (Hg)	mg/l	3112 B	< 0.0001	ND	ND	≤ 0.7
Nickel (Ni)	mg/l	3120 B	< 0.002	ND	ND	≤ 5.0

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23rd ED. 2017 (AWWA.APHA.WEF)

Khemchuda Insorn

(Miss Khemchuda Insorn)

Analyst

REG. NO. 7-239-n-0005

Araya Tipparuk

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-n-0004

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4. - Not available.



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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1476/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 30/08/2023	SAMPLING TIME	: 14:56-15:10, 14:20-14:37
RECEIVED DATE	: 31/08/2023	ANALYTICAL DATE	: 04-06/09/2023
REPORT DATE	: 14/09/2023	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^u
				MW-01	MW-02	
Naphthalene	mg/l	6440 C	< 0.00005	ND	ND	≤ 48
Benzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 0.2
Ethylbenzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 2.0
Toluene	mg/l	6200 B	< 0.0002	ND	ND	≤ 5.0
m-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
o-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
p-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
Total Xylenes	mg/l	6200 B	< 0.0006	ND	ND	≤ 24

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23rd ED. 2017 (AWWA.APHA.WEF)

Jutarat Jaemruen

(Miss Jutarat Jaemruen)

Analyst

REG. NO. 7-239-n-0022

Araya Tipparuk

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 1476/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 30/08/2023	SAMPLING TIME	: 14:56-15:10, 14:20-14:37
RECEIVED DATE	: 31/08/2023	ANALYTICAL DATE	: 01-06/09/2023
REPORT DATE	: 14/09/2023	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^U
				MW-01	MW-02	
Total Petroleum Hydrocarbons						
- TPH (C ₇ - C ₆)	mg/l	5030 C / 8260 D	< 0.003	ND	ND	≤ 1.4
- Pentane						
- Benzene						
- Toluene						
- m,p-Xylene						
- o-Xylene						
- Ethylbenzene						
- TPH (C ₉ - C ₁₆)	mg/l	3510 C / 8015 D	< 0.025	ND	ND	≤ 1.7
- n-Nonane						
- n-Decane						
- n-Dodecane						
- n-Tetradecane						
- n-Hexadecane						
- TPH (C ₉ - C ₃₃)	mg/l	3510 C / 8015 D	< 0.050	ND	ND	≤ 0.1
- n-Octadecane						
- n-Eicosane						
- n-Docosane						
- n-Tetracosane						
- n-Hexacosane						
- n-Octacosane						
- n-Triacontane						
- n-Dotriacontane						
- n-Tetracontane						
- Pentatriacontane						

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3rd ED, 2020.

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 7-239-9-0001

MR

(Mrs. Araya Tipparuk)

Technical Management Team

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CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 1476/66
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REPORT DATE	: 14/09/2023	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^u
				MW-01	MW-02	
alpha-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
gamma-BHC	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
Heptachlor	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.01
Aldrin	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.003
beta-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.03
delta-BHC	mg/l	6630 B	< 0.000003	ND	ND	-
Heptachlor epoxide	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
o,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endosulfan I	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
gamma-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
alpha-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
p,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Dieldrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.003
o,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 1.0
o,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
p,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endosulfan II	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
p,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endrin aldehyde	mg/l	6630 B	< 0.000001	ND	ND	-
Endosulfan Sulfate	mg/l	6630 B	< 0.000003	ND	ND	-
Endrin ketone	mg/l	6630 B	< 0.000003	ND	ND	-

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED, 2017 (AWWA, APHA, WEF)

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

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REPORT DATE	: 14/09/2023	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^u
				MW-03	MW-04	
pH	-	4500-H ⁺ B	< 0.10	6.66	7.34	^u
Conductivity	µS/cm	2510 B	< 1.0	708	611	-
Salinity	ppt	2520 B	< 0.01	0.29	0.24	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0741	0.0380	≤ 0.1
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	ND	≤ 2.0
Lead (Pb)	mg/l	3120 B	< 0.008	ND	ND	≤ 4.0
Mercury (Hg)	mg/l	3112 B	< 0.0001	ND	ND	≤ 0.7
Nickel (Ni)	mg/l	3120 B	< 0.002	< 0.01	ND	≤ 5.0

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (AWWA, APHA, WEF)

Khemchuda Insorn

(Miss Khemchuda Insorn)

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REG. NO. 2-239-ก-0005

Araya Tipparuk

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SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^u
				MW-03	MW-04	
Naphthalene	mg/l	6440 C	< 0.00005	ND	ND	≤ 48
Benzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 0.2
Ethylbenzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 2.0
Toluene	mg/l	6200 B	< 0.0002	ND	ND	≤ 5.0
m-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
o-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
p-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
Total Xylenes	mg/l	6200 B	< 0.0006	ND	ND	≤ 24

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (AWWA, APHA, WEF)

Jutarat Jaemruen

(Miss Jutarat Jaemruen)

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SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^u
				MW-03	MW-04	
Total Petroleum Hydrocarbons						
- TPH (C ₃ - C ₆)	mg/l	5030 C / 8260 D	< 0.003	ND	ND	≤ 1.4
- Pentane						
- Benzene						
- Toluene						
- m,p-Xylene						
- o-Xylene						
- Ethylbenzene						
- TPH (C ₇₋₈ - C ₁₆)	mg/l	3510 C / 8015 D	< 0.025	ND	ND	≤ 1.7
- n-Nonane						
- n-Decane						
- n-Dodecane						
- n-Tetradecane						
- n-Hexadecane						
- TPH (C ₇₋₁₆ - C ₁₉)	mg/l	3510 C / 8015 D	< 0.050	ND	ND	≤ 0.1
- n-Octadecane						
- n-Eicosane						
- n-Docosane						
- n-Tetracosane						
- n-Hexacosane						
- n-Octacosane						
- n-Triacontane						
- n-Dotriacontane						
- n-Tetracontane						
- Pentatriacontane						

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3rd ED., 2020.

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 7-239-9-0001

(Mrs. Araya Tipparuk)

Technical Management Team

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REPORT DATE	: 14/09/2023	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^u
				MW-03	MW-04	
alpha-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
gamma-BHC	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
Heptachlor	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.01
Aldrin	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.003
beta-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.03
delta-BHC	mg/l	6630 B	< 0.000003	ND	ND	-
Heptachlor epoxide	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
o,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endosulfan I	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
gamma-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
alpha-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
p,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Dieldrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.003
o,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 1.0
o,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
p,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endosulfan II	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
p,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endrin aldehyde	mg/l	6630 B	< 0.000001	ND	ND	-
Endosulfan Sulfate	mg/l	6630 B	< 0.000003	ND	ND	-
Endrin ketone	mg/l	6630 B	< 0.000003	ND	ND	-

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED., 2017 (AWWA, APHA, WEF)

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 7-239-9-0001

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-9-0004

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1476/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 29/08/2023	SAMPLING TIME	: 15:21-16:15, 14:23-14:45
RECEIVED DATE	: 31/08/2023	ANALYTICAL DATE	: 29, 31/08/2023, 01-06/09/2023
REPORT DATE	: 14/09/2023	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ¹⁾
				MW-05	MW-06	
pH	-	4500-H ⁺ B	< 0.10	7.11	6.55	¹⁾
Conductivity	µS/cm	2510 B	< 1.0	877	2,644	-
Salinity	ppt	2520 B	< 0.01	0.38	1.31	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0736	0.0415	≤ 0.1
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	< 0.01	≤ 2.0
Lead (Pb)	mg/l	3120 B	< 0.008	ND	ND	≤ 4.0
Mercury (Hg)	mg/l	3112 B	< 0.0001	ND	ND	≤ 0.7
Nickel (Ni)	mg/l	3120 B	< 0.002	ND	ND	≤ 5.0

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (AWWA, APHA, WEF)

Khemchuda Insorn

(Miss Khemchuda Insorn)

Analyst

REG. NO. 7-239-n-0005

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Technical Management Team

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SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ¹⁾
				MW-05	MW-06	
Naphthalene	mg/l	6440 C	< 0.00005	ND	ND	≤ 48
Benzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 0.2
Ethylbenzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 2.0
Toluene	mg/l	6200 B	< 0.0002	ND	ND	≤ 5.0
m-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
o-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
p-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
Total Xylenes	mg/l	6200 B	< 0.0006	ND	ND	≤ 24

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (AWWA, APHA, WEF)

Jutarat Jaemruen

(Miss Jutarat Jaemruen)

Analyst

REG. NO. 7-239-n-0022

(Mrs. Araya Tipparuk)

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-n-0004

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3. ¹⁾ Notification of the Ministry of Industry, B.E.2559 (2016).



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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 1476/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 29/08/2023	SAMPLING TIME	: 15:21-16:15, 14:23-14:45
RECEIVED DATE	: 31/08/2023	ANALYTICAL DATE	: 01-06/09/2023
REPORT DATE	: 14/09/2023	SITE OPERATOR	: Mr. Jeerawat Khotamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^{1/}
				MW-05	MW-06	
Total Petroleum Hydrocarbons						
- TPH (C ₅ - C ₈)	mg/l	5030 C / 8260 D	< 0.003	ND	ND	≤ 1.4
- Pentane						
- Benzene						
- Toluene						
- m,p-Xylene						
- o-Xylene						
- Ethylbenzene						
- TPH (C ₉ - C ₁₆)	mg/l	3510 C / 8015 D	< 0.025	ND	ND	≤ 1.7
- n-Nonane						
- n-Decane						
- n-Dodecane						
- n-Tetradecane						
- n-Hexadecane						
- TPH (C ₁₆ - C ₃₅)	mg/l	3510 C / 8015 D	< 0.050	ND	ND	≤ 0.1
- n-Octadecane						
- n-Eicosane						
- n-Docosane						
- n-Tetracosane						
- n-Hexacosane						
- n-Octacosane						
- n-Triacontane						
- n-Dotriacontane						
- n-Tetracontane						
- n-Pentatriacontane						

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3rd ED., 2020.

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 2-239-9-0001

Araya T.

(Mrs. Araya Tipparak)

Technical Management Team

REG. NO. 2-239-n-0004

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 1476/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 29/08/2023	SAMPLING TIME	: 15:21-16:15, 14:23-14:45
RECEIVED DATE	: 31/08/2023	ANALYTICAL DATE	: 06-08/09/2023
REPORT DATE	: 14/09/2023	SITE OPERATOR	: Mr. Jeerawat Khotamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^u
				MW-05	MW-06	
alpha-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
gamma-BHC	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
Heptachlor	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.01
Aldrin	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.003
beta-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.03
delta-BHC	mg/l	6630 B	< 0.000003	ND	ND	-
Heptachlor epoxide	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
o,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endosulfan I	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
gamma-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
alpha-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
p,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Dieldrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.003
o,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 1.0
o,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
p,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endosulfan II	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
p,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endrin aldehyde	mg/l	6630 B	< 0.000001	ND	ND	-
Endosulfan Sulfate	mg/l	6630 B	< 0.000003	ND	ND	-
Endrin ketone	mg/l	6630 B	< 0.000003	ND	ND	-

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 13th ED. 2017 (AWWA APHA, WEF)

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 2-239-9-0001

Araya T.

(Mrs. Araya Tipparak)

Technical Management Team

REG. NO. 2-239-n-0004

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1476/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 29, 30/08/2023	SAMPLING TIME	: 15:25-16:07, 09:38-09:57
RECEIVED DATE	: 31/08/2023	ANALYTICAL DATE	: 29-31/08/2023, 01-06/09/2023
REPORT DATE	: 14/09/2023	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^U
				MW-07	MW-08	
pH	-	4500-H ⁺ B	< 0.10	6.95	7.22	^U
Conductivity	μS/cm	2510 B	< 1.0	1,465	852	-
Salinity	ppt	2520 B	< 0.01	0.69	0.37	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0583	0.0386	≤ 0.1
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	ND	≤ 2.0
Lead (Pb)	mg/l	3120 B	< 0.008	ND	ND	≤ 4.0
Mercury (Hg)	mg/l	3112 B	< 0.0001	ND	ND	≤ 0.7
Nickel (Ni)	mg/l	3120 B	< 0.002	ND	ND	≤ 5.0

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (AWWA/APHA/WEF)

Khenshuda Insorn

(Miss Khenshuda Insorn)

Analyst

REG. NO. 7-239-n-0005

Araya Tipparuk

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1476/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 29, 30/08/2023	SAMPLING TIME	: 15:25-16:07, 09:38-09:57
RECEIVED DATE	: 31/08/2023	ANALYTICAL DATE	: 04-06/09/2023
REPORT DATE	: 14/09/2023	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^U
				MW-07	MW-08	
Naphthalene	mg/l	6440 C	< 0.00005	ND	ND	≤ 48
Benzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 0.2
Ethylbenzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 2.0
Toluene	mg/l	6200 B	< 0.0002	ND	ND	≤ 5.0
m-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
o-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
p-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
Total Xylenes	mg/l	6200 B	< 0.0006	ND	ND	≤ 24

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (AWWA/APHA/WEF)

Jutarat Jaemruen

(Miss Jutarat Jaemruen)

Analyst

REG. NO. 7-239-n-0022

Araya Tipparuk

(Mrs. Araya Tipparuk)

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 1476/66
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RECEIVED DATE	: 31/08/2023	ANALYTICAL DATE	: 01-06/09/2023
REPORT DATE	: 14/09/2023	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS	ND	STATION		STANDARD ^u
		METHODS	(non-detectable)	MW-07	MW-08	
Total Petroleum Hydrocarbons						
- TPH (C ₅ - C ₈)	mg/l	5030 C / 8260 D	< 0.003	ND	ND	≤ 1.4
- Pentane						
- Benzene						
- Toluene						
- m,p-Xylene						
- o-Xylene						
- Ethylbenzene						
- TPH (C ₉ - C ₁₄)	mg/l	3510 C / 8015 D	< 0.025	ND	ND	≤ 1.7
- n-Nonane						
- n-Decane						
- n-Dodecane						
- n-Tetradecane						
- n-Hexadecane						
- TPH (C ₁₅ - C ₃₅)	mg/l	3510 C / 8015 D	< 0.050	ND	ND	≤ 0.1
- n-Octadecane						
- n-Eicosane						
- n-Docosane						
- n-Tetracosane						
- n-Hexacosane						
- n-Octacosane						
- n-Triacontane						
- n-Dotriacontane						
- n-Tetracontane						
- Pentatriacontane						

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE 3rd ED. 2020.

Sudaporn S.
(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 2-239-9-0001

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 2-239-9-0004

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 1476/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 29, 30/08/2023	SAMPLING TIME	: 15:25-16:07, 09:38-09:57
RECEIVED DATE	: 31/08/2023	ANALYTICAL DATE	: 06-08/09/2023
REPORT DATE	: 14/09/2023	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^u
				MW-07	MW-08	
alpha-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
gamma-BHC	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
Heptachlor	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.01
Aldrin	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.003
beta-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.03
delta-BHC	mg/l	6630 B	< 0.000003	ND	ND	-
Heptachlor epoxide	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
o,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endosulfan I	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
gamma-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
alpha-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
p,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Dieldrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.003
o,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 1.0
o,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
p,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endosulfan II	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
p,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endrin aldehyde	mg/l	6630 B	< 0.000001	ND	ND	-
Endosulfan Sulfate	mg/l	6630 B	< 0.000003	ND	ND	-
Endrin ketone	mg/l	6630 B	< 0.000003	ND	ND	-

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 22nd ED. 2017 (AWWA APHA WEF)

Sudaporn S.
(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 2-239-9-0001

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 2-239-9-0004

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL., Branch 6 (Refinery)	REQUEST SERVICE No.	: 1441/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 21/08/2023	SAMPLING TIME	: 11:09-11:25 , 11:41-12:00
RECEIVED DATE	: 25/08/2023	ANALYTICAL DATE	: 21, 25-31/08/2023
REPORT DATE	: 07/09/2023	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^u
				MW-09	MW-11	
pH	-	4500-H B	< 0.10	7.29	7.85	u
Conductivity	µS/cm	2510 B	< 1.0	1,835	635	-
Salinity	ppt	2520 B	< 0.01	0.90	0.26	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0030	0.0050	≤ 0.1
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	ND	≤ 2.0
Lead (Pb)	mg/l	3120 B	< 0.008	ND	ND	≤ 4.0
Mercury (Hg)	mg/l	3112 B	< 0.0001	ND	ND	≤ 0.7
Nickel (Ni)	mg/l	3120 B	< 0.002	ND	ND	≤ 5.0

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (AWWA.APHA.WEF)

Khemchuda Insorn

(Miss Khemchuda Insorn)

Analyst

REG. NO. 2-239-n-0005

Araya Tipparuk

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 2-239-n-0004

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL., Branch 6 (Refinery)	REQUEST SERVICE No.	: 1441/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 21/08/2023	SAMPLING TIME	: 11:09-11:25 , 11:41-12:00
RECEIVED DATE	: 25/08/2023	ANALYTICAL DATE	: 28, 30-31/08/2023
REPORT DATE	: 07/09/2023	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^u
				MW-09	MW-11	
Naphthalene	mg/l	6440 C	< 0.00005	ND	ND	≤ 48
Benzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 0.2
Ethylbenzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 2.0
Toluene	mg/l	6200 B	< 0.0002	ND	ND	≤ 5.0
m-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
o-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
p-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
Total Xylenes	mg/l	6200 B	< 0.0006	ND	ND	≤ 24

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (AWWA.APHA.WEF)

Jutarat Jaemruen

(Miss Jutarat Jaemruen)

Analyst

REG. NO. 2-239-n-0022

Araya Tipparuk

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Technical Management Team

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 1441/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 21/08/2023	SAMPLING TIME	: 11:09-11:25 , 11:41-12:00
RECEIVED DATE	: 25/08/2023	ANALYTICAL DATE	: 29, 31/08/2023-02/09/2023
REPORT DATE	: 07/09/2023	SITE OPERATOR	: Mr. Jeerawat Khotamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^U
				MW-09	MW-11	
Total Petroleum Hydrocarbons						
- TPH (C ₈ - C ₉)	mg/l	5030 C / 8260 D	< 0.003	ND	ND	≤ 1.4
- Pentane						
- Benzene						
- Toluene						
- m,p-Xylene						
- o-Xylene						
- Ethylbenzene						
- TPH (C ₁₀ - C ₁₄)	mg/l	3510 C / 8015 D	< 0.025	ND	ND	≤ 1.7
- n-Nonane						
- n-Decane						
- n-Dodecane						
- n-Tetradecane						
- n-Hexadecane						
- TPH (C ₁₆ - C ₂₂)	mg/l	3510 C / 8015 D	< 0.050	ND	ND	≤ 0.1
- n-Octadecane						
- n-Eicosane						
- n-Docosane						
- n-Tetracosane						
- n-Hexacosane						
- n-Octacosane						
- n-Triacontane						
- n-Dotriacontane						
- n-Tetatriacontane						
- Pentatriacontane						

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE 3rd ED. 2020.

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 2-239-9-0001

MT

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 2-239-9-0004

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 1441/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 21/08/2023	SAMPLING TIME	: 11:09-11:25 , 11:41-12:00
RECEIVED DATE	: 25/08/2023	ANALYTICAL DATE	: 29/08/2023-01/09/2023
REPORT DATE	: 07/09/2023	SITE OPERATOR	: Mr. Jeerawat Khotamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^u
				MW-09	MW-11	
alpha-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
gamma-BHC	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
Heptachlor	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.01
Aldrin	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.003
beta-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.03
delta-BHC	mg/l	6630 B	< 0.000003	ND	ND	-
Heptachlor epoxide	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
o,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endosulfan I	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
gamma-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
alpha-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
p,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Dieldrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.003
o,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 1.0
o,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
p,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endosulfan II	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
p,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endrin aldehyde	mg/l	6630 B	< 0.000001	ND	ND	-
Endosulfan Sulfate	mg/l	6630 B	< 0.000003	ND	ND	-
Endrin ketone	mg/l	6630 B	< 0.000003	ND	ND	-

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (AWWA, APHA, WEF)

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 2-239-9-0001

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Technical Management Team

REG. NO. 2-239-9-0004

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1476/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 29/08/2023	SAMPLING TIME	: 10:12-10:30, 10:43-11:22
RECEIVED DATE	: 31/08/2023	ANALYTICAL DATE	: 29, 31/08/2023, 01-06/09/2023
REPORT DATE	: 14/09/2023	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^u
				MW-10	MW-12	
pH	-	4500-H ⁺ B	< 0.10	7.67	7.71	^u
Conductivity	μS/cm	2510 B	< 1.0	1,456	3,637	-
Salinity	ppt	2520 B	< 0.01	0.69	1.87	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0047	0.0084	≤ 0.1
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	ND	≤ 2.0
Lead (Pb)	mg/l	3120 B	< 0.008	ND	ND	≤ 4.0
Mercury (Hg)	mg/l	3112 B	< 0.0001	ND	ND	≤ 0.7
Nickel (Ni)	mg/l	3120 B	< 0.002	ND	ND	≤ 5.0

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (AWWA.APHA.WEF)

Khemchuda Insorn

(Miss Khemchuda Insorn)

Analyst

REG. NO. 7-239-n-0005

Araya Tipparuk

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1476/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 29/08/2023	SAMPLING TIME	: 10:12-10:30, 10:43-11:22
RECEIVED DATE	: 31/08/2023	ANALYTICAL DATE	: 04-06/09/2023
REPORT DATE	: 14/09/2023	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^u
				MW-10	MW-12	
Naphthalene	mg/l	6440 C	< 0.00005	ND	ND	≤ 48
Benzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 0.2
Ethylbenzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 2.0
Toluene	mg/l	6200 B	< 0.0002	ND	ND	≤ 5.0
m-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
o-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
p-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
Total Xylenes	mg/l	6200 B	< 0.0006	ND	ND	≤ 24

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (AWWA.APHA.WEF)

Jutarat Jaemruen

(Miss Jutarat Jaemruen)

Analyst

REG. NO. 7-239-n-0022

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Technical Management Team

REG. NO. 7-239-n-0004

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 1476/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 29/08/2023	SAMPLING TIME	: 10:12-10:30, 10:43-11:22
RECEIVED DATE	: 31/08/2023	ANALYTICAL DATE	: 01-06/09/2023
REPORT DATE	: 14/09/2023	SITE OPERATOR	: Mr. Jeerawat Khotamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS	ND	STATION		STANDARD ^u
		METHODS	(non-detectable)	MW-10	MW-12	
Total Petroleum Hydrocarbons						
- TPH (C ₃ - C ₄)	mg/l	5030 C / 8260 D	< 0.003	ND	ND	≤ 1.4
- Pentane						
- Benzene						
- Toluene						
- m,p-Xylene						
- o-Xylene						
- Ethylbenzene						
- TPH (C ₉ - C ₁₆)	mg/l	3510 C / 8015 D	< 0.025	ND	ND	≤ 1.7
- n-Nonane						
- n-Decane						
- n-Dodecane						
- n-Tetradecane						
- n-Hexadecane						
- TPH (C ₁₆ - C ₂₅)	mg/l	3510 C / 8015 D	< 0.050	ND	ND	≤ 0.1
- n-Octadecane						
- n-Eicosane						
- n-Docosane						
- n-Tetracosane						
- n-Hexacosane						
- n-Octacosane						
- n-Triacontane						
- n-Dotriacontane						
- n-Tetracontane						
- Pentatriacontane						

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3rd ED., 2020.

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 7-239-8-0001

Mrs. Araya Tipparuk

(Mrs. Araya Tipparuk)

Technical Management Team

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 1476/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 29/08/2023	SAMPLING TIME	: 10:12-10:30, 10:43-11:22
RECEIVED DATE	: 31/08/2023	ANALYTICAL DATE	: 06-08/09/2023
REPORT DATE	: 14/09/2023	SITE OPERATOR	: Mr. Jeerawat Khotamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^u
				MW-10	MW-12	
alpha-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
gamma-BHC	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
Heptachlor	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.01
Aldrin	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.003
beta-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.03
delta-BHC	mg/l	6630 B	< 0.000003	ND	ND	-
Heptachlor epoxide	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
o,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endosulfan I	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
gamma-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
alpha-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
p,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Dieldrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.003
o,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 1.0
o,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
p,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endosulfan II	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
p,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endrin aldehyde	mg/l	6630 B	< 0.000001	ND	ND	-
Endosulfan Sulfate	mg/l	6630 B	< 0.000003	ND	ND	-
Endrin ketone	mg/l	6630 B	< 0.000003	ND	ND	-

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER, 23rd ED., 2017 (AWWA, APHA, WED)

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 7-239-8-0001

Mrs. Araya Tipparuk

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-8-0004

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1441/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 21/08/2023	SAMPLING TIME	: 14:57-15:15, 14:26-14:42
RECEIVED DATE	: 25/08/2023	ANALYTICAL DATE	: 21, 25-31/08/2023
REPORT DATE	: 07/09/2023	SITE OPERATOR	: Mr. Jeerawat Khotamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^u
				MW-13	MW-15	
pH	-	4500-H ⁺ B	< 0.10	7.90	7.58	u
Conductivity	µS/cm	2510 B	< 1.0	532	1,019	-
Salinity	ppt	2520 B	< 0.01	0.20	0.48	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0024	0.0009	≤ 0.1
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	ND	≤ 2.0
Lead (Pb)	mg/l	3120 B	< 0.008	ND	ND	≤ 4.0
Mercury (Hg)	mg/l	3112 B	< 0.0001	ND	ND	≤ 0.7
Nickel (Ni)	mg/l	3120 B	< 0.002	< 0.01	ND	≤ 5.0

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (AWWA.APHA.WEF)

Khemchuda Insorn

(Miss Khemchuda Insorn)

Analyst

REG. NO. 2-239-n-0005

Araya Tipparuk

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Technical Management Team

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1441/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 21/08/2023	SAMPLING TIME	: 14:57-15:15, 14:26-14:42
RECEIVED DATE	: 25/08/2023	ANALYTICAL DATE	: 28, 30-31/08/2023
REPORT DATE	: 07/09/2023	SITE OPERATOR	: Mr. Jeerawat Khotamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^u
				MW-13	MW-15	
Naphthalene	mg/l	6440 C	< 0.00005	ND	ND	≤ 48
Benzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 0.2
Ethylbenzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 2.0
Toluene	mg/l	6200 B	< 0.0002	ND	ND	≤ 5.0
m-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
o-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
p-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
Total Xylenes	mg/l	6200 B	< 0.0006	ND	ND	≤ 24

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (AWWA.APHA.WEF)

Jutarat Jaemruen

(Miss Jutarat Jaemruen)

Analyst

REG. NO. 2-239-n-0022

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 1441/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 21/08/2023	SAMPLING TIME	: 14:57-15:15, 14:26-14:42
RECEIVED DATE	: 25/08/2023	ANALYTICAL DATE	: 29, 31/08/2023-02/09/2023
REPORT DATE	: 07/09/2023	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^U
				MW-13	MW-15	
Total Petroleum Hydrocarbons						
- TPH (C ₉ - C ₈)	mg/l	5030 C / 8260 D	< 0.003	ND	ND	≤ 1.4
- Pentane						
- Benzene						
- Toluene						
- m,p-Xylene						
- o-Xylene						
- Ethylbenzene						
- TPH (C ₉₋₁₆ - C ₁₆)	mg/l	3510 C / 8015 D	< 0.025	ND	ND	≤ 1.7
- n-Nonane						
- n-Decane						
- n-Dodecane						
- n-Tetradecane						
- n-Hexadecane						
- TPH (C ₁₆₋₃₃ - C ₃₃)	mg/l	3510 C / 8015 D	< 0.050	ND	ND	≤ 0.1
- n-Octadecane						
- n-Eicosane						
- n-Docosane						
- n-Tetracosane						
- n-Hexacosane						
- n-Octacosane						
- n-Triacontane						
- n-Dotriacontane						
- n-Tetracontane						
- Pentatriacontane						

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE 3rd ED. 2020.

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 7-239-0-0001

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(Mrs. Araya Tipparuk)

Technical Management Team

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TEL. (662) 959-3600 FAX (662) 959-3535 Website : secot.co.th E-mail : envserv@secot.co.th

GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 1441/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 21/08/2023	SAMPLING TIME	: 14:57-15:15, 14:26-14:42
RECEIVED DATE	: 25/08/2023	ANALYTICAL DATE	: 29/08/2023-01/09/2023
REPORT DATE	: 07/09/2023	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^U
				MW-13	MW-15	
alpha-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
gamma-BHC	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
Heptachlor	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.01
Aldrin	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.003
beta-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.03
delta-BHC	mg/l	6630 B	< 0.000003	ND	ND	-
Heptachlor epoxide	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
o,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endosulfan I	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
gamma-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
alpha-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
p,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Dieldrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.003
o,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 1.0
o,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
p,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endosulfan II	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
p,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endrin aldehyde	mg/l	6630 B	< 0.000001	ND	ND	-
Endosulfan Sulfate	mg/l	6630 B	< 0.000003	ND	ND	-
Endrin ketone	mg/l	6630 B	< 0.000003	ND	ND	-

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (AWWA, APHA, WEF)

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 7-239-0-0001

MT

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-0-0004

- Remark : 1. Reported analysis refers to submitted sample only.
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3. ^U Notification of the Ministry of Industry, B.E.2559 (2016).
4. - Not available.



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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1476/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 28/08/2023	SAMPLING TIME	: 15:25-16:18, 14:33-14:55
RECEIVED DATE	: 31/08/2023	ANALYTICAL DATE	: 28, 31/08/2023, 01-06/09/2023
REPORT DATE	: 12/09/2023	SITE OPERATOR	: Mr. Jeerawat Khotamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^u
				MW-14	MW-16	
pH	-	4500-H ⁺ B	< 0.10	8.16	7.94	u
Conductivity	µS/cm	2510 B	< 1.0	3,765	376	-
Salinity	ppt	2520 B	< 0.01	1.95	0.11	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0060	0.0059	≤ 0.1
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	ND	≤ 2.0
Lead (Pb)	mg/l	3120 B	< 0.008	ND	ND	≤ 4.0
Mercury (Hg)	mg/l	3112 B	< 0.0001	ND	ND	≤ 0.7
Nickel (Ni)	mg/l	3120 B	< 0.002	ND	ND	≤ 5.0

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23rd ED. 2017 (AWWA, APHA, WEF)

Khemchuda Insorn

(Miss Khemchuda Insorn)

Analyst

REG. NO. 7-239-n-0005

Araya Tipparuk

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Technical Management Team

REG. NO. 7-239-n-0004

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1476/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 28/08/2023	SAMPLING TIME	: 15:25-16:18, 14:33-14:55
RECEIVED DATE	: 31/08/2023	ANALYTICAL DATE	: 02, 04-06/09/2023
REPORT DATE	: 12/09/2023	SITE OPERATOR	: Mr. Jeerawat Khotamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^u
				MW-14	MW-16	
Naphthalene	mg/l	6440 C	< 0.00005	ND	ND	≤ 48
Benzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 0.2
Ethylbenzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 2.0
Toluene	mg/l	6200 B	< 0.0002	ND	ND	≤ 5.0
m-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
o-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
p-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
Total Xylenes	mg/l	6200 B	< 0.0006	ND	ND	≤ 24

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23rd ED. 2017 (AWWA, APHA, WEF)

Jutarat Jaemruen

(Miss Jutarat Jaemruen)

Analyst

REG. NO. 7-239-n-0022

Araya Tipparuk

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-n-0004

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 1476/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 28/08/2023	SAMPLING TIME	: 15:25-16:18, 14:33-14:55
RECEIVED DATE	: 31/08/2023	ANALYTICAL DATE	: 02, 04-06/09/2023
REPORT DATE	: 12/09/2023	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^{1/}
				MW-14	MW-16	
Total Petroleum Hydrocarbons						
-TPH (C ₁ - C ₆)	mg/l	5030 C / 8260 D	< 0.003	ND	ND	≤ 1.4
- Pentane						
- Benzene						
- Toluene						
- m,p-Xylene						
- o-Xylene						
- Ethylbenzene						
-TPH (C ₇₋₁₆ - C ₁₆)	mg/l	3510 C / 8015 D	< 0.025	ND	ND	≤ 1.7
- n-Nonane						
- n-Decane						
- n-Dodecane						
- n-Tetradecane						
- n-Hexadecane						
-TPH (C ₁₇₋₃₃ - C ₃₃)	mg/l	3510 C / 8015 D	< 0.050	ND	ND	≤ 0.1
- n-Octadecane						
- n-Eicosane						
- n-Docosane						
- n-Tetracosane						
- n-Hexacosane						
- n-Octacosane						
- n-Triacontane						
- n-Dotriacontane						
- n-Tetraatriacontane						
- Pentatriacontane						

REFERENCE : USEPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3rd ED. 2020.

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 2-239-0-0001

Araya Tipparuk

(Mrs. Araya Tipparuk)

Technical Management Team

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 1476/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 28/08/2023	SAMPLING TIME	: 15:25-16:18, 14:33-14:55
RECEIVED DATE	: 31/08/2023	ANALYTICAL DATE	: 06-08/09/2023
REPORT DATE	: 12/09/2023	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^u
				MW-14	MW-16	
alpha-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
gamma-BHC	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
Heptachlor	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.01
Aldrin	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.003
beta-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.03
delta-BHC	mg/l	6630 B	< 0.000003	ND	ND	-
Heptachlor epoxide	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
o,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endosulfan I	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
gamma-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
alpha-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
p,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Dieldrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.003
o,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 1.0
o,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
p,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endosulfan II	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
p,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endrin aldehyde	mg/l	6630 B	< 0.000001	ND	ND	-
Endosulfan Sulfate	mg/l	6630 B	< 0.000003	ND	ND	-
Endrin ketone	mg/l	6630 B	< 0.000003	ND	ND	-

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (AWWA, APHA, WEF)

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 2-239-0-0001

Araya Tipparuk

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Technical Management Team

REG. NO. 2-239-0-0004

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1441/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 21-22/08/2023	SAMPLING TIME	: 15:35-16:10, 10:09-10:30
RECEIVED DATE	: 25/08/2023	ANALYTICAL DATE	: 21-22, 25-31/08/2023
REPORT DATE	: 07/09/2023	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ¹⁾
				MW-17	MW-19	
pH	-	4500-H ⁺ B	< 0.10	8.09	7.87	¹⁾
Conductivity	μS/cm	2510 B	< 1.0	367	414	-
Salinity	ppt	2520 B	< 0.01	0.11	0.14	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0078	0.0006	≤ 0.1
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	ND	≤ 2.0
Lead (Pb)	mg/l	3120 B	< 0.008	ND	ND	≤ 4.0
Mercury (Hg)	mg/l	3112 B	< 0.0001	ND	ND	≤ 0.7
Nickel (Ni)	mg/l	3120 B	< 0.002	ND	0.01	≤ 5.0

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (AWWA, APHA, WEF)

Khemchuda Inson

(Miss Khemchuda Inson)

Analyst

REG. NO. 7-239-ก-0005

Araya Tipparuk

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-ก-0004

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1441/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 21-22/08/2023	SAMPLING TIME	: 15:35-16:10, 10:09-10:30
RECEIVED DATE	: 25/08/2023	ANALYTICAL DATE	: 28, 30-31/08/2023
REPORT DATE	: 07/09/2023	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ¹⁾
				MW-17	MW-19	
Naphthalene	mg/l	6440 C	< 0.00005	ND	ND	≤ 48
Benzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 0.2
Ethylbenzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 2.0
Toluene	mg/l	6200 B	< 0.0002	ND	ND	≤ 5.0
m-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
o-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
p-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
Total Xylenes	mg/l	6200 B	< 0.0006	ND	ND	≤ 24

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (AWWA, APHA, WEF)

Jutarat Jaemruen

(Miss Jutarat Jaemruen)

Analyst

REG. NO. 7-239-ก-0022

Araya Tipparuk

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-ก-0004

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 1441/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 21-22/08/2023	SAMPLING TIME	: 15:35-16:10, 10:09-10:30
RECEIVED DATE	: 25/08/2023	ANALYTICAL DATE	: 29, 31/08/2023-02/09/2023
REPORT DATE	: 07/09/2023	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^U
				MW-17	MW-19	
Total Petroleum Hydrocarbons						
- TPH (C ₂ - C ₆)	mg/l	5030 C / 8260 D	< 0.003	ND	ND	≤ 1.4
- Pentane						
- Benzene						
- Toluene						
- m,p-Xylene						
- o-Xylene						
- Ethylbenzene						
- TPH (C ₈ - C ₁₄)	mg/l	3510 C / 8015 D	< 0.025	ND	ND	≤ 1.7
- n-Nonane						
- n-Decane						
- n-Dodecane						
- n-Tetradecane						
- n-Hexadecane						
- TPH (C ₁₆ - C ₃₅)	mg/l	3510 C / 8015 D	< 0.050	ND	ND	≤ 0.1
- n-Octadecane						
- n-Eicosane						
- n-Docosane						
- n-Tetracosane						
- n-Hexacosane						
- n-Octacosane						
- n-Triacontane						
- n-Dotriacontane						
- n-Tetatriacontane						
- Pentatriacontane						

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 1st ED, 2020.

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 7-239-9-0001

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-9-0004

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 1441/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 21-22/08/2023	SAMPLING TIME	: 15:35-16:10, 10:09-10:30
RECEIVED DATE	: 25/08/2023	ANALYTICAL DATE	: 29/08/2023-01/09/2023
REPORT DATE	: 07/09/2023	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^U
				MW-17	MW-19	
alpha-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
gamma-BHC	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
Heptachlor	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.01
Aldrin	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.003
beta-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.03
delta-BHC	mg/l	6630 B	< 0.000003	ND	ND	-
Heptachlor epoxide	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
o,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endosulfan I	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
gamma-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
alpha-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
p,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Dieldrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.003
o,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 1.0
o,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
p,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endosulfan II	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
p,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endrin aldehyde	mg/l	6630 B	< 0.000001	ND	ND	-
Endosulfan Sulfate	mg/l	6630 B	< 0.000003	ND	ND	-
Endrin ketone	mg/l	6630 B	< 0.000003	ND	ND	-

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED, 2017 (AWWA/APHA/WEF)

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 7-239-9-0001

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-9-0004

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4. - Not available.



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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1476/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 28/08/2023	SAMPLING TIME	: 10:55-11:20, 10:23-10:40
RECEIVED DATE	: 31/08/2023	ANALYTICAL DATE	: 28, 31/08/2023, 01-06/09/2023
REPORT DATE	: 12/09/2023	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^u
				MW-18	MW-20	
pH	-	4500-H ⁺ B	< 0.10	7.77	7.67	u
Conductivity	µS/cm	2510 B	< 1.0	609	698	-
Salinity	ppt	2520 B	< 0.01	0.23	0.28	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0082	0.0048	≤ 0.1
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	ND	≤ 2.0
Lead (Pb)	mg/l	3120 B	< 0.008	ND	ND	≤ 4.0
Mercury (Hg)	mg/l	3112 B	< 0.0001	ND	ND	≤ 0.7
Nickel (Ni)	mg/l	3120 B	< 0.002	ND	ND	≤ 5.0

REFERENCE: STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23rd ED. 2017 (AWWA, APHA, WEF)

Khemchuda Insnor

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1476/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 28/08/2023	SAMPLING TIME	: 10:55-11:20, 10:23-10:40
RECEIVED DATE	: 31/08/2023	ANALYTICAL DATE	: 02, 04-06/09/2023
REPORT DATE	: 12/09/2023	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^u
				MW-18	MW-20	
Naphthalene	mg/l	6440 C	< 0.00005	ND	ND	≤ 48
Benzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 0.2
Ethylbenzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 2.0
Toluene	mg/l	6200 B	< 0.0002	ND	ND	≤ 5.0
m-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
o-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
p-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
Total Xylenes	mg/l	6200 B	< 0.0006	ND	ND	≤ 24

REFERENCE: STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23rd ED. 2017 (AWWA, APHA, WEF)

Jutarat Jaemruen

(Miss Jutarat Jaemruen)

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REG. NO. 2-239-ก-0022

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 1476/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 28/08/2023	SAMPLING TIME	: 10:55-11:20, 10:23-10:40
RECEIVED DATE	: 31/08/2023	ANALYTICAL DATE	: 02, 04-06/09/2023
REPORT DATE	: 12/09/2023	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^{1/}
				MW-18	MW-20	
Total Petroleum Hydrocarbons						
- TPH (C ₅ - C ₆)	mg/l	5030 C / 8260 D	< 0.003	ND	ND	≤ 1.4
- Pentane						
- Benzene						
- Toluene						
- m,p-Xylene						
- o-Xylene						
- Ethylbenzene						
- TPH (C ₇ - C ₁₂)	mg/l	3510 C / 8015 D	< 0.025	ND	ND	≤ 1.7
- n-Nonane						
- n-Decane						
- n-Dodecane						
- n-Tetradecane						
- n-Hexadecane						
- TPH (C ₁₄ - C ₁₉)	mg/l	3510 C / 8015 D	< 0.050	ND	ND	≤ 0.1
- n-Octadecane						
- n-Eicosane						
- n-Docosane						
- n-Tetracosane						
- n-Hexacosane						
- n-Octacosane						
- n-Triacontane						
- n-Dotriacontane						
- n-Tetracontane						
- Pentatriacontane						

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3rd ED., 2008.

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 1476/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 28/08/2023	SAMPLING TIME	: 10:55-11:20, 10:23-10:40
RECEIVED DATE	: 31/08/2023	ANALYTICAL DATE	: 06-08/09/2023
REPORT DATE	: 12/09/2023	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^{1/}
				MW-18	MW-20	
alpha-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
gamma-BHC	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
Heptachlor	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.01
Aldrin	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.003
beta-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.03
delta-BHC	mg/l	6630 B	< 0.000003	ND	ND	-
Heptachlor epoxide.	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
o,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endosulfan I	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
gamma-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
alpha-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
p,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Dieldrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.003
o,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 1.0
o,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
p,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endosulfan II	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
p,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endrin aldehyde	mg/l	6630 B	< 0.000001	ND	ND	-
Endosulfan Sulfate	mg/l	6630 B	< 0.000003	ND	ND	-
Endrin ketone	mg/l	6630 B	< 0.000003	ND	ND	-

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (AWWA APHA WEF)

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 7-239-9-0001

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1441/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 22/08/2023	SAMPLING TIME	: 10:47-11:10, 14:23-14:45
RECEIVED DATE	: 25/08/2023	ANALYTICAL DATE	: 22,25-31/08/2023
REPORT DATE	: 07/09/2023	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^{1/}
				MW-21	MW-23	
pH	-	4500-H ⁺ B	< 0.10	7.52	7.53	1/
Conductivity	µS/cm	2510 B	< 1.0	330	851	-
Salinity	ppt	2520 B	< 0.01	0.09	0.38	-
Arsenic (As)	mg/l	3114 C	< 0.0001	< 0.0005	0.0055	≤ 0.1
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	ND	≤ 2.0
Lead (Pb)	mg/l	3120 B	< 0.008	ND	ND	≤ 4.0
Mercury (Hg)	mg/l	3112 B	< 0.0001	ND	ND	≤ 0.7
Nickel (Ni)	mg/l	3120 B	< 0.002	ND	ND	≤ 5.0

REFERENCE: STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (AWWA, APHA, WEF)

Khemchuda Insorn

(Miss Khemchuda Insorn)

Analyst

REG. NO. 2-239-ก-0005

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1441/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 22/08/2023	SAMPLING TIME	: 10:47-11:10, 14:23-14:45
RECEIVED DATE	: 25/08/2023	ANALYTICAL DATE	: 28, 30-31/08/2023
REPORT DATE	: 07/09/2023	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^{1/}
				MW-21	MW-23	
Naphthalene	mg/l	6440 C	< 0.00005	ND	ND	≤ 48
Benzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 0.2
Ethylbenzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 2.0
Toluene	mg/l	6200 B	< 0.0002	ND	ND	≤ 5.0
m-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
o-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
p-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
Total Xylenes	mg/l	6200 B	< 0.0006	ND	ND	≤ 24

REFERENCE: STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (AWWA, APHA, WEF)

Jutarat Jaemruen

(Miss Jutarat Jaemruen)

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 1441/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 22/08/2023	SAMPLING TIME	: 10:47-11:10, 14:23-14:45
RECEIVED DATE	: 25/08/2023	ANALYTICAL DATE	: 29, 31/08/2023-02/09/2023
REPORT DATE	: 07/09/2023	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS	ND	STATION		STANDARD ^{1/}
		METHODS	(non-detectable)	MW-21	MW-23	
Total Petroleum Hydrocarbons						
- TPH (C ₃ - C ₉)	mg/l	5030 C / 8260 D	< 0.003	ND	0.012	≤ 1.4
- Pentane						
- Benzene						
- Toluene						
- m,p-Xylene						
- o-Xylene						
- Ethylbenzene						
- TPH (C ₉ - C ₁₄)	mg/l	3510 C / 8015 D	< 0.025	0.030	ND	≤ 1.7
- n-Nonane						
- n-Decane						
- n-Dodecane						
- n-Tetradecane						
- n-Hexadecane						
- TPH (C ₁₄ - C ₃₅)	mg/l	3510 C / 8015 D	< 0.050	ND	ND	≤ 0.1
- n-Octadecane						
- n-Eicosane						
- n-Docosane						
- n-Tetracosane						
- n-Hexacosane						
- n-Octacosane						
- n-Triacontane						
- n-Dotriacontane						
- n-Tetracontane						
- Pentatriacontane						

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 1st ED. 2020.

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 7-239-0-0001

(Mrs. Araya Tipparuk)

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Technical Management Team

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 1441/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 22/08/2023	SAMPLING TIME	: 10:47-11:10, 14:23-14:45
RECEIVED DATE	: 25/08/2023	ANALYTICAL DATE	: 29/08/2023-01/09/2023
REPORT DATE	: 07/09/2023	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^{1/}
				MW-21	MW-23	
alpha-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
gamma-BHC	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
Heptachlor	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.01
Aldrin	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.003
beta-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.03
delta-BHC	mg/l	6630 B	< 0.000003	ND	ND	-
Heptachlor epoxide	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
o,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endosulfan I	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
gamma-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
alpha-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
p,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Dieldrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.003
o,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 1.0
o,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
p,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endosulfan II	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
p,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endrin aldehyde	mg/l	6630 B	< 0.000001	ND	ND	-
Endosulfan Sulfate	mg/l	6630 B	< 0.000003	ND	ND	-
Endrin ketone	mg/l	6630 B	< 0.000003	ND	ND	-

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23rd ED. 2017 (AWWA-APHA-WEF)

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1476/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 28/08/2023	SAMPLING TIME	: 09:48-10:08
RECEIVED DATE	: 31/08/2023	ANALYTICAL DATE	: 28, 31/08/2023, 01-06/09/2023
REPORT DATE	: 12/09/2023	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS	ND	STATION		STANDARD ^{1/}
		METHODS	(non-detectable)	MW-22		
pH	-	4500-H ⁺ B	< 0.10	7.81		^{1/}
Conductivity	µS/cm	2510 B	< 1.0	600	-	
Salinity	ppt	2520 B	< 0.01	0.23	-	
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0069		≤ 0.1
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND		≤ 2.0
Lead (Pb)	mg/l	3120 B	< 0.008	ND		≤ 4.0
Mercury (Hg)	mg/l	3112 B	< 0.0001	ND		≤ 0.7
Nickel (Ni)	mg/l	3120 B	< 0.002	ND		≤ 5.0

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (AWWA, APHA, WEF)

Khemchuda Insorn

(Miss Khemchuda Insorn)

Analyst

REG. NO. 2-239-n-0005

Araya Tipparak

(Mrs. Araya Tipparak)

Technical Management Team

REG. NO. 2-239-n-0004

Remark : 1. Reported analysis refers to submitted sample only.

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3. ^u Notification of the Ministry of Industry, B.E.2559 (2016).

4. - Not available.



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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1476/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 28/08/2023	SAMPLING TIME	: 09:48-10:08
RECEIVED DATE	: 31/08/2023	ANALYTICAL DATE	: 02, 04-06/09/2023
REPORT DATE	: 12/09/2023	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD ^u
				MW-22	
Naphthalene	mg/l	6440 C	< 0.00005	ND	≤ 48
Benzene	mg/l	6200 B	< 0.0002	ND	≤ 0.2
Ethylbenzene	mg/l	6200 B	< 0.0002	ND	≤ 2.0
Toluene	mg/l	6200 B	< 0.0002	ND	≤ 5.0
m-Xylene	mg/l	6200 B	< 0.0002	ND	≤ 24
o-Xylene	mg/l	6200 B	< 0.0002	ND	≤ 24
p-Xylene	mg/l	6200 B	< 0.0002	ND	≤ 24
Total Xylenes	mg/l	6200 B	< 0.0006	ND	≤ 24

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (AWWA, APHA, WEF)

Jutarat Jaemruen

(Miss Jutarat Jaemruen)

Analyst

REG. NO. 2-239-n-0022

Araya Tipparak

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 1476/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 28/08/2023	SAMPLING TIME	: 09:48-10:08
RECEIVED DATE	: 31/08/2023	ANALYTICAL DATE	: 02, 04-06/09/2023
REPORT DATE	: 12/09/2023	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-22	STANDARD ^u
Total Petroleum Hydrocarbons					
- TPH (C ₈ -C ₁₆)	mg/l	5030 C / 8260 D	< 0.003	ND	≤ 1.4
- Pentane					
- Benzene					
- Toluene					
- m,p-Xylene					
- o-Xylene					
- Ethylbenzene					
- TPH (C ₈ -C ₁₆)	mg/l	3510 C / 8015 D	< 0.025	ND	≤ 1.7
- n-Nonane					
- n-Decane					
- n-Dodecane					
- n-Tetradecane					
- n-Hexadecane					
- TPH (C ₈ -C ₁₆)	mg/l	3510 C / 8015 D	< 0.050	ND	≤ 0.1
- n-Octadecane					
- n-Eicosane					
- n-Docosane					
- n-Tetracosane					
- n-Hexacosane					
- n-Octacosane					
- n-Triacontane					
- n-Dotriacontane					
- n-Tetracontane					
- Pentatriacontane					

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3rd ED., 2020.

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 2-239-0-0001

MR

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 2-239-0-0004

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 1476/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 28/08/2023	SAMPLING TIME	: 09:48-10:08
RECEIVED DATE	: 31/08/2023	ANALYTICAL DATE	: 06-08/09/2023
REPORT DATE	: 12/09/2023	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-22	STANDARD ^u
alpha-BHC	mg/l	6630 B	< 0.000001	ND	≤ 0.01
gamma-BHC	mg/l	6630 B	< 0.000003	ND	≤ 0.04
Heptachlor	mg/l	6630 B	< 0.000003	ND	≤ 0.01
Aldrin	mg/l	6630 B	< 0.000001	ND	≤ 0.003
beta-BHC	mg/l	6630 B	< 0.000001	ND	≤ 0.03
delta-BHC	mg/l	6630 B	< 0.000003	ND	-
Heptachlor epoxide	mg/l	6630 B	< 0.000001	ND	≤ 0.01
o,p'-DDE	mg/l	6630 B	< 0.000003	ND	≤ 0.1
Endosulfan I	mg/l	6630 B	< 0.000003	ND	≤ 14
gamma-Chlordane	mg/l	6630 B	< 0.000003	ND	≤ 0.04
alpha-Chlordane	mg/l	6630 B	< 0.000003	ND	≤ 0.04
p,p'-DDE	mg/l	6630 B	< 0.000003	ND	≤ 0.1
Dieldrin	mg/l	6630 B	< 0.000003	ND	≤ 0.003
o,p'-DDD	mg/l	6630 B	< 0.000003	ND	≤ 0.2
Endrin	mg/l	6630 B	< 0.000003	ND	≤ 1.0
o,p'-DDT	mg/l	6630 B	< 0.000003	ND	≤ 0.1
p,p'-DDD	mg/l	6630 B	< 0.000003	ND	≤ 0.2
Endosulfan II	mg/l	6630 B	< 0.000003	ND	≤ 14
p,p'-DDT	mg/l	6630 B	< 0.000003	ND	≤ 0.1
Endrin aldehyde	mg/l	6630 B	< 0.000001	ND	-
Endosulfan Sulfate	mg/l	6630 B	< 0.000003	ND	-
Endrin ketone	mg/l	6630 B	< 0.000003	ND	-

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 22nd ED. 2017 (AWWA APHA, WEF)

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 2-239-0-0001

MR

(Mrs. Araya Tipparuk)

Technical Management Team

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GROUND WATER ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical PCL, Branch 6 (Refinery) REQUEST SERVICE No. : 1441/66
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Pneumatic Bladder Pump
SAMPLING DATE : 24/08/2023 SAMPLING TIME : 15:26-16:05, 14:56-15:15
RECEIVED DATE : 25/08/2023 ANALYTICAL DATE : 24-31/08/2023
REPORT DATE : 07/09/2023 SITE OPERATOR : Mr. Jeerawat Khothamhan
SAMPLE CONDITION : Normal FILE CODE : 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^{1/}
				MW-24	MW-25	
pH	-	4500-H B	< 0.10	7.80	7.50	1/
Conductivity	µS/cm	2510 B	< 1.0	16,980	404	-
Salinity	ppt	2520 B	< 0.01	9.05	0.13	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0046	0.0219	≤ 0.1
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	ND	≤ 2.0
Lead (Pb)	mg/l	3120 B	< 0.008	ND	ND	≤ 4.0
Mercury (Hg)	mg/l	3112 B	< 0.0001	ND	ND	≤ 0.7
Nickel (Ni)	mg/l	3120 B	< 0.002	ND	ND	≤ 5.0

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (AWWA-APHA-WEF)

Khemchuda Insorn

(Miss Khemchuda Insorn)
Analyst
REG. NO. 2-239-n-0005

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GROUND WATER ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical PCL, Branch 6 (Refinery) REQUEST SERVICE No : 1441/66
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Pneumatic Bladder Pump
SAMPLING DATE : 24/08/2023 SAMPLING TIME : 15:26-16:05, 14:56-15:15
RECEIVED DATE : 25/08/2023 ANALYTICAL DATE : 28, 30-31/08/2023
REPORT DATE : 07/09/2023 SITE OPERATOR : Mr. Jeerawat Khothamhan
SAMPLE CONDITION : Normal FILE CODE : 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^{1/}
				MW-24	MW-25	
Naphthalene	mg/l	6440 C	< 0.00005	ND	ND	≤ 48
Benzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 0.2
Ethylbenzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 2.0
Toluene	mg/l	6200 B	< 0.0002	ND	ND	≤ 5.0
m-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
o-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
p-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
Total Xylenes	mg/l	6200 B	< 0.0006	ND	ND	≤ 24

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (AWWA-APHA-WEF)

Jutarat Jaemruen

(Miss Jutarat Jaemruen)
Analyst
REG. NO. 2-239-n-0022

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 1441/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 24/08/2023	SAMPLING TIME	: 15:26-16:05, 14:56-15:15
RECEIVED DATE	: 25/08/2023	ANALYTICAL DATE	: 29, 31/08/2023-02/09/2023
REPORT DATE	: 07/09/2023	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS	ND	STATION		STANDARD ^U
		METHODS	(non-detectable)	MW-24	MW-25	
Total Petroleum Hydrocarbons						
- TPH (C ₇ - C ₉)	mg/l	5030 C / 8260 D	< 0.003	ND	ND	≤ 1.4
- Pentane						
- Benzene						
- Toluene						
- m,p-Xylene						
- o-Xylene						
- Ethylbenzene						
- TPH (C ₁₀ - C ₁₆)	mg/l	3510 C / 8015 D	< 0.025	ND	ND	≤ 1.7
- n-Nonane						
- n-Decane						
- n-Dodecane						
- n-Tetradecane						
- n-Hexadecane						
- TPH (C ₁₆ - C ₃₃)	mg/l	3510 C / 8015 D	< 0.050	ND	ND	≤ 0.1
- n-Octadecane						
- n-Eicosane						
- n-Docosane						
- n-Tetracosane						
- n-Hexacosane						
- n-Octacosane						
- n-Triacontane						
- n-Dotriacontane						
- n-Tetracontane						
- Pentatriacontane						

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 1st ED., 2020

Sudaporn S.
(Miss Sudaporn Soonthorn)
Analyst

REG. NO. 7-239-ก-0001

Araya Tipparuk
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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 1441/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 24/08/2023	SAMPLING TIME	: 15:26-16:05, 14:56-15:15
RECEIVED DATE	: 25/08/2023	ANALYTICAL DATE	: 29/08/2023-01/09/2023
REPORT DATE	: 07/09/2023	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^u
				MW-24	MW-25	
alpha-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
gamma-BHC	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
Heptachlor	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.01
Aldrin	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.003
beta-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.03
delta-BHC	mg/l	6630 B	< 0.000003	ND	ND	-
Heptachlor epoxide	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
o,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endosulfan I	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
gamma-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
alpha-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
p,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Dieldrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.003
o,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 1.0
o,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
p,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endosulfan II	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
p,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endrin aldehyde	mg/l	6630 B	< 0.000001	ND	ND	-
Endosulfan Sulfate	mg/l	6630 B	< 0.000003	ND	ND	-
Endrin ketone	mg/l	6630 B	< 0.000003	ND	ND	-

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23rd ED. 2017 (AWWA-APHA-WEF)

Sudaporn S.
(Miss Sudaporn Soonthorn)
Analyst

REG. NO. 7-239-ก-0001

Araya Tipparuk
(Mrs. Araya Tipparuk)
Technical Management Team

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1441/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 22, 24/08/2023	SAMPLING TIME	: 14:24-14:42, 15:07-15:30
RECEIVED DATE	: 26/08/2023	ANALYTICAL DATE	: 22, 24-31/08/2023
REPORT DATE	: 07/09/2023	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^u
				MW-26	MW-27	
pH	-	4500-H B	< 0.10	7.13	7.87	^u
Conductivity	µS/cm	2510 B	< 1.0	672	469	-
Salinity	ppt	2520 B	< 0.01	0.28	0.17	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0158	0.0038	≤ 0.1
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	ND	≤ 2.0
Lead (Pb)	mg/l	3120 B	< 0.008	ND	ND	≤ 4.0
Mercury (Hg)	mg/l	3112 B	< 0.0001	ND	ND	≤ 0.7
Nickel (Ni)	mg/l	3120 B	< 0.002	ND	ND	≤ 5.0

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (AWWA, APHA, WEF)

Khemchuda Inorn

(Miss Khemchuda Inorn)

Analyst

REG. NO. 2-239-n-0005

Araya Tipparuk

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Technical Management Team

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1441/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 22, 24/08/2023	SAMPLING TIME	: 14:24-14:42, 15:07-15:30
RECEIVED DATE	: 26/08/2023	ANALYTICAL DATE	: 28, 30-31/08/2023
REPORT DATE	: 07/09/2023	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^u
				MW-26	MW-27	
Naphthalene	mg/l	6440 C	< 0.00005	ND	ND	≤ 48
Benzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 0.2
Ethylbenzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 2.0
Toluene	mg/l	6200 B	< 0.0002	ND	ND	≤ 5.0
m-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
o-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
p-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
Total Xylenes	mg/l	6200 B	< 0.0006	ND	ND	≤ 24

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (AWWA, APHA, WEF)

Jutarat Jaemruen

(Miss Jutarat Jaemruen)

Analyst

REG. NO. 2-239-n-0022

Araya Tipparuk

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 2-239-n-0004

Remark : 1. Reported analysis refers to submitted sample only.

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3. ^u Notification of the Ministry of Industry, B.E.2559 (2016).



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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 1441/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 22, 24/08/2023	SAMPLING TIME	: 14:24-14:42, 15:07-15:30
RECEIVED DATE	: 26/08/2023	ANALYTICAL DATE	: 31/08/2023-02/09/2023
REPORT DATE	: 07/09/2023	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^U
				MW-26	MW-27	
Total Petroleum Hydrocarbons						
- TPH (C ₇ - C ₆)	mg/l	5030 C / 8260 D	< 0.003	ND	ND	≤ 1.4
- Pentane						
- Benzene						
- Toluene						
- m,p-Xylene						
- o-Xylene						
- Ethylbenzene						
- TPH (C ₉ - C ₁₄)	mg/l	3510 C / 8015 D	< 0.025	ND	ND	≤ 1.7
- n-Nonane						
- n-Decane						
- n-Dodecane						
- n-Tetradecane						
- n-Hexadecane						
- TPH (C ₁₆ - C ₃₃)	mg/l	3510 C / 8015 D	< 0.050	ND	ND	≤ 0.1
- n-Octadecane						
- n-Eicosane						
- n-Docosane						
- n-Tetracosane						
- n-Hexacosane						
- n-Octacosane						
- n-Triacontane						
- n-Dotriacontane						
- n-Tetracontane						
- Pentatriacontane						

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE 3rd ED. 2020.

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 7-239-0-0001

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-0-0004

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 1441/66
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REPORT DATE	: 07/09/2023	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^u
				MW-26	MW-27	
alpha-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
gamma-BHC	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
Heptachlor	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.01
Aldrin	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.003
beta-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.03
delta-BHC	mg/l	6630 B	< 0.000003	ND	ND	-
Heptachlor epoxide	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
o,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endosulfan I	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
gamma-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
alpha-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
p,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Dieldrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.003
o,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 1.0
o,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
p,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endosulfan II	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
p,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endrin aldehyde	mg/l	6630 B	< 0.000001	ND	ND	-
Endosulfan Sulfate	mg/l	6630 B	< 0.000003	ND	ND	-
Endrin ketone	mg/l	6630 B	< 0.000003	ND	ND	-

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (AWWA, APHA, WEF)

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 7-239-0-0001

Araya Tipparuk

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Technical Management Team

REG. NO. 7-239-0-0004

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1441/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 22, 24/08/2023	SAMPLING TIME	: 10:28-11:10, 15:44-16:20
RECEIVED DATE	: 26/08/2023	ANALYTICAL DATE	: 22, 24-31/08/2023
REPORT DATE	: 07/09/2023	SITE OPERATOR	: Mr. Jeerawat Khotamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^u
				MW-28	MW-29	
pH	-	4500-H B	< 0.10	8.04	7.29	u
Conductivity	μS/cm	2510 B	< 1.0	327	885	-
Salinity	ppt	2520 B	< 0.01	0.09	0.40	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0035	0.0008	≤ 0.1
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	ND	≤ 2.0
Lead (Pb)	mg/l	3120 B	< 0.008	ND	ND	≤ 4.0
Mercury (Hg)	mg/l	3112 B	< 0.0001	ND	ND	≤ 0.7
Nickel (Ni)	mg/l	3120 B	< 0.002	0.01	ND	≤ 5.0

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (AWWA APHA WEF)

Khemchuda Insorn

(Miss Khemchuda Insorn)

Analyst

REG. NO. 7-239-n-0005

NT

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-n-0004

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SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^u
				MW-28	MW-29	
Naphthalene	mg/l	6440 C	< 0.00005	ND	ND	≤ 48
Benzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 0.2
Ethylbenzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 2.0
Toluene	mg/l	6200 B	< 0.0002	ND	ND	≤ 5.0
m-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
o-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
p-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
Total Xylenes	mg/l	6200 B	< 0.0006	ND	ND	≤ 24

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (AWWA APHA WEF)

Jutarat Jaemruen

(Miss Jutarat Jaemruen)

Analyst

REG. NO. 7-239-n-0022

NT

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-n-0004

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GROUND WATER ANALYSIS REPORT

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SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^U
				MW-28	MW-29	
Total Petroleum Hydrocarbons						
- TPH (C ₃ - C ₉)	mg/l	5030 C / 8260 D	< 0.003	ND	0.077	≤ 1.4
- Pentane						
- Benzene						
- Toluene						
- m,p-Xylene						
- o-Xylene						
- Ethylbenzene						
- TPH (C ₉ - C ₁₆)	mg/l	3510 C / 8015 D	< 0.025	ND	0.027	≤ 1.7
- n-Nonane						
- n-Decane						
- n-Dodecane						
- n-Tetradecane						
- n-Hexadecane						
- TPH (C ₁₄ - C ₃₂)	mg/l	3510 C / 8015 D	< 0.050	ND	ND	≤ 0.1
- n-Octadecane						
- n-Eicosane						
- n-Docosane						
- n-Tetracosane						
- n-Hexacosane						
- n-Octacosane						
- n-Triacontane						
- n-Dotriacontane						
- n-Tetracontane						
- Pentatriacontane						

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3rd ED., 2020.

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 7-239-n-0001

MTL

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-n-0004

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GROUND WATER ANALYSIS REPORT

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SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
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REPORT DATE	: 07/09/2023	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^U
				MW-28	MW-29	
alpha-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
gamma-BHC	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
Heptachlor	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.01
Aldrin	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.003
beta-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.03
delta-BHC	mg/l	6630 B	< 0.000003	ND	ND	-
Heptachlor epoxide	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
o,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endosulfan I	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
gamma-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
alpha-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
p,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Diehdrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.003
o,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 1.0
o,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
p,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endosulfan II	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
p,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endrin aldehyde	mg/l	6630 B	< 0.000001	ND	ND	-
Endosulfan Sulfate	mg/l	6630 B	< 0.000003	ND	ND	-
Endrin ketone	mg/l	6630 B	< 0.000003	ND	ND	-

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (AWWA, APHA, WEF)

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 7-239-n-0001

MTL

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-n-0004

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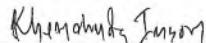
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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1441/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 23/08/2023	SAMPLING TIME	: 15:34-16:10, 10:13-10:30
RECEIVED DATE	: 26/08/2023	ANALYTICAL DATE	: 23, 26-31/08/2023
REPORT DATE	: 07/09/2023	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^u
				MW-30	MW-31	
pH	-	4500-H ⁺ B	< 0.10	7.78	7.00	^u
Conductivity	µS/cm	2510 B	< 1.0	383	1,075	-
Salinity	ppt	2520 B	< 0.01	0.12	0.51	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0090	0.0014	≤ 0.1
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	ND	≤ 2.0
Lead (Pb)	mg/l	3120 B	< 0.008	ND	ND	≤ 4.0
Mercury (Hg)	mg/l	3112 B	< 0.0001	ND	ND	≤ 0.7
Nickel (Ni)	mg/l	3120 B	< 0.002	ND	ND	≤ 5.0

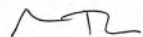
REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23rd ED. 2017 (AWWA, APHA, WEF)



(Miss Khemchuda Insorn)

Analyst

REG. NO. 7-239-8-0005



(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-8-0004

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3. ^u Notification of the Ministry of Industry, B.E.2559 (2016).

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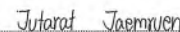
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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1441/66
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REPORT DATE	: 07/09/2023	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^u
				MW-30	MW-31	
Naphthalene	mg/l	6440 C	< 0.00005	ND	ND	≤ 48
Benzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 0.2
Ethylbenzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 2.0
Toluene	mg/l	6200 B	< 0.0002	ND	ND	≤ 5.0
m-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
o-Xylene	mg/l	6200 B	< 0.0002	ND	0.0003	≤ 24
p-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
Total Xylenes	mg/l	6200 B	< 0.0006	ND	ND	≤ 24

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23rd ED. 2017 (AWWA, APHA, WEF)



(Miss Jutarat Jaemruen)

Analyst

REG. NO. 7-239-8-0022



(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-8-0004

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3. ^u Notification of the Ministry of Industry, B.E.2559 (2016).



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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 1441/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 23/08/2023	SAMPLING TIME	: 15:34-16:10, 10:13-10:30
RECEIVED DATE	: 26/08/2023	ANALYTICAL DATE	: 31/08/2023-02/09/2023
REPORT DATE	: 07/09/2023	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^u
				MW-30	MW-31	
Total Petroleum Hydrocarbons						
- TPH (C ₅ - C ₆)	mg/l	5030 C / 8260 D	< 0.003	ND	0.027	≤ 1.4
- Pentane						
- Benzene						
- Toluene						
- m,p-Xylene						
- o-Xylene						
- Ethylbenzene						
- TPH (C ₉ - C ₁₆)	mg/l	3510 C / 8015 D	< 0.025	ND	ND	≤ 1.7
- n-Nonane						
- n-Decane						
- n-Dodecane						
- n-Tetradecane						
- n-Hexadecane						
- TPH (C ₁₈ - C ₃₅)	mg/l	3510 C / 8015 D	< 0.050	ND	ND	≤ 0.1
- n-Octadecane						
- n-Eicosane						
- n-Docosane						
- n-Tetracosane						
- n-Hexacosane						
- n-Octacosane						
- n-Triacontane						
- n-Dotriacontane						
- n-Tetracontane						
- Pentatriacontane						

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3rd ED., 2020.

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 7-239-9-0001

NT

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-9-0004

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 1441/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 23/08/2023	SAMPLING TIME	: 15:34-16:10, 10:13-10:30
RECEIVED DATE	: 26/08/2023	ANALYTICAL DATE	: 29/08/2023-01/09/2023
REPORT DATE	: 07/09/2023	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^u
				MW-30	MW-31	
alpha-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
gamma-BHC	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
Heptachlor	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.01
Aldrin	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.003
beta-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.03
delta-BHC	mg/l	6630 B	< 0.000003	ND	ND	-
Heptachlor epoxide	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
o,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endosulfan I	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
gamma-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
alpha-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
p,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Dieldrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.003
o,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 1.0
o,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
p,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endosulfan II	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
p,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endrin aldehyde	mg/l	6630 B	< 0.000001	ND	ND	-
Endosulfan Sulfate	mg/l	6630 B	< 0.000003	ND	ND	-
Endrin ketone	mg/l	6630 B	< 0.000003	ND	ND	-

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. (AWWA APHA WEI)

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 7-239-9-0001

NT

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-9-0004

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1441/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 23-24/08/2023	SAMPLING TIME	: 14:57-15:15, 09:53-10:10
RECEIVED DATE	: 26/08/2023	ANALYTICAL DATE	: 23-24, 26-31/08/2023
REPORT DATE	: 07/09/2023	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^U
				MW-32	MW-33	
pH	-	4500-H ⁺ B	< 0.10	8.03	7.84	U
Conductivity	µS/cm	2510 B	< 1.0	722	518	-
Salinity	ppt	2520 B	< 0.01	0.31	0.20	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0066	0.0048	≤ 0.1
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	ND	≤ 2.0
Lead (Pb)	mg/l	3120 B	< 0.008	ND	ND	≤ 4.0
Mercury (Hg)	mg/l	3112 B	< 0.0001	ND	ND	≤ 0.7
Nickel (Ni)	mg/l	3120 B	< 0.002	ND	ND	≤ 5.0

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (APHA, APTA, WEF)

Khemchuda Insorn

(Miss Khemchuda Insorn)

Analyst

REG. NO. 7-239-ก-0005

Araya Tipparuk

(Mrs. Araya Tipparuk)

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REPORT DATE	: 07/09/2023	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^U
				MW-32	MW-33	
Naphthalene	mg/l	6440 C	< 0.00005	ND	ND	≤ 48
Benzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 0.2
Ethylbenzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 2.0
Toluene	mg/l	6200 B	< 0.0002	ND	ND	≤ 5.0
m-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
o-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
p-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
Total Xylenes	mg/l	6200 B	< 0.0006	ND	ND	≤ 24

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (APHA, APTA, WEF)

Jutarat Jaemruen

(Miss Jutarat Jaemruen)

Analyst

REG. NO. 7-239-ก-0022

Araya Tipparuk

(Mrs. Araya Tipparuk)

Technical Management Team

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GROUND WATER ANALYSIS REPORT

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REPORT DATE	: 07/09/2023	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS	ND	STATION		STANDARD ^U
		METHODS	(non-detectable)	MW-32	MW-33	
Total Petroleum Hydrocarbons						
- TPH (C ₇ - C ₉)	mg/l	5030 C / 8260 D	< 0.003	ND	ND	≤ 1.4
- Pentane						
- Benzene						
- Toluene						
- m,p-Xylene						
- o-Xylene						
- Ethylbenzene						
- TPH (C ₁₀ - C ₁₆)	mg/l	3510 C / 8015 D	< 0.025	ND	ND	≤ 1.7
- n-Nonane						
- n-Decane						
- n-Dodecane						
- n-Tetradecane						
- n-Hexadecane						
- TPH (C ₁₆ - C ₃₅)	mg/l	3510 C / 8015 D	< 0.050	ND	ND	≤ 0.1
- n-Octadecane						
- n-Eicosane						
- n-Docosane						
- n-Tetracosane						
- n-Hexacosane						
- n-Octacosane						
- n-Triacontane						
- n-Dotriacontane						
- n-Tetracontane						
- Pentatriacontane						

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE 3rd ED. 2020.

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 7-239-9-0001

Mrs. Araya Tippiarak

Technical Management Team

REG. NO. 7-239-9-0004

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SAMPLING DATE	: 23-24/08/2023	SAMPLING TIME	: 14:57-15:15, 09:53-10:10
RECEIVED DATE	: 26/08/2023	ANALYTICAL DATE	: 29/08/2023-01/09/2023
REPORT DATE	: 07/09/2023	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^U
				MW-32	MW-33	
alpha-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
gamma-BHC	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
Heptachlor	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.01
Aldrin	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.003
beta-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.03
delta-BHC	mg/l	6630 B	< 0.000003	ND	ND	-
Heptachlor epoxide	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
o,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endosulfan I	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
gamma-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
alpha-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
p,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Dieldrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.003
o,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 1.0
o,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
p,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endosulfan II	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
p,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endrin aldehyde	mg/l	6630 B	< 0.000001	ND	ND	-
Endosulfan Sulfate	mg/l	6630 B	< 0.000003	ND	ND	-
Endrin ketone	mg/l	6630 B	< 0.000003	ND	ND	-

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23rd ED. 2017 (AWWA APHA WEF)

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 7-239-9-0001

Mrs. Araya Tippiarak

(Mrs. Araya Tippiarak)

Technical Management Team

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GROUND WATER ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical PCL, Branch 6 (Refinery) REQUEST SERVICE No. : 1441/66
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Pneumatic Bladder Pump
SAMPLING DATE : 23, 25/08/2023 SAMPLING TIME : 14:26-14:42, 10:47-11:20
RECEIVED DATE : 26/08/2023 ANALYTICAL DATE : 23, 25-31/08/2024
REPORT DATE : 07/09/2023 SITE OPERATOR : Mr. Jeerawat Khothamhan
SAMPLE CONDITION : Normal FILE CODE : 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^{1/}
				MW-34	MW-35	
pH	-	4500-H ⁺ B	< 0.10	7.53	7.72	1/
Conductivity	µS/cm	2510 B	< 1.0	542	325	-
Salinity	ppt	2520 B	< 0.01	0.21	0.09	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0046	0.0063	≤ 0.1
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	ND	≤ 2.0
Lead (Pb)	mg/l	3120 B	< 0.008	ND	ND	≤ 4.0
Mercury (Hg)	mg/l	3112 B	< 0.0001	ND	ND	≤ 0.7
Nickel (Ni)	mg/l	3120 B	< 0.002	ND	ND	≤ 5.0

REFERENCE: STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (AWWA.APHA.WEF)

Khemchuda Insom

(Miss Khemchuda Insom)

Analyst

REG. NO. 7-239-ก-0005

Araya Tipparuk

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Technical Management Team

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REPORT DATE : 07/09/2023 SITE OPERATOR : Mr. Jeerawat Khothamhan
SAMPLE CONDITION : Normal FILE CODE : 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^{1/}
				MW-34	MW-35	
Naphthalene	mg/l	6440 C	< 0.00005	ND	ND	≤ 48
Benzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 0.2
Ethylbenzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 2.0
Toluene	mg/l	6200 B	< 0.0002	ND	ND	≤ 5.0
m-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
o-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
p-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
Total Xylenes	mg/l	6200 B	< 0.0006	ND	ND	≤ 24

REFERENCE: STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (AWWA.APHA.WEF)

Jutarat Jaemruen

(Miss Jutarat Jaemruen)

Analyst

REG. NO. 7-239-ก-0022

Araya Tipparuk

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Technical Management Team

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SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS	ND	STATION		STANDARD ^U
		METHODS	(non-detectable)	MW-34	MW-35	
Total Petroleum Hydrocarbons						
- TPH (C ₁ - C ₄)	mg/l	5030 C / 8260 D	< 0.003	ND	ND	≤ 1.4
- Pentane						
- Benzene						
- Toluene						
- m,p-Xylene						
- o-Xylene						
- Ethylbenzene						
- TPH (C ₁₁ - C ₁₆)	mg/l	3510 C / 8015 D	< 0.025	ND	ND	≤ 1.7
- n-Nonane						
- n-Decane						
- n-Dodecane						
- n-Tetradecane						
- n-Hexadecane						
- TPH (C ₁₇ - C ₂₁)	mg/l	3510 C / 8015 D	< 0.050	ND	ND	≤ 0.1
- n-Octadecane						
- n-Eicosane						
- n-Docosane						
- n-Tetracosane						
- n-Hexacosane						
- n-Octacosane						
- n-Triacontane						
- n-Dotriacontane						
- n-Tetatriacontane						
- Pentatriacontane						

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE 3rd ED., 2020.

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 7-239-0-0001

Araya T.

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-0-0004

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3. ^U Notification of the Ministry of Industry, B.E.2559 (2016).



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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 1441/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 23, 25/08/2023	SAMPLING TIME	: 14:26-14:42, 10:47-11:20
RECEIVED DATE	: 26/08/2023	ANALYTICAL DATE	: 29/08/2023-01/09/2023
REPORT DATE	: 07/09/2023	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^U
				MW-34	MW-35	
alpha-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
gamma-BHC	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
Heptachlor	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.01
Aldrin	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.003
beta-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.03
delta-BHC	mg/l	6630 B	< 0.000003	ND	ND	-
Heptachlor epoxide	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
o,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endosulfan I	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
gamma-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
alpha-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
p,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Dieldrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.003
o,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 1.0
o,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
p,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endosulfan II	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
p,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endrin aldehyde	mg/l	6630 B	< 0.000001	ND	ND	-
Endosulfan Sulfate	mg/l	6630 B	< 0.000003	ND	ND	-
Endrin ketone	mg/l	6630 B	< 0.000003	ND	ND	-

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED., 2017 (WWW.APHA.WEB)

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 7-239-0-0001

Araya T.

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GROUND WATER ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical PCL, Branch 6 (Refinery) REQUEST SERVICE No. : 1482/66
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Pneumatic Bladder Pump
SAMPLING DATE : 31/08/2023 SAMPLING TIME : 14:36-14:59, 15:24-16:12
RECEIVED DATE : 01/09/2023 ANALYTICAL DATE : 31/08/2023, 01-06/09/2023
REPORT DATE : 12/09/2023 SITE OPERATOR : Mr. Jeerawat Khothamhan
SAMPLE CONDITION : Normal FILE CODE : 223010_GW_September

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^u
				MW-36	MW-37	
pH	-	4500-H ⁺ B	< 0.10	6.83	7.06	^u
Conductivity	µS/cm	2510 B	< 1.0	1,633	2,506	-
Salinity	ppt	2520 B	< 0.01	0.79	1.25	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0402	0.0493	≤ 0.1
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	ND	≤ 2.0
Lead (Pb)	mg/l	3120 B	< 0.008	ND	ND	≤ 4.0
Mercury (Hg)	mg/l	3112 B	< 0.0001	ND	ND	≤ 0.7
Nickel (Ni)	mg/l	3120 B	< 0.002	ND	ND	≤ 5.0

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (AWWA, APHA, WEF)

(Miss Khemchuda Inorn)
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GROUND WATER ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical PCL, Branch 6 (Refinery) REQUEST SERVICE No. : 1482/66
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Pneumatic Bladder Pump
SAMPLING DATE : 31/08/2023 SAMPLING TIME : 14:36-14:59, 15:24-16:12
RECEIVED DATE : 01/09/2023 ANALYTICAL DATE : 02, 04-06/09/2023
REPORT DATE : 12/09/2023 SITE OPERATOR : Mr. Jeerawat Khothamhan
SAMPLE CONDITION : Normal FILE CODE : 223010_GW_September

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^u
				MW-36	MW-37	
Naphthalene	mg/l	6440 C	< 0.00005	ND	ND	≤ 48
Benzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 0.2
Ethylbenzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 2.0
Toluene	mg/l	6200 B	< 0.0002	ND	ND	≤ 5.0
m-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
o-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
p-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
Total Xylenes	mg/l	6200 B	< 0.0006	ND	ND	≤ 24

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (AWWA, APHA, WEF)

(Miss Jutarat Jaemruen)
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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 1482/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 31/08/2023	SAMPLING TIME	: 14:36-14:59, 15:24-16:12
RECEIVED DATE	: 01/09/2023	ANALYTICAL DATE	: 02, 04-06/09/2023
REPORT DATE	: 12/09/2023	SITE OPERATOR	: Mr. Jeerawat Khotamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_September

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^U
				MW-36	MW-37	
Total Petroleum Hydrocarbons						
- TPH (C ₃ - C ₉)	mg/l	5030 C / 8260 D	< 0.003	ND	ND	≤ 1.4
- Pentane						
- Benzene						
- Toluene						
- m,p-Xylene						
- o-Xylene						
- Ethylbenzene						
- TPH (C ₉ - C ₁₆)	mg/l	3510 C / 8015 D	< 0.025	ND	ND	≤ 1.7
- n-Nonane						
- n-Decane						
- n-Dodecane						
- n-Tetradecane						
- n-Hexadecane						
- TPH (C ₁₆ - C ₃₃)	mg/l	3510 C / 8015 D	< 0.050	ND	ND	≤ 0.1
- n-Octadecane						
- n-Eicosane						
- n-Docosane						
- n-Tetracosane						
- n-Hexacosane						
- n-Octacosane						
- n-Triacontane						
- n-Dotriacontane						
- n-Tetratriacontane						
- Pentatriacontane						

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE 3rd ED. 2020.

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 7-239-ก-0001

Araya Tipparuk

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 1482/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 31/08/2023	SAMPLING TIME	: 14:36-14:59, 15:24-16:12
RECEIVED DATE	: 01/09/2023	ANALYTICAL DATE	: 06-08/09/2023
REPORT DATE	: 12/09/2023	SITE OPERATOR	: Mr. Jeerawat Khotamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_September

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^U
				MW-36	MW-37	
alpha-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
gamma-BHC	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
Heptachlor	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.01
Aldrin	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.003
beta-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.03
delta-BHC	mg/l	6630 B	< 0.000003	ND	ND	-
Heptachlor epoxide	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
o,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endosulfan I	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
gamma-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
alpha-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
p,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Dieldrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.003
o,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 1.0
o,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
p,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endosulfan II	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
p,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endrin aldehyde	mg/l	6630 B	< 0.000001	ND	ND	-
Endosulfan Sulfate	mg/l	6630 B	< 0.000003	ND	ND	-
Endrin ketone	mg/l	6630 B	< 0.000003	ND	ND	-

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (AWWA, APHA, WEF)

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 7-239-ก-0001

Araya Tipparuk

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GROUND WATER ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical PCL, Branch 6 (Refinery) REQUEST SERVICE No. : 1482/66
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Pneumatic Bladder Pump
SAMPLING DATE : 31/08/2023 SAMPLING TIME : 14:08-14:25, 09:59-10:17
RECEIVED DATE : 01/09/2023 ANALYTICAL DATE : 31/08/2023, 01-06/09/2023
REPORT DATE : 12/09/2023 SITE OPERATOR : Mr. Jeerawat Khothamhan
SAMPLE CONDITION : Normal FILE CODE : 223010_GW_September

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^u
				MW-38	MW-39	
pH	-	4500-H B	< 0.10	6.50	6.87	u
Conductivity	µS/cm	2510 B	< 1.0	2.561	3.475	-
Salinity	ppt	2520 B	< 0.01	1.28	1.76	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0868	0.0152	≤ 0.1
Cadmium (Cd)	mg/l	3120 B	< 0.001	< 0.01	ND	≤ 2.0
Lead (Pb)	mg/l	3120 B	< 0.008	ND	ND	≤ 4.0
Mercury (Hg)	mg/l	3112 B	< 0.0001	ND	ND	≤ 0.7
Nickel (Ni)	mg/l	3120 B	< 0.002	< 0.01	ND	≤ 5.0

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23rd ED. 2017 (AWWA.APHA.WEF)

Khemchuda Insorn

(Miss Khemchuda Insorn)

Analyst

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GROUND WATER ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical PCL, Branch 6 (Refinery) REQUEST SERVICE No. : 1482/66
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Pneumatic Bladder Pump
SAMPLING DATE : 31/08/2023 SAMPLING TIME : 14:08-14:25, 09:59-10:17
RECEIVED DATE : 01/09/2023 ANALYTICAL DATE : 02, 04-06/09/2023
REPORT DATE : 12/09/2023 SITE OPERATOR : Mr. Jeerawat Khothamhan
SAMPLE CONDITION : Normal FILE CODE : 223010_GW_September

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^u
				MW-38	MW-39	
Naphthalene	mg/l	6440 C	< 0.00005	ND	ND	≤ 48
Benzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 0.2
Ethylbenzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 2.0
Toluene	mg/l	6200 B	< 0.0002	ND	ND	≤ 5.0
m-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
o-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
p-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
Total Xylenes	mg/l	6200 B	< 0.0006	ND	ND	≤ 24

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23rd ED. 2017 (AWWA.APHA.WEF)

Jutarat Jaermuen

(Miss Jutarat Jaermuen)

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REG. NO. 2-239-n-0022

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 1482/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 31/08/2023	SAMPLING TIME	: 14:08-14:25, 09:59-10:17
RECEIVED DATE	: 01/09/2023	ANALYTICAL DATE	: 02, 04-06/09/2023
REPORT DATE	: 12/09/2023	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_September

PARAMETER	UNIT	ANALYSIS	ND	STATION		STANDARD ^{1/}
		METHODS	(non-detectable)	MW-38	MW-39	
Total Petroleum Hydrocarbons						
- TPH (C ₁ - C ₉)	mg/l	5030 C / 8260 D	< 0.003	ND	ND	≤ 1.4
- Pentane						
- Benzene						
- Toluene						
- m,p-Xylene						
- o-Xylene						
- Ethylbenzene						
- TPH (C ₁₀ - C ₁₆)	mg/l	3510 C / 8015 D	< 0.025	ND	ND	≤ 1.7
- n-Nonane						
- n-Decane						
- n-Dodecane						
- n-Tetradecane						
- n-Hexadecane						
- TPH (C ₁₇ - C ₂₅)	mg/l	3510 C / 8015 D	< 0.050	ND	ND	≤ 0.1
- n-Octadecane						
- n-Eicosane						
- n-Docosane						
- n-Tetracosane						
- n-Hexacosane						
- n-Octacosane						
- n-Triacontane						
- n-Dotriacontane						
- n-Tetracontane						
- n-Pentacontane						

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 1st ED., 2020.

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 2-239-0-0001

MR

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 1482/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 31/08/2023	SAMPLING TIME	: 14:08-14:25, 09:59-10:17
RECEIVED DATE	: 01/09/2023	ANALYTICAL DATE	: 06-08/09/2023
REPORT DATE	: 12/09/2023	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_September

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^{1/}
				MW-38	MW-39	
alpha-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
gamma-BHC	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
Heptachlor	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.01
Aldrin	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.003
beta-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.03
delta-BHC	mg/l	6630 B	< 0.000003	ND	ND	-
Heptachlor epoxide	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
o,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endosulfan I	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
gamma-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
alpha-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
p,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Dieldrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.003
o,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 1.0
o,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
p,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endosulfan II	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
p,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endrin aldehyde	mg/l	6630 B	< 0.000001	ND	ND	-
Endosulfan Sulfate	mg/l	6630 B	< 0.000003	ND	ND	-
Endrin ketone	mg/l	6630 B	< 0.000003	ND	ND	-

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (AWWA, APHA, WEF)

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 2-239-0-0001

MR

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 2-239-n-0004

- Remark : 1. Reported analysis refers to submitted sample only.
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3. ^{1/} Notification of the Ministry of Industry, B.E.2559 (2016).
4. - Not available.



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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1482/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 31/08/2023	SAMPLING TIME	: 10:37-11:15
RECEIVED DATE	: 01/09/2023	ANALYTICAL DATE	: 31/08/2023, 01-06/09/2023
REPORT DATE	: 12/09/2023	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_September

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-40	STANDARD ^u
pH	-	4500-H ⁺ B	< 0.10	7.04	u
Conductivity	µS/cm	2510 B	< 1.0	1,439	-
Salinity	ppt	2520 B	< 0.01	0.68	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0271	≤ 0.1
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	≤ 2.0
Lead (Pb)	mg/l	3120 B	< 0.008	ND	≤ 4.0
Mercury (Hg)	mg/l	3112 B	< 0.0001	ND	≤ 0.7
Nickel (Ni)	mg/l	3120 B	< 0.002	< 0.01	≤ 5.0

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (AWWA, APHA, WEF)

Khemchuda Insorn

(Miss Khemchuda Insorn)

Analyst

REG. NO. 7-239-ก-0005

(Mrs. Araya Tipparuk)

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-ก-0004

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1482/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 31/08/2023	SAMPLING TIME	: 10:37-11:15
RECEIVED DATE	: 01/09/2023	ANALYTICAL DATE	: 02, 04-06/09/2023
REPORT DATE	: 12/09/2023	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_September

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-40	STANDARD ^u
Naphthalene	mg/l	6440 C	< 0.00005	ND	≤ 48
Benzene	mg/l	6200 B	< 0.0002	ND	≤ 0.2
Ethylbenzene	mg/l	6200 B	< 0.0002	ND	≤ 2.0
Toluene	mg/l	6200 B	< 0.0002	ND	≤ 5.0
m-Xylene	mg/l	6200 B	< 0.0002	ND	≤ 24
o-Xylene	mg/l	6200 B	< 0.0002	ND	≤ 24
p-Xylene	mg/l	6200 B	< 0.0002	ND	≤ 24
Total Xylenes	mg/l	6200 B	< 0.0006	ND	≤ 24

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (AWWA, APHA, WEF)

Jutarat Jaemruen

(Miss Jutarat Jaemruen)

Analyst

REG. NO. 7-239-ก-0022

(Mrs. Araya Tipparuk)

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-ก-0004

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 1482/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 31/08/2023	SAMPLING TIME	: 10:37-11:15
RECEIVED DATE	: 01/09/2023	ANALYTICAL DATE	: 02, 04-06/09/2023
REPORT DATE	: 12/09/2023	SITE OPERATOR	: Mr. Jeerawat Khotamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_September

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-40	STANDARD ^U
Total Petroleum Hydrocarbons					
- TPH (C ₅ - C ₆)	mg/l	5030 C / 8260 D	< 0.003	ND	≤ 1.4
- Pentane					
- Benzene					
- Toluene					
- m,p-Xylene					
- o-Xylene					
- Ethylbenzene					
- TPH (C ₇₋₁₄ - C ₁₆)	mg/l	3510 C / 8015 D	< 0.025	ND	≤ 1.7
- n-Nonane					
- n-Decane					
- n-Dodecane					
- n-Tetradecane					
- n-Hexadecane					
- TPH (C ₁₆ - C ₂₅)	mg/l	3510 C / 8015 D	< 0.050	ND	≤ 0.1
- n-Octadecane					
- n-Eicosane					
- n-Docosane					
- n-Tetracosane					
- n-Hexacosane					
- n-Octacosane					
- n-Triacontane					
- n-Dotriacontane					
- n-Tetracontane					
- Pentatriacontane					

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE 1st ED. 2020.

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 7-239-9-0001

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-9-0004

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 1482/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 31/08/2023	SAMPLING TIME	: 10:37-11:15
RECEIVED DATE	: 01/09/2023	ANALYTICAL DATE	: 06-08/09/2023
REPORT DATE	: 12/09/2023	SITE OPERATOR	: Mr. Jeerawat Khotamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_September

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-40	STANDARD ^U
alpha-BHC	mg/l	6630 B	< 0.000001	ND	≤ 0.01
gamma-BHC	mg/l	6630 B	< 0.000003	ND	≤ 0.04
Heptachlor	mg/l	6630 B	< 0.000003	ND	≤ 0.01
Aldrin	mg/l	6630 B	< 0.000001	ND	≤ 0.003
beta-BHC	mg/l	6630 B	< 0.000001	ND	≤ 0.03
delta-BHC	mg/l	6630 B	< 0.000003	ND	-
Heptachlor epoxide	mg/l	6630 B	< 0.000001	ND	≤ 0.01
o,p'-DDE	mg/l	6630 B	< 0.000003	ND	≤ 0.1
Endosulfan I	mg/l	6630 B	< 0.000003	ND	≤ 14
gamma-Chlordane	mg/l	6630 B	< 0.000003	ND	≤ 0.04
alpha-Chlordane	mg/l	6630 B	< 0.000003	ND	≤ 0.04
p,p'-DDE	mg/l	6630 B	< 0.000003	ND	≤ 0.1
Dieldrin	mg/l	6630 B	< 0.000003	ND	≤ 0.003
o,p'-DDD	mg/l	6630 B	< 0.000003	ND	≤ 0.2
Endrin	mg/l	6630 B	< 0.000003	ND	≤ 1.0
o,p'-DDT	mg/l	6630 B	< 0.000003	ND	≤ 0.1
p,p'-DDD	mg/l	6630 B	< 0.000003	ND	≤ 0.2
Endosulfan II	mg/l	6630 B	< 0.000003	ND	≤ 14
p,p'-DDT	mg/l	6630 B	< 0.000003	ND	≤ 0.1
Endrin aldehyde	mg/l	6630 B	< 0.000001	ND	-
Endosulfan Sulfate	mg/l	6630 B	< 0.000003	ND	-
Endrin ketone	mg/l	6630 B	< 0.000003	ND	-

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23rd ED. 2017 (AWWA, APHA, WEF)

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 7-239-9-0001

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-9-0004

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1498/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 01/09/2023	SAMPLING TIME	: 10:08-10:42, 09:35-09:55
RECEIVED DATE	: 02/09/2023	ANALYTICAL DATE	: 01, 02-12/09/2023
REPORT DATE	: 14/09/2023	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_September

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^U
				MW-41	MW-42	
pH	-	4500-H ¹ B	< 0.10	7.17	7.34	U
Conductivity	μS/cm	2510 B	< 1.0	3,105	32,750	-
Salinity	ppt	2520 B	< 0.01	1.56	19.65	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0152	0.0039	≤ 0.1
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	ND	≤ 2.0
Lead (Pb)	mg/l	3120 B	< 0.008	ND	ND	≤ 4.0
Mercury (Hg)	mg/l	3112 B	< 0.0001	ND	ND	≤ 0.7
Nickel (Ni)	mg/l	3120 B	< 0.002	ND	ND	≤ 5.0

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (AWWA, APHA, WEF)

Khemchuda Insorn

(Miss Khemchuda Insorn)

Analyst

REG. NO. 7-239-n-0005

Araya Tipparak

(Mrs. Araya Tipparak)

Technical Management Team

REG. NO. 7-239-n-0004

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1498/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 01/09/2023	SAMPLING TIME	: 10:08-10:42, 09:35-09:55
RECEIVED DATE	: 02/09/2023	ANALYTICAL DATE	: 04.05-06/09/2023
REPORT DATE	: 14/09/2023	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_September

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^U
				MW-41	MW-42	
Naphthalene	mg/l	6440 C	< 0.00005	ND	ND	≤ 48
Benzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 0.2
Ethylbenzene	mg/l	6200 B	< 0.0002	ND	ND	≤ 2.0
Toluene	mg/l	6200 B	< 0.0002	ND	ND	≤ 5.0
m-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
o-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
p-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
Total Xylenes	mg/l	6200 B	< 0.0006	ND	ND	≤ 24

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (AWWA, APHA, WEF)

Jutarat Jaemruen

(Miss Jutarat Jaemruen)

Analyst

REG. NO. 7-239-n-0022

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 1498/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 01/09/2023	SAMPLING TIME	: 10:08-10:42, 09:35-09:55
RECEIVED DATE	: 02/09/2023	ANALYTICAL DATE	: 04-06/09/2023
REPORT DATE	: 14/09/2023	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_September

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^{1/}
				MW-41	MW-42	
Total Petroleum Hydrocarbons						
- TPH (C ₃ - C ₉)	mg/l	5030 C / 8260 D	< 0.003	ND	ND	≤ 1.4
- Pentane						
- Benzene						
- Toluene						
- m,p-Xylene						
- o-Xylene						
- Ethylbenzene						
- TPH (C ₁₀ - C ₁₆)	mg/l	3510 C / 8015 D	< 0.025	ND	ND	≤ 1.7
- n-Nonane						
- n-Decane						
- n-Dodecane						
- n-Tetradecane						
- n-Hexadecane						
- TPH (C ₁₆ - C ₃₃)	mg/l	3510 C / 8015 D	< 0.050	ND	ND	≤ 0.1
- n-Octadecane						
- n-Eicosane						
- n-Docosane						
- n-Tetracosane						
- n-Hexacosane						
- n-Octacosane						
- n-Triacontane						
- n-Dotriacontane						
- n-Tetracontane						
- Pentatriacontane						

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3rd ED., 2020.

Sudaporn S.
(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 7-239-0-0001

(Mrs. Araya Tipparuk)

Technical Management Team

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TEL. (662) 959-3600 FAX (662) 959-3535 Website : secot.co.th E-mail : envserv@secot.co.th

GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 1498/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 01/09/2023	SAMPLING TIME	: 10:08-10:42, 09:35-09:55
RECEIVED DATE	: 02/09/2023	ANALYTICAL DATE	: 06-08/09/2023
REPORT DATE	: 14/09/2023	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_GW_September

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^{1/}
				MW-41	MW-42	
alpha-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
gamma-BHC	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
Heptachlor	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.01
Aldrin	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.003
beta-BHC	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.03
delta-BHC	mg/l	6630 B	< 0.000003	ND	ND	-
Heptachlor epoxide	mg/l	6630 B	< 0.000001	ND	ND	≤ 0.01
o,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endosulfan I	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
gamma-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
alpha-Chlordane	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.04
p,p'-DDE	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Dieldrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.003
o,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endrin	mg/l	6630 B	< 0.000003	ND	ND	≤ 1.0
o,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
p,p'-DDD	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.2
Endosulfan II	mg/l	6630 B	< 0.000003	ND	ND	≤ 14
p,p'-DDT	mg/l	6630 B	< 0.000003	ND	ND	≤ 0.1
Endrin aldehyde	mg/l	6630 B	< 0.000001	ND	ND	-
Endosulfan Sulfate	mg/l	6630 B	< 0.000003	ND	ND	-
Endrin ketone	mg/l	6630 B	< 0.000003	ND	ND	-

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23rd ED. 2017 (AWWA, APHA, WEF)

Sudaporn S.
(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 7-239-0-0001

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-0-0004

Remark : 1. Reported analysis refers to submitted sample only.

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3. ^{1/} Notification of the Ministry of Industry, B.E.2559 (2016).

4. - Not available.

คุณภาพดิน



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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 0663/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger
SAMPLING DATE	: 28/04/2023	SAMPLING TIME	: 11:30-11:50
RECEIVED DATE	: 02/05/2023	ANALYTICAL DATE	: 02-05/05/2023
REPORT DATE	: 15/05/2023	SITE OPERATOR	: Mr. Aniwat Pimwanna
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_Soil_May

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD ^U
				MW 1	
pH	-	4500-H B	-	8.93	-
Conductivity	dS/m	EC25 (1:5) / Electrical Conductivity	-	0.075	-
Salinity	ppt	EC25 (1:5) / Electrical Conductivity	-	0.0	-
Arsenic (As)	mg/kg	3050 B/6010 D	< 2.00	11.84	≤ 27
Cadmium (Cd)	mg/kg	3050 B/6010 D	< 1.00	ND	≤ 810
Lead (Pb)	mg/kg	3050 B/6010 D	< 3.00	19.23	≤ 750
Mercury (Hg)	mg/kg	7471B	< 0.05	ND	≤ 610
Nickel (Ni)	mg/kg	3050 B/6010 D	< 1.00	7.40	≤ 41,000

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3rd ED., 2020

Khemchuda Insorn

(Miss Khemchuda Insorn)

Analyst

REG. NO. 2-239-ก-5976

Araya Tipparuk

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 2-239-ก-5863

- Remark :**
1. Reported analysis refers to submitted sample only.
 2. This report shall not be reproduced, except in full, without official approval.
 3. ^U Notification of the Ministry of Industry, B.E.2559 (2016).
 4. Reference method : Operation Manual Chemical Analysis in Soil. Land Development Department.
 5. - Not available.



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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 0663/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger
SAMPLING DATE	: 28/04/2023	SAMPLING TIME	: 11:30-11:50
RECEIVED DATE	: 02/05/2023	ANALYTICAL DATE	: 03-06, 08/05/2023
REPORT DATE	: 15/05/2023	SITE OPERATOR	: Mr. Aniwat Pimwanna
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_Soil_May

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD ^U
				MW 1	
Naphthalene	mg/kg	3540 C / 8270 E	< 0.005	ND	≤ 1,000
Benzene	mg/kg	5035 A / 8260 D	< 0.00025	ND	≤ 15
Ethylbenzene	mg/kg	5035 A / 8260 D	< 0.00025	ND	≤ 230
Toluene	mg/kg	5035 A / 8260 D	< 0.00025	ND	≤ 520
m-Xylene	mg/kg	5035 A / 8260 D	< 0.00025	ND	≤ 210
o-Xylene	mg/kg	5035 A / 8260 D	< 0.00025	ND	≤ 210
p-Xylene	mg/kg	5035 A / 8260 D	< 0.00025	ND	≤ 210
Total Xylenes	mg/kg	5035 A / 8260 D	< 0.00075	ND	≤ 210

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3rd ED., 2020

Jutarat Jaemruen

(Miss Jutarat Jaemruen)

Analyst

REG. NO. 2-239-ก-5827

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Technical Management Team

REG. NO. 2-239-ก-5863

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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical PCL, Branch 6 (Refinery) REQUEST SERVICE No : 0663/66
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Hand Auger
SAMPLING DATE : 28/04/2023 SAMPLING TIME : 11:30-11:50
RECEIVED DATE : 02/05/2023 ANALYTICAL DATE : 05, 09-11/05/2023
REPORT DATE : 15/05/2023 SITE OPERATOR : Mr. Aniwat Pimwanna
SAMPLE CONDITION : Normal FILE CODE : 223010_Soil_May

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW 1	STANDARD ¹⁾
Total Petroleum Hydrocarbon					
- TPH (C ₅ - C ₉)	mg/kg	5035 A / 8260 D	< 0.003	ND	≤ 25
- Pentane					
- Benzene					
- Toluene					
- m,p-Xylene					
- o-Xylene					
- Ethylbenzene					
- TPH (C ₁₀ - C ₁₆)	mg/kg	3540 C / 8015 D	< 0.25	ND	≤ 25
- n-Nonane					
- n-Decane					
- n-Dodecane					
- n-Tetradecane					
- n-Hexadecane					
- TPH (C ₁₆ - C ₃₅)	mg/kg	3540 C / 8015 D	< 1.85	ND	≤ 8
- n-Octadecane					
- n-Eicosane					
- n-Docosane					
- n-Tetracosane					
- n-Hexacosane					
- n-Octacosane					
- n-Triacontane					
- n-Dotriacontane					
- n-Tetracontane					
- Pentacontane					

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE 3rd ED., 2020

Sudaporn Soonthorn

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 7-239-9-0001

MR

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Technical Management Team

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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical PCL, Branch 6 (Refinery) REQUEST SERVICE No. : 0663/66
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Hand Auger
SAMPLING DATE : 28/04/2023 SAMPLING TIME : 11:30-11:50
RECEIVED DATE : 02/05/2023 ANALYTICAL DATE : 08-09/05/2023
REPORT DATE : 15/05/2023 SITE OPERATOR : Mr. Aniwat Pimwanna
SAMPLE CONDITION : Normal FILE CODE : 223010_Soil_May

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW 1	STANDARD ¹⁾
alpha-BHC	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 0.3
gamma-BHC	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 29
Heptachlor	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 5.5
Aldrin	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 0.1
beta-BHC	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 0.9
delta-BHC	mg/kg	3550 C / 8081 B	< 0.0002	ND	-
Heptachlor epoxide	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 2.7
o,p'-DDE	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 0.001
Endosulfan I	mg/kg	3550 C / 8081 B	< 0.0002	ND	-
gamma-Chlordane	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 110
alpha-Chlordane	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 110
p,p'-DDE	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 0.001
Dieldrin	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 1.5
o,p'-DDD	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 7
Endrin	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 25
o,p'-DDT	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 120
p,p'-DDD	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 7
Endosulfan II	mg/kg	3550 C / 8081 B	< 0.0002	ND	-
p,p'-DDT	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 120
Endrin aldehyde	mg/kg	3550 C / 8081 B	< 0.0002	ND	-
Endosulfan sulfate	mg/kg	3550 C / 8081 B	< 0.0002	ND	-
Endrin ketone	mg/kg	3550 C / 8081 B	< 0.0002	ND	-

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE 3rd ED., 2020

Sudaporn Soonthorn

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 7-239-9-0001

MR

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Technical Management Team

REG. NO. 7-239-9-5863

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 4. - Not available.



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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 0676/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger
SAMPLING DATE	: 03/05/2023	SAMPLING TIME	: 15:35-15:50
RECEIVED DATE	: 04/05/2023	ANALYTICAL DATE	: 04-05/05/2023
REPORT DATE	: 15/05/2023	SITE OPERATOR	: Mr. Aniwat Pimwanna
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_Soil_May

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW 3	STANDARD ^{1/}
pH	-	4500-H ⁺ B	-	8.28	-
Conductivity	dS/m	EC25 (1:5) / Electrical Conductivity	-	0.038	-
Salinity	ppt	EC25 (1:5) / Electrical Conductivity	-	0.0	-
Arsenic (As)	mg/kg	3050 B/6010 D	< 2.00	ND	≤ 27
Cadmium (Cd)	mg/kg	3050 B/6010 D	< 1.00	ND	≤ 810
Lead (Pb)	mg/kg	3050 B/6010 D	< 3.00	7.38	≤ 750
Mercury (Hg)	mg/kg	7471B	< 0.05	ND	≤ 610
Nickel (Ni)	mg/kg	3050 B/6010 D	< 1.00	2.46	≤ 41,000

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE 3rd ED., 2020

Khemchuda Insorn

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3. ^{1/} Notification of the Ministry of Industry, B.E.2559 (2016).

4. Reference method : Operation Manual Chemical Analysis in Soil, Land Development Department.

5. - Not available.



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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 0676/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger
SAMPLING DATE	: 03/05/2023	SAMPLING TIME	: 15:35-15:50
RECEIVED DATE	: 04/05/2023	ANALYTICAL DATE	: 05-06, 08/05/2023
REPORT DATE	: 15/05/2023	SITE OPERATOR	: Mr. Aniwat Pimwanna
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_Soil_May

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW 3	STANDARD ^{1/}
Naphthalene	mg/kg	3540 C / 8270 E	< 0.005	ND	≤ 1,000
Benzene	mg/kg	5035 A / 8260 D	< 0.00025	ND	≤ 15
Ethylbenzene	mg/kg	5035 A / 8260 D	< 0.00025	ND	≤ 230
Toluene	mg/kg	5035 A / 8260 D	< 0.00025	ND	≤ 520
m-Xylene	mg/kg	5035 A / 8260 D	< 0.00025	ND	≤ 210
o-Xylene	mg/kg	5035 A / 8260 D	< 0.00025	ND	≤ 210
p-Xylene	mg/kg	5035 A / 8260 D	< 0.00025	ND	≤ 210
Total Xylenes	mg/kg	5035 A / 8260 D	< 0.00075	ND	≤ 210

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE 3rd ED., 2020

Jutarat Jaemruen

(Miss Jutarat Jaemruen)

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REG. NO. 2-239-ก-5827

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Technical Management Team

REG. NO. 2-239-ก-5863

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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical PCL, Branch 6 (Refinery) REQUEST SERVICE No : 0676/66
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Hand Auger
SAMPLING DATE : 03/05/2023 SAMPLING TIME : 15:35-15:50
RECEIVED DATE : 04/05/2023 ANALYTICAL DATE : 05, 09-11/05/2023
REPORT DATE : 15/05/2023 SITE OPERATOR : Mr. Aniwat Pimwanna
SAMPLE CONDITION : Normal FILE CODE : 223010_Soil_May

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW 3	STANDARD ^u
Total Petroleum Hydrocarbon					
- TPH (C ₃ - C ₆)	mg/kg	5035 A / 8260 D	< 0.003	ND	≤ 25
- Pentane					
- Benzene					
- Toluene					
- m,p-Xylene					
- o-Xylene					
- Ethylbenzene					
- TPH (C ₇ - C ₁₆)	mg/kg	3540 C / 8015 D	< 0.25	ND	≤ 25
- n-Nonane					
- n-Decane					
- n-Dodecane					
- n-Tetradecane					
- n-Hexadecane					
- TPH (C ₁₇ - C ₃₅)	mg/kg	3540 C / 8015 D	< 1.85	6.56	≤ 8
- n-Octadecane					
- n-Eicosane					
- n-Docosane					
- n-Tetracosane					
- n-Hexacosane					
- n-Octacosane					
- n-Triacontane					
- n-Dotriacontane					
- n-Tetracontane					
- Pentatriacontane					

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3rd ED., 2020

Sudaporn Soonthorn

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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical PCL, Branch 6 (Refinery) REQUEST SERVICE No : 0676/66
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Hand Auger
SAMPLING DATE : 03/05/2023 SAMPLING TIME : 15:35-15:50
RECEIVED DATE : 04/05/2023 ANALYTICAL DATE : 08-09/05/2023
REPORT DATE : 15/05/2023 SITE OPERATOR : Mr. Aniwat Pimwanna
SAMPLE CONDITION : Normal FILE CODE : 223010_Soil_May

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW 3	STANDARD ^u
alpha-BHC	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 0.3
gamma-BHC	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 29
Heptachlor	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 5.5
Aldrin	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 0.1
beta-BHC	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 0.9
delta-BHC	mg/kg	3550 C / 8081 B	< 0.0002	ND	-
Heptachlor epoxide	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 2.7
o,p'-DDE	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 0.001
Endosulfan I	mg/kg	3550 C / 8081 B	< 0.0002	ND	-
gamma-Chlordane	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 110
alpha-Chlordane	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 110
p,p'-DDE	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 0.001
Dieldrin	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 1.5
o,p'-DDD	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 7
Endrin	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 25
o,p'-DDT	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 120
p,p'-DDD	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 7
Endosulfan II	mg/kg	3550 C / 8081 B	< 0.0002	ND	-
p,p'-DDT	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 120
Endrin aldehyde	mg/kg	3550 C / 8081 B	< 0.0002	ND	-
Endosulfan sulfate	mg/kg	3550 C / 8081 B	< 0.0002	ND	-
Endrin ketone	mg/kg	3550 C / 8081 B	< 0.0002	ND	-

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3rd ED., 2020

Sudaporn Soonthorn

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 7-239-9-0001

(Mrs. Araya Tipparuk)

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-9-5863

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3. ^u Notification of the Ministry of Industry, B.E.2559 (2016).

4. - Not available.



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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 0645/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger
SAMPLING DATE	: 26-27/04/2023	SAMPLING TIME	: 11:37-11:50, 14:55-15:25
RECEIVED DATE	: 28/04/2023	ANALYTICAL DATE	: 28/04/2023-05/05/2023
REPORT DATE	: 15/05/2023	SITE OPERATOR	: Mr. Aniwat Pimwanna
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_Soil_April

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^U
				MW 9	MW 32	
pH	-	4500-H ⁺ B	-	7.77	8.44	-
Conductivity	dS/m	EC25 (1:5) / Electrical Conductivity	-	0.022	0.024	-
Salinity	ppt	EC25 (1:5) / Electrical Conductivity	-	0.0	0.0	-
Arsenic (As)	mg/kg	3050 B/6010 D	< 2.00	19.87	ND	≤ 27
Cadmium (Cd)	mg/kg	3050 B/6010 D	< 1.00	ND	ND	≤ 810
Lead (Pb)	mg/kg	3050 B/6010 D	< 3.00	7.20	4.30	≤ 750
Mercury (Hg)	mg/kg	7471B	< 0.05	0.16	0.23	≤ 610
Nickel (Ni)	mg/kg	3050 B/6010 D	< 1.00	5.48	1.55	≤ 41,000

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE 3rd ED., 2020

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(Miss Khemchuda Insorn)

Analyst

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Technical Management Team

REG. NO. 2-239-ก-5863

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 3. ^U Notification of the Ministry of Industry, B.E.2559 (2016).
 4. Reference method : Operation Manual Chemical Analysis in Soil. Land Development Department.
 5. - Not available.



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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 0645/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger
SAMPLING DATE	: 26-27/04/2023	SAMPLING TIME	: 11:37-11:50, 14:55-15:25
RECEIVED DATE	: 28/04/2023	ANALYTICAL DATE	: 03-06, 08/05/2023
REPORT DATE	: 15/05/2023	SITE OPERATOR	: Mr. Aniwat Pimwanna
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_Soil_April

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^U
				MW 9	MW 32	
Naphthalene	mg/kg	3540 C / 8270 E	< 0.005	ND	ND	≤ 1,000
Benzene	mg/kg	5035 A / 8260 D	< 0.00025	ND	ND	≤ 15
Ethylbenzene	mg/kg	5035 A / 8260 D	< 0.00025	ND	ND	≤ 230
Toluene	mg/kg	5035 A / 8260 D	< 0.00025	ND	ND	≤ 520
m-Xylene	mg/kg	5035 A / 8260 D	< 0.00025	ND	ND	≤ 210
o-Xylene	mg/kg	5035 A / 8260 D	< 0.00025	ND	ND	≤ 210
p-Xylene	mg/kg	5035 A / 8260 D	< 0.00025	ND	ND	≤ 210
Total Xylenes	mg/kg	5035 A / 8260 D	< 0.00075	ND	ND	≤ 210

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE 3rd ED., 2020

Jutarat Jaemruen

(Miss Jutarat Jaemruen)

Analyst

REG. NO. 2-239-ก-5827

(Mrs. Araya Tipparuk)

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 2-239-ก-5863

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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 0645/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger
SAMPLING DATE	: 26-27/04/2023	SAMPLING TIME	: 11:37-11:50, 14:55-15:25
RECEIVED DATE	: 28/04/2023	ANALYTICAL DATE	: 05, 09-11/05/2023
REPORT DATE	: 15/05/2023	SITE OPERATOR	: Mr. Aniwat Pimwanna
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_Soil_April

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^{1/}
				MW 9	MW 32	
Total Petroleum Hydrocarbon						
- TPH (C ₃ - C ₉)	mg/kg	5035 A / 8260 D	< 0.003	ND	ND	≤ 25
- Pentane						
- Benzene						
- Toluene						
- m,p-Xylene						
- o-Xylene						
- Ethylbenzene						
- TPH (C ₁₀ - C ₁₆)	mg/kg	3540 C / 8015 D	< 0.25	ND	0.69	≤ 25
- n-Nonane						
- n-Decane						
- n-Dodecane						
- n-Tetradecane						
- n-Hexadecane						
- TPH (C ₁₇ - C ₃₅)	mg/kg	3540 C / 8015 D	< 1.85	ND	ND	≤ 8
- n-Octadecane						
- n-Eicosane						
- n-Docosane						
- n-Tetracosane						
- n-Hexacosane						
- n-Octacosane						
- n-Triacontane						
- n-Dotriacontane						
- n-Tetracontane						
- n-Pentatriacontane						

REFERENCE: US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE 3rd ED., 2020

Sudaporn Soonthorn

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 2-239-9-0001

(Mrs. Araya Tipparuk)

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Technical Management Team

REG. NO. 2-239-9-5863

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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 0645/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger
SAMPLING DATE	: 26-27/04/2023	SAMPLING TIME	: 11:37-11:50, 14:55-15:25
RECEIVED DATE	: 28/04/2023	ANALYTICAL DATE	: 08-09/05/2023
REPORT DATE	: 15/05/2023	SITE OPERATOR	: Mr. Aniwat Pimwanna
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_Soil_April

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^u
				MW 9	MW 32	
alpha-BHC	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 0.3
gamma-BHC	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 29
Heptachlor	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 5.5
Aldrin	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 0.1
beta-BHC	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 0.9
delta-BHC	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	-
Heptachlor epoxide	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 2.7
o,p'-DDE	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 0.001
Endosulfan I	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	-
gamma-Chlordane	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 110
alpha-Chlordane	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 110
p,p'-DDE	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 0.001
Dieldrin	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 1.5
o,p'-DDD	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 7
Endrin	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 25
o,p'-DDT	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 120
p,p'-DDD	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 7
Endosulfan II	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	-
p,p'-DDT	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 120
Endrin aldehyde	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	-
Endosulfan sulfate	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	-
Endrin ketone	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	-

REFERENCE: US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE 3rd ED., 2020

Sudaporn Soonthorn

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 2-239-9-0001

(Mrs. Araya Tipparuk)

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Technical Management Team

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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL., Branch 6 (Refinery)	REQUEST SERVICE No.	: 0966/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger
SAMPLING DATE	: 14/06/2023	SAMPLING TIME	: 09:40-09:50
RECEIVED DATE	: 15/06/2023	ANALYTICAL DATE	: 15-19/06/2023
REPORT DATE	: 27/06/2023	SITE OPERATOR	: Mr. Aniwat Pimwanna
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_Soil_June

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD ^U
				MW-14	
pH	-	4500-H B	-	8.07	-
Conductivity	dS/m	EC25 (1:5) / Electrical Conductivity	-	0.036	-
Salinity	ppt	EC25 (1:5) / Electrical Conductivity	-	0.0	-
Arsenic (As)	mg/kg	3050 B/6010 D	< 2.00	16.07	≤ 27
Cadmium (Cd)	mg/kg	3050 B/6010 D	< 1.00	ND	≤ 810
Lead (Pb)	mg/kg	3050 B/6010 D	< 3.00	7.71	≤ 750
Mercury (Hg)	mg/kg	7471B	< 0.05	ND	≤ 610
Nickel (Ni)	mg/kg	3050 B/6010 D	< 1.00	4.52	≤ 41,000

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3rd ED., 2020

Khemchuda Insorn

(Miss Khemchuda Insorn)

Analyst

REG. NO. 7-239-8-5976

Araya Tipparuk

(Mrs. Araya Tipparuk)

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 4. Reference method : Operation Manual Chemical Analysis in Soil. Land Development Department.
 5. - Not available.



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CLIENT NAME	: PTT Global Chemical PCL., Branch 6 (Refinery)	REQUEST SERVICE No.	: 0966/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger
SAMPLING DATE	: 14/06/2023	SAMPLING TIME	: 09:40-09:50
RECEIVED DATE	: 15/06/2023	ANALYTICAL DATE	: 19-20/06/2023
REPORT DATE	: 27/06/2023	SITE OPERATOR	: Mr. Aniwat Pimwanna
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_Soil_June

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD ^U
				MW-14	
Naphthalene	mg/kg	3540 C / 8270 E	< 0.005	ND	≤ 1,000
Benzene	mg/kg	5035 A / 8260 D	< 0.00025	ND	≤ 15
Ethylbenzene	mg/kg	5035 A / 8260 D	< 0.00025	ND	≤ 230
Toluene	mg/kg	5035 A / 8260 D	< 0.00025	ND	≤ 520
m-Xylene	mg/kg	5035 A / 8260 D	< 0.00025	ND	≤ 210
o-Xylene	mg/kg	5035 A / 8260 D	< 0.00025	ND	≤ 210
p-Xylene	mg/kg	5035 A / 8260 D	< 0.00025	ND	≤ 210
Total Xylenes	mg/kg	5035 A / 8260 D	< 0.00075	ND	≤ 210

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3rd ED., 2020

Jutarat Jaemruen

(Miss Jutarat Jaemruen)

Analyst

REG. NO. 7-239-8-5827

Araya Tipparuk

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-8-5863

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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 0966/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger
SAMPLING DATE	: 14/06/2023	SAMPLING TIME	: 09:40-09:50
RECEIVED DATE	: 15/06/2023	ANALYTICAL DATE	: 19, 26/06/2023
REPORT DATE	: 27/06/2023	SITE OPERATOR	: Mr. Aniwat Pimwanna
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_Soil_June

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-14	STANDARD ^{1/}
Total Petroleum Hydrocarbon					
- TPH (C ₅ - C ₈)	mg/kg	5035 A / 8260 D	< 0.003	ND	≤ 25
- Pentane					
- Benzene					
- Toluene					
- m,p-Xylene					
- o-Xylene					
- Ethylbenzene					
- TPH (C ₉ - C ₁₆)	mg/kg	3540 C / 8015 D	< 0.25	ND	≤ 25
- n-Nonane					
- n-Decane					
- n-Dodecane					
- n-Tetradecane					
- n-Hexadecane					
- TPH (C ₁₇ - C ₃₅)	mg/kg	3540 C / 8015 D	< 1.85	ND	≤ 8
- n-Octadecane					
- n-Eicosane					
- n-Docosane					
- n-Tetracosane					
- n-Hexacosane					
- n-Octacosane					
- n-Triacontane					
- n-Dotriacontane					
- n-Tetratriacontane					
- Pentatriacontane					

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 1st ED., 2020

Sudaporn Soonthorn

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 2-239-9-0001

MR

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 2-239-9-5863

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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 0966/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger
SAMPLING DATE	: 14/06/2023	SAMPLING TIME	: 09:40-09:50
RECEIVED DATE	: 15/06/2023	ANALYTICAL DATE	: 23-24/06/2023
REPORT DATE	: 27/06/2023	SITE OPERATOR	: Mr. Aniwat Pimwanna
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_Soil_June

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-14	STANDARD ^{1/}
alpha-BHC	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 0.3
gamma-BHC	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 29
Heptachlor	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 5.5
Aldrin	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 0.1
beta-BHC	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 0.9
delta-BHC	mg/kg	3550 C / 8081 B	< 0.0002	ND	-
Heptachlor epoxide	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 2.7
o,p'-DDE	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 0.001
Endosulfan I	mg/kg	3550 C / 8081 B	< 0.0002	ND	-
gamma-Chlordane	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 110
alpha-Chlordane	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 110
p,p'-DDE	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 0.001
Dieldrin	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 1.5
o,p'-DDD	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 7
Endrin	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 25
o,p'-DDT	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 120
p,p'-DDD	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 7
Endosulfan II	mg/kg	3550 C / 8081 B	< 0.0002	ND	-
p,p'-DDT	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 120
Endrin aldehyde	mg/kg	3550 C / 8081 B	< 0.0002	ND	-
Endosulfan sulfate	mg/kg	3550 C / 8081 B	< 0.0002	ND	-
Endrin ketone	mg/kg	3550 C / 8081 B	< 0.0002	ND	-

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 1st ED., 2020

Sudaporn Soonthorn

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 2-239-9-0001

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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 0663/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger
SAMPLING DATE	: 28/04/2023	SAMPLING TIME	: 14:50-15:15, 15:25-15:45
RECEIVED DATE	: 02/05/2023	ANALYTICAL DATE	: 02-05/05/2023
REPORT DATE	: 15/05/2023	SITE OPERATOR	: Mr. Aniwat Pimwanna
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_Soil_May

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^u
				MW 23	MW 24	
pH	-	4500-H B	-	7.43	8.55	-
Conductivity	dS/m	EC25 (1:5) / Electrical Conductivity	-	0.019	0.040	-
Salinity	ppt	EC25 (1:5) / Electrical Conductivity	-	0.0	0.0	-
Arsenic (As)	mg/kg	3050 B/6010 D	< 2.00	3.41	9.99	≤ 27
Cadmium (Cd)	mg/kg	3050 B/6010 D	< 1.00	ND	ND	≤ 810
Lead (Pb)	mg/kg	3050 B/6010 D	< 3.00	9.69	9.03	≤ 750
Mercury (Hg)	mg/kg	7471B	< 0.05	0.12	0.12	≤ 610
Nickel (Ni)	mg/kg	3050 B/6010 D	< 1.00	14.95	4.51	≤ 41,000

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3rd ED., 2020

Khemchuda Insorn

(Miss Khemchuda Insorn)

Analyst

REG. NO. 7-239-ก-5976

(Mrs. Araya Tipparuk)

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Technical Management Team

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 4. Reference method : Operation Manual Chemical Analysis in Soil. Land Development Department.
 5. - Not available.



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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 0663/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger
SAMPLING DATE	: 28/04/2023	SAMPLING TIME	: 14:50-15:15, 15:25-15:45
RECEIVED DATE	: 02/05/2023	ANALYTICAL DATE	: 03-06, 08/05/2023
REPORT DATE	: 15/05/2023	SITE OPERATOR	: Mr. Aniwat Pimwanna
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_Soil_May

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^u
				MW 23	MW 24	
Naphthalene	mg/kg	3540 C / 8270 E	< 0.005	ND	ND	≤ 1,000
Benzene	mg/kg	5035 A / 8260 D	< 0.00025	ND	ND	≤ 15
Ethylbenzene	mg/kg	5035 A / 8260 D	< 0.00025	ND	ND	≤ 230
Toluene	mg/kg	5035 A / 8260 D	< 0.00025	ND	ND	≤ 520
m-Xylene	mg/kg	5035 A / 8260 D	< 0.00025	ND	ND	≤ 210
o-Xylene	mg/kg	5035 A / 8260 D	< 0.00025	ND	ND	≤ 210
p-Xylene	mg/kg	5035 A / 8260 D	< 0.00025	ND	ND	≤ 210
Total Xylenes	mg/kg	5035 A / 8260 D	< 0.00075	ND	ND	≤ 210

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3rd ED., 2020

Jutarat Jaemruen

(Miss Jutarat Jaemruen)

Analyst

REG. NO. 7-239-ก-5827

(Mrs. Araya Tipparuk)

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-ก-5863

- Remark :**
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 3. ^u Notification of the Ministry of Industry, B.E.2559 (2016).



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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 0663/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger
SAMPLING DATE	: 28/04/2023	SAMPLING TIME	: 14:50-15:15, 15:25-15:45
RECEIVED DATE	: 02/05/2023	ANALYTICAL DATE	: 05, 09-11/05/2023
REPORT DATE	: Normal	SITE OPERATOR	: Mr. Aniwat Pimwanna
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_Soil_May

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^{1/}
				MW 23	MW 24	
Total Petroleum Hydrocarbon						
- TPH (C ₃ - C ₁₀)	mg/kg	5035 A / 8260 D	< 0.003	ND	ND	≤ 25
- Pentane						
- Benzene						
- Toluene						
- m,p-Xylene						
- o-Xylene						
- Ethylbenzene						
- TPH (C ₁₁ - C ₁₆)	mg/kg	3540 C / 8015 D	< 0.25	ND	0.90	≤ 25
- n-Nonane						
- n-Decane						
- n-Dodecane						
- n-Tetradecane						
- n-Hexadecane						
- TPH (C ₁₇ - C ₃₅)	mg/kg	3540 C / 8015 D	< 1.85	3.85	ND	≤ 8
- n-Octadecane						
- n-Eicosane						
- n-Docosane						
- n-Tetracosane						
- n-Hexacosane						
- n-Octacosane						
- n-Triacontane						
- n-Dotriacontane						
- n-Tetracontane						
- Pentatriacontane						

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3rd ED., 2020

Sudaporn Soonthorn

(Miss Sudaporn Soonthorn)

Analyst

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(Mrs. Araya Tipparuk)

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Technical Management Team

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Remark : 1. Reported analysis refers to submitted sample only.

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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 0663/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger
SAMPLING DATE	: 28/04/2023	SAMPLING TIME	: 14:50-15:15, 15:25-15:45
RECEIVED DATE	: 02/05/2023	ANALYTICAL DATE	: 08-09/05/2023
REPORT DATE	: 15/05/2023	SITE OPERATOR	: Mr. Aniwat Pimwanna
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_Soil_May

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^{1/}
				MW 23	MW 24	
alpha-BHC	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 0.3
gamma-BHC	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 29
Heptachlor	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 5.5
Aldrin	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 0.1
beta-BHC	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 0.9
delta-BHC	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	-
Heptachlor epoxide	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 2.7
o,p'-DDE	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 0.001
Endosulfan I	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	-
gamma-Chlordane	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 110
alpha-Chlordane	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 110
p,p'-DDE	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 0.001
Dieldrin	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 1.5
o,p'-DDD	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 7
Endrin	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 25
o,p'-DDT	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 120
p,p'-DDD	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 7
Endosulfan II	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	-
p,p'-DDT	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 120
Endrin aldehyde	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	-
Endosulfan sulfate	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	-
Endrin ketone	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	-

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3rd ED., 2020

Sudaporn Soonthorn

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 2-239-9-0001

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Technical Management Team

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3. ^{1/} Notification of the Ministry of Industry, B.E.2559 (2016).

4. - Not available.



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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 0645/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger
SAMPLING DATE	: 26-27/04/2023	SAMPLING TIME	: 16:15-16:40, 11:00-11:20
RECEIVED DATE	: 28/04/2023	ANALYTICAL DATE	: 28/04/2023-05/05/2023
REPORT DATE	: 15/05/2023	SITE OPERATOR	: Mr. Aniwat Pimwanna
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_Soil_April

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^U
				MW 34	MW 35	
pH	-	4500-H ⁺ B	-	8.18	8.68	-
Conductivity	dS/m	EC25 (1:5) / Electrical Conductivity	-	0.020	0.031	-
Salinity	ppt	EC25 (1:5) / Electrical Conductivity	-	0.0	0.0	-
Arsenic (As)	mg/kg	3050 B/6010 D	< 2.00	2.30	3.98	≤ 27
Cadmium (Cd)	mg/kg	3050 B/6010 D	< 1.00	ND	ND	≤ 810
Lead (Pb)	mg/kg	3050 B/6010 D	< 3.00	5.62	5.77	≤ 750
Mercury (Hg)	mg/kg	7471B	< 0.05	ND	0.27	≤ 610
Nickel (Ni)	mg/kg	3050 B/6010 D	< 1.00	2.86	2.09	≤ 41,000

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE 3rd ED., 2020

Khemchuda Insorn

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Analyst

REG. NO. 2-239-ก-5976

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 3. ^U Notification of the Ministry of Industry, B.E.2559 (2016).
 4. Reference method : Operation Manual Chemical Analysis in Soil. Land Development Department.
 5. - Not available.



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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 0645/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger
SAMPLING DATE	: 26-27/04/2023	SAMPLING TIME	: 16:15-16:40, 11:00-11:20
RECEIVED DATE	: 28/04/2023	ANALYTICAL DATE	: 03-06, 08/05/2023
REPORT DATE	: 15/05/2023	SITE OPERATOR	: Mr. Aniwat Pimwanna
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_Soil_April

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^U
				MW 34	MW 35	
Naphthalene	mg/kg	3540 C / 8270 E	< 0.005	ND	ND	≤ 1,000
Benzene	mg/kg	5035 A / 8260 D	< 0.00025	ND	ND	≤ 15
Ethylbenzene	mg/kg	5035 A / 8260 D	< 0.00025	ND	ND	≤ 230
Toluene	mg/kg	5035 A / 8260 D	< 0.00025	ND	ND	≤ 520
m-Xylene	mg/kg	5035 A / 8260 D	< 0.00025	ND	ND	≤ 210
o-Xylene	mg/kg	5035 A / 8260 D	< 0.00025	ND	ND	≤ 210
p-Xylene	mg/kg	5035 A / 8260 D	< 0.00025	ND	ND	≤ 210
Total Xylenes	mg/kg	5035 A / 8260 D	< 0.00075	ND	ND	≤ 210

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE 3rd ED., 2020

Jutarat Jaemruen

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 4. - Not available.



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SAMPLING DATE	: 26-27/04/2023	SAMPLING TIME	: 16:15-16:40, 11:00-11:20
RECEIVED DATE	: 28/04/2023	ANALYTICAL DATE	: 05, 09-11/05/2023
REPORT DATE	: Normal	SITE OPERATOR	: Mr. Aniwat Pimwanna
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_Soil_April

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^{1/}
				MW 34	MW 35	
Total Petroleum Hydrocarbon						
- TPH (C ₃ - C ₉)	mg/kg	5035 A / 8260 D	< 0.003	ND	ND	≤ 25
- Pentane						
- Benzene						
- Toluene						
- m,p-Xylene						
- o-Xylene						
- Ethylbenzene						
- TPH (C ₁₀ - C ₁₆)	mg/kg	3540 C / 8015 D	< 0.25	ND	2.18	≤ 25
- n-Nonane						
- n-Decane						
- n-Dodecane						
- n-Tetradecane						
- n-Hexadecane						
- TPH (C ₁₆ - C ₃₅)	mg/kg	3540 C / 8015 D	< 1.85	ND	ND	≤ 8
- n-Octadecane						
- n-Eicosane						
- n-Docosane						
- n-Tetracosane						
- n-Hexacosane						
- n-Octacosane						
- n-Triacontane						
- n-Dotriacontane						
- n-Tetratriacontane						
- Pentatriacontane						

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3rd ED., 2020

Sudaporn Soonthorn

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Technical Management Team

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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 0645/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger
SAMPLING DATE	: 26-27/04/2023	SAMPLING TIME	: 16:15-16:40, 11:00-11:20
RECEIVED DATE	: 28/04/2023	ANALYTICAL DATE	: 08-09/05/2023
REPORT DATE	: 15/05/2023	SITE OPERATOR	: Mr. Aniwat Pimwanna
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_Soil_April

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^{1/}
				MW 34	MW 35	
alpha-BHC	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 0.3
gamma-BHC	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 29
Heptachlor	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 5.5
Aldrin	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 0.1
beta-BHC	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 0.9
delta-BHC	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	-
Heptachlor epoxide	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 2.7
o,p'-DDE	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 0.001
Endosulfan I	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	-
gamma-Chlordane	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 110
alpha-Chlordane	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 110
p,p'-DDE	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 0.001
Dieldrin	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 1.5
o,p'-DDD	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 7
Endrin	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 25
o,p'-DDT	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 120
p,p'-DDD	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 7
Endosulfan II	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	-
p,p'-DDT	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 120
Endrin aldehyde	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	-
Endosulfan sulfate	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	-
Endrin ketone	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	-

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3rd ED., 2020

Sudaporn Soonthorn

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 2-239-0-0001

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REG. NO. 2-239-0-5863

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4. - Not available.



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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1191/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger
SAMPLING DATE	: 14/07/2023	SAMPLING TIME	: 10:07-10:11
RECEIVED DATE	: 15/07/2023	ANALYTICAL DATE	: 15-21/07/2023
REPORT DATE	: 22/07/2023	SITE OPERATOR	: Mr. Aniwat Pimwanna
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_Soil_July

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW 36	STANDARD ^u
pH	-	4500-H ⁺ B	-	7.82	-
Conductivity	dS/m	EC25 (1:5) / Electrical Conductivity	-	0.021	-
Salinity	ppt	EC25 (1:5) / Electrical Conductivity	-	0.0	-
Arsenic (As)	mg/kg	3050 B/6010 D	< 2.00	20.52	≤ 27
Cadmium (Cd)	mg/kg	3050 B/6010 D	< 1.00	ND	≤ 810
Lead (Pb)	mg/kg	3050 B/6010 D	< 3.00	5.51	≤ 750
Mercury (Hg)	mg/kg	7471B	< 0.05	ND	≤ 610
Nickel (Ni)	mg/kg	3050 B/6010 D	< 1.00	3.18	≤ 41,000

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE 3rd ED., 2020

Khemchuda Insorn

(Miss Khemchuda Insorn)

Analyst

REG. NO. 2-239-ก-5976

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Technical Management Team

REG. NO. 2-239-ก-5863

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 4. Reference method : Operation Manual Chemical Analysis in Soil. Land Development Department.
 5. - Not available.



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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1191/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger
SAMPLING DATE	: 14/07/2023	SAMPLING TIME	: 10:07-10:11
RECEIVED DATE	: 15/07/2023	ANALYTICAL DATE	: 19, 21/07/2023
REPORT DATE	: 22/07/2023	SITE OPERATOR	: Mr. Aniwat Pimwanna
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_Soil_July

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW 36	STANDARD ^u
Naphthalene	mg/kg	3540 C / 8270 E	< 0.005	0.0070	≤ 1,000
Benzene	mg/kg	5035 A / 8260 D	< 0.00025	ND	≤ 15
Ethylbenzene	mg/kg	5035 A / 8260 D	< 0.00025	ND	≤ 230
Toluene	mg/kg	5035 A / 8260 D	< 0.00025	ND	≤ 520
m-Xylene	mg/kg	5035 A / 8260 D	< 0.00025	ND	≤ 210
o-Xylene	mg/kg	5035 A / 8260 D	< 0.00025	ND	≤ 210
p-Xylene	mg/kg	5035 A / 8260 D	< 0.00025	ND	≤ 210
Total Xylenes	mg/kg	5035 A / 8260 D	< 0.00075	ND	≤ 210

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE 3rd ED., 2020

Jutarat Jaemruen

(Miss Jutarat Jaemruen)

Analyst

REG. NO. 2-239-ก-5827

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Technical Management Team

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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 1191/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger
SAMPLING DATE	: 14/07/2023	SAMPLING TIME	: 10:07-10:11
RECEIVED DATE	: 15/07/2023	ANALYTICAL DATE	: 20/07/2023
REPORT DATE	: 22/07/2023	SITE OPERATOR	: Mr. Aniwat Pimwanna
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_Soil_July

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW 36	STANDARD ^{1/}
Total Petroleum Hydrocarbon					
- TPH (C ₅ - C ₉)	mg/kg	5035 A / 8260 D	< 0.003	ND	≤ 25
- Pentane					
- Benzene					
- Toluene					
- m,p-Xylene					
- o-Xylene					
- Ethylbenzene					
- TPH (C ₁₀ - C ₁₆)	mg/kg	3540 C / 8015 D	< 0.25	ND	≤ 25
REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3 rd ED., 2020					
- n-Decane					
- n-Dodecane					
- n-Tetradecane					
- n-Hexadecane					
- TPH (C ₁₆ - C ₃₃)	mg/kg	3540 C / 8015 D	< 1.85	ND	≤ 8
- n-Octadecane					
- n-Eicosane					
- n-Docosane					
- n-Tetracosane					
- n-Hexacosane					
- n-Octacosane					
- n-Triacontane					
- n-Dotriacontane					
- n-Tetracontane					
- Pentatriacontane					

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3rd ED., 2020

Sudaporn Soonthorn

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 2-239-0-0001

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 2-239-0-5863

- Remark : 1. Reported analysis refers to submitted sample only.
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3. ^{1/} Notification of the Ministry of Industry, B.E.2559 (2016).



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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 1191/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger
SAMPLING DATE	: 14/07/2023	SAMPLING TIME	: 10:07-10:11
RECEIVED DATE	: 15/07/2023	ANALYTICAL DATE	: 20-21/07/2023
REPORT DATE	: 22/07/2023	SITE OPERATOR	: Mr. Aniwat Pimwanna
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_Soil_July

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW 36	STANDARD ^{1/}
alpha-BHC	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 0.3
gamma-BHC	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 29
Heptachlor	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 5.5
Aldrin	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 0.1
beta-BHC	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 0.9
delta-BHC	mg/kg	3550 C / 8081 B	< 0.0002	ND	-
Heptachlor epoxide	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 2.7
o,p'-DDE	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 0.001
Endosulfan I	mg/kg	3550 C / 8081 B	< 0.0002	ND	-
gamma-Chlordane	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 110
alpha-Chlordane	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 110
p,p'-DDE	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 0.001
Dieldrin	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 1.5
o,p'-DDD	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 7
Endrin	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 25
o,p'-DDT	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 120
p,p'-DDD	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 7
Endosulfan II	mg/kg	3550 C / 8081 B	< 0.0002	ND	-
p,p'-DDT	mg/kg	3550 C / 8081 B	< 0.0002	ND	≤ 120
Endrin aldehyde	mg/kg	3550 C / 8081 B	< 0.0002	ND	-
Endosulfan sulfate	mg/kg	3550 C / 8081 B	< 0.0002	ND	-
Endrin ketone	mg/kg	3550 C / 8081 B	< 0.0002	ND	-

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3rd ED., 2020

Sudaporn Soonthorn

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 2-239-0-0001

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 2-239-0-5863

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3. ^{1/} Notification of the Ministry of Industry, B.E.2559 (2016).
4. - Not available.



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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 0676/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger
SAMPLING DATE	: 03/05/2023	SAMPLING TIME	: 11:35-11:55, 10:27-10:45
RECEIVED DATE	: 04/05/2023	ANALYTICAL DATE	: 04-05/05/2023
REPORT DATE	: 15/05/2023	SITE OPERATOR	: Mr. Aniwat Pimwanna
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_Soil_May

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ¹⁾
				MW 41	MW 42	
pH	-	4500-H ⁺ B	-	8.87	8.88	-
Conductivity	dS/m	EC25 (1:5) / Electrical Conductivity	-	0.056	0.031	-
Salinity	ppt	EC25 (1:5) / Electrical Conductivity	-	0.0	0.0	-
Arsenic (As)	mg/kg	3050 B/6010 D	< 2.00	3.56	ND	≤ 27
Cadmium (Cd)	mg/kg	3050 B/6010 D	< 1.00	ND	ND	≤ 810
Lead (Pb)	mg/kg	3050 B/6010 D	< 3.00	5.07	ND	≤ 750
Mercury (Hg)	mg/kg	7471B	< 0.05	ND	ND	≤ 610
Nickel (Ni)	mg/kg	3050 B/6010 D	< 1.00	3.02	ND	≤ 41,000

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE 1st ED. 2020

(Miss Khemchuda Insorn)

Analyst

REG. NO. 7-239-ก-5976

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-ก-5863

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 3. ¹⁾ Notification of the Ministry of Industry, B.E.2559 (2016).
 4. Reference method : Operation Manual Chemical Analysis in Soil. Land Development Department.
 5. - Not available.



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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 0676/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger
SAMPLING DATE	: 03/05/2023	SAMPLING TIME	: 11:35-11:55, 10:27-10:45
RECEIVED DATE	: 04/05/2023	ANALYTICAL DATE	: 05-06, 08/05/2023
REPORT DATE	: 15/05/2023	SITE OPERATOR	: Mr. Aniwat Pimwanna
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_Soil_May

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ¹⁾
				MW 41	MW 42	
Naphthalene	mg/kg	3540 C / 8270 E	< 0.005	ND	ND	≤ 1,000
Benzene	mg/kg	5035 A / 8260 D	< 0.00025	ND	ND	≤ 15
Ethylbenzene	mg/kg	5035 A / 8260 D	< 0.00025	ND	ND	≤ 230
Toluene	mg/kg	5035 A / 8260 D	< 0.00025	ND	ND	≤ 520
m-Xylene	mg/kg	5035 A / 8260 D	< 0.00025	ND	ND	≤ 210
o-Xylene	mg/kg	5035 A / 8260 D	< 0.00025	ND	ND	≤ 210
p-Xylene	mg/kg	5035 A / 8260 D	< 0.00025	ND	ND	≤ 210
Total Xylenes	mg/kg	5035 A / 8260 D	< 0.00075	ND	ND	≤ 210

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE 1st ED. 2020

(Miss Jutarat Jaemruen)

Analyst

REG. NO. 7-239-ก-5827

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-ก-5863

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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 0676/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger
SAMPLING DATE	: 03/05/2023	SAMPLING TIME	: 11:35-11:55, 10:27-10:45
RECEIVED DATE	: 04/05/2023	ANALYTICAL DATE	: 05, 09-11/05/2023
REPORT DATE	: Normal	SITE OPERATOR	: Mr. Aniwat Pimwanna
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_Soil_May

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^{1/}
				MW 41	MW 42	
Total Petroleum Hydrocarbon						
- TPH (C ₅ - C ₉)	mg/kg	5035 A / 8260 D	< 0.003	ND	ND	≤ 25
- Pentane						
- Benzene						
- Toluene						
- m,p-Xylene						
- o-Xylene						
- Ethylbenzene						
- TPH (C ₁₀ - C ₁₆)	mg/kg	3540 C / 8015 D	< 0.25	ND	1.70	≤ 25
- n-Nonane						
- n-Decane						
- n-Dodecane						
- n-Tetradecane						
- n-Hexadecane						
- TPH (C ₁₆ - C ₂₉)	mg/kg	3540 C / 8015 D	< 1.85	ND	ND	≤ 8
- n-Octadecane						
- n-Eicosane						
- n-Docosane						
- n-Tetracosane						
- n-Hexacosane						
- n-Octacosane						
- n-Triacontane						
- n-Dotriacontane						
- n-Tetratriacontane						
- Pentatriacontane						

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3rd ED., 2020

Sudaporn Soonthorn

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 2-239-9-0001

Araya Tipparuk

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 2-239-9-5863

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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 0676/66
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger
SAMPLING DATE	: 03/05/2023	SAMPLING TIME	: 11:35-11:55, 10:27-10:45
RECEIVED DATE	: 04/05/2023	ANALYTICAL DATE	: 08-09/05/2023
REPORT DATE	: 15/05/2023	SITE OPERATOR	: Mr. Aniwat Pimwanna
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_Soil_May

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^{1/}
				MW 41	MW 42	
alpha-BHC	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 0.3
gamma-BHC	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 29
Heptachlor	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 5.5
Aldrin	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 0.1
beta-BHC	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 0.9
delta-BHC	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	-
Heptachlor epoxide	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 2.7
o,p'-DDE	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 0.001
Endosulfan I	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	-
gamma-Chlordane	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 110
alpha-Chlordane	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 110
p,p'-DDE	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 0.001
Dieldrin	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 1.5
o,p'-DDD	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 7
Endrin	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 25
o,p'-DDT	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 120
p,p'-DDD	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 7
Endosulfan II	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	-
p,p'-DDT	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	≤ 120
Endrin aldehyde	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	-
Endosulfan sulfate	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	-
Endrin ketone	mg/kg	3550 C / 8081 B	< 0.0002	ND	ND	-

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3rd ED., 2020

Sudaporn Soonthorn

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 2-239-9-0001

Araya Tipparuk

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 2-239-9-5863

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4. - Not available.

ระดับเสียงในพื้นที่ทำงาน



Noise Monitoring Result : Working Noise MTR-PTTGC6-Refinery

Location : Air Compressor (K-1701 A, B and Spare) (Panel 3)		Monitor Period : Oct 12, 2023	
SLM Model : SCARLET ST-21D		Serial No : 820731	
Site Operator : Miss Wiraya Patchimboon			
Calibrator Model : Cirrus CR:515		Serial No : 94296	
Calibration Ref dB(A) : 94.0		Certified Date : Sep 11, 2023	
SLM Reading / Adjust dB(A) : 93.7/0.1		Expire Date : Sep 10, 2024	
Cal Sheet No.: CR-515-2023-170			
Time	Equivalent Sound Pressure Level (dB(A))		
	Oct 12, 2023		
00:00 – 01:00			
01:00 – 02:00			
02:00 – 03:00			
03:00 – 04:00			
04:00 – 05:00			
05:00 – 06:00			
06:00 – 07:00			
07:00 – 08:00			
08:00 – 09:00			
09:00 – 10:00			
10:00 – 11:00			
11:00 – 12:00			
12:00 – 13:00			
13:00 – 14:00			
14:00 – 15:00			
15:00 – 16:00			
16:00 – 17:00			
17:00 – 18:00			
18:00 – 19:00			
19:00 – 20:00			
20:00 – 21:00			
21:00 – 22:00			
22:00 – 23:00			
23:00 – 24:00			
Leq(8)*	83.1		
Lmax **	86.6		
Standard-8Hr	90 dB(A)		
Standard-Max	140 dB(A)		

Remark : * Average time between 09:00-17:00

** Maximum Sound Pressure Level between 09:00-17:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Sununta Sirawuttinanon)
Technical Management Team



Noise Monitoring Result : Working Noise MTR-PTTGC6-Refinery

Location : Air Blower (K-1001 of K-1003) (Panel 1)		Monitor Period : Oct 12, 2023	
SLM Model : SCARLET ST-21D		Serial No : 820728	
Site Operator : Miss Wiraya Patchimboon			

Calibrator Model : Cirrus CR:515		Serial No : 94296	
Calibration Ref dB(A) : 94.0		Certified Date : Sep 11, 2023	
SLM Reading / Adjust dB(A) : 93.8/0.0		Expire Date : Sep 10, 2024	
Cal Sheet No.: CR-515-2023-170			

Time	Equivalent Sound Pressure Level (dB(A))	
	Oct 12, 2023	
00:00 - 01:00		
01:00 - 02:00		
02:00 - 03:00		
03:00 - 04:00		
04:00 - 05:00		
05:00 - 06:00		
06:00 - 07:00		
07:00 - 08:00		
08:00 - 09:00		
09:00 - 10:00	84.1	
10:00 - 11:00	84.1	
11:00 - 12:00	84.0	
12:00 - 13:00	84.0	
13:00 - 14:00	84.4	
14:00 - 15:00	84.4	
15:00 - 16:00	84.2	
16:00 - 17:00	84.3	
17:00 - 18:00		
18:00 - 19:00		
19:00 - 20:00		
20:00 - 21:00		
21:00 - 22:00		
22:00 - 23:00		
23:00 - 24:00		

Leq(8)*	84.2
Lmax **	89.3

Standard-8Hr	90 dB(A)
Standard-Max	140 dB(A)

Remark : * Average time between 09:00-17:00

** Maximum Sound Pressure Level between 09:00-17:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Sununta Sirawuttinanon)
Technical Management Team



Noise Monitoring Result : Working Noise MTR-PTTGC6-Refinery

Location : Fan (Below E-1791) (Panel 3) Monitor Period : Oct 12, 2023
SLM Model : SCARLET ST-21D Serial No : 820722
Site Operator : Miss Wiraya Patchimboon

Calibrator Model : Cirrus CR:515 Serial No : 94296
Calibration Ref dB(A) : 94.0 Certified Date : Sep 11, 2023
SLM Reading / Adjust dB(A) : 93.8/0.0 Expire Date : Sep 10, 2024
Cal Sheet No.: CR-515-2023-170

Time	Equivalent Sound Pressure Level (dB(A))	
	Oct 12, 2023	
00:00 - 01:00		
01:00 - 02:00		
02:00 - 03:00		
03:00 - 04:00		
04:00 - 05:00		
05:00 - 06:00		
06:00 - 07:00		
07:00 - 08:00		
08:00 - 09:00		
09:00 - 10:00	81.2	
10:00 - 11:00	81.2	
11:00 - 12:00	81.2	
12:00 - 13:00	81.5	
13:00 - 14:00	81.4	
14:00 - 15:00	81.9	
15:00 - 16:00	81.8	
16:00 - 17:00	81.7	
17:00 - 18:00		
18:00 - 19:00		
19:00 - 20:00		
20:00 - 21:00		
21:00 - 22:00		
22:00 - 23:00		
23:00 - 24:00		
Leq(8)*	81.5	
Lmax **	93.6	
Standard-8Hr	90 dB(A)	
Standard-Max	140 dB(A)	

Remark : * Average time between 09:00-17:00

** Maximum Sound Pressure Level between 09:00-17:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Sununta Sirawuttinanon)
Technical Management Team



Noise Monitoring Result : Working Noise MTR-PTTGC6-Refinery

Location : Generator (Gas Turbine) (Panel 4) Monitor Period : Oct 12, 2023
SLM Model : SCARLET ST-21D Serial No : 820723
Site Operator : Miss Wiraya Patchimboon

Calibrator Model : Cirrus CR:515 Serial No : 94296
Calibration Ref dB(A) : 94.0 Certified Date : Sep 11, 2023
SLM Reading / Adjust dB(A) : 93.8/0.0 Expire Date : Sep 10, 2024
Cal Sheet No.: CR-515-2023-170

Time	Equivalent Sound Pressure Level (dB(A))	
	Oct 12, 2023	
00:00 - 01:00		
01:00 - 02:00		
02:00 - 03:00		
03:00 - 04:00		
04:00 - 05:00		
05:00 - 06:00		
06:00 - 07:00		
07:00 - 08:00		
08:00 - 09:00		
09:00 - 10:00	78.5	
10:00 - 11:00	78.4	
11:00 - 12:00	78.4	
12:00 - 13:00	79.0	
13:00 - 14:00	78.9	
14:00 - 15:00	79.3	
15:00 - 16:00	78.9	
16:00 - 17:00	78.5	
17:00 - 18:00		
18:00 - 19:00		
19:00 - 20:00		
20:00 - 21:00		
21:00 - 22:00		
22:00 - 23:00		
23:00 - 24:00		
Leq(8)*	78.7	
Lmax **	97.0	
Standard-8Hr	90 dB(A)	
Standard-Max	140 dB(A)	

Remark : * Average time between 09:00-17:00

** Maximum Sound Pressure Level between 09:00-17:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Sununta Sirawuttinanon)
Technical Management Team



Noise Monitoring Result : Working Noise MTR-PTTGC6-Refinery

Location : Steam Turbine (Steam Generators) (Panel 4)		Monitor Period : Oct 12, 2023		
SLM Model : SCARLET ST-21D		Serial No : 820726		
Site Operator : Mr. Wittaya Krataychan				
Calibrator Model : Cirrus CR:515		Serial No : 94296		
Calibration Ref dB(A) : 94.0		Certified Date : Sep 11, 2023		
SLM Reading / Adjust dB(A) : 93.6/0.2		Expire Date : Sep 10, 2024		
Cal Sheet No.: CR-515-2023-170				
Time	Equivalent Sound Pressure Level (dB(A))			
	Oct 12, 2023			
00:00 – 01:00				
01:00 – 02:00				
02:00 – 03:00				
03:00 – 04:00				
04:00 – 05:00				
05:00 – 06:00				
06:00 – 07:00				
07:00 – 08:00				
08:00 – 09:00				
09:00 – 10:00				83.1
10:00 – 11:00				82.9
11:00 – 12:00				82.7
12:00 – 13:00				82.6
13:00 – 14:00				82.4
14:00 – 15:00				83.0
15:00 – 16:00				82.6
16:00 – 17:00				82.9
17:00 – 18:00				
18:00 – 19:00				
19:00 – 20:00				
20:00 – 21:00				
21:00 – 22:00				
22:00 – 23:00				
23:00 – 24:00				
Leq(8)*	82.8			
Lmax **	88.9			
Standard-8Hr	90 dB(A)			
Standard-Max	140 dB(A)			

Remark : * Average time between 09:00-17:00

** Maximum Sound Pressure Level between 09:00-17:00

(Miss Katesarin Vorradetwittaya)
 Environmental Scientist

(Miss Sununta Sirawuttinanon)
 Technical Management Team



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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME	: PTT Global Chemical Public Co., Ltd.	REFERENCE NO.	: PTTGC6 (Refinery)_223010_Cert-NsD/Oct23
	Branch 6 (Refinery)	INSTRUMENT	: Noise Dosimeter
MEASUREMENT BY	: SECOT Co., Ltd.	CALIBRATOR TYPE	: RC 110A
MEASUREMENT DATE	: 12/10/2023	SERIAL NO.	: 95168
MEASUREMENT LOCATION	: Process area	CALIBRATOR REF.	: 114 dB @1,000 Hz
SITE OPERATOR	: Miss Wiraya Patchimboon		

OPERATOR ID	RESPONSIBILITY/AREA	TIME	RESULTS		STANDARD*
			% DOSE	TWA (12 hr) (dBA)	TWA (12 hr) (dBA)
ID 26009116	Operator Panel 1	07.26-19.01	33.2	78.5	83.0

(Miss Katesarin Vorradetwittaya)
 Environmental Scientist

(Miss Sununta Sirawuttinanon)
 Technical Management Team

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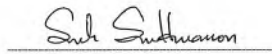
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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : PTT Global Chemical Public Co., Ltd. REFERENCE NO. : PTTGC6 (Refinery)_223010_Cert-NsD/Oct23
Branch 6 (Refinery) INSTRUMENT : Noise Dosimeter
MEASUREMENT BY : SECOT Co., Ltd. CALIBRATOR TYPE : RC 110A
MEASUREMENT DATE : 12/10/2023 SERIAL NO. : 95168
MEASUREMENT LOCATION : Process area CALIBRATOR REF. : 114 dB @1,000 Hz
SITE OPERATOR : Miss Wiraya Patchimboon

OPERATOR ID	RESPONSIBILITY/AREA	TIME	RESULTS		STANDARD*
			% DOSE	TWA (12 hr) (dBA)	
ID 26009117	Operator Panel 2	07.40-19.02	78.1	82.2	83.0


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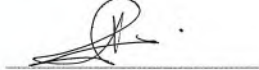
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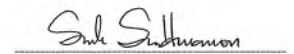
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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : PTT Global Chemical Public Co., Ltd. REFERENCE NO. : PTTGC6 (Refinery)_223010_Cert-NsD/Oct23
Branch 6 (Refinery) INSTRUMENT : Noise Dosimeter
MEASUREMENT BY : SECOT Co., Ltd. CALIBRATOR TYPE : RC 110A
MEASUREMENT DATE : 12/10/2023 SERIAL NO. : 95168
MEASUREMENT LOCATION : Process area CALIBRATOR REF. : 114 dB @1,000 Hz
SITE OPERATOR : Miss Wiraya Patchimboon

OPERATOR ID	RESPONSIBILITY/AREA	TIME	RESULTS		STANDARD*
			% DOSE	TWA (12 hr) (dBA)	
ID 26006584	Operator Panel 3	07.55-19.02	50.7	80.3	83.0


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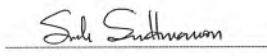
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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : PTT Global Chemical Public Co., Ltd. REFERENCE NO. : PTTGC6 (Refinery)_223010_Cert-NsD/Oct23
Branch 6 (Refinery) INSTRUMENT : Noise Dosimeter
MEASUREMENT BY : SECOT Co., Ltd. CALIBRATOR TYPE : RC 110A
MEASUREMENT DATE : 12/10/2023 SERIAL NO. : 95168
MEASUREMENT LOCATION : Process area CALIBRATOR REF. : 114 dB @1,000 Hz
SITE OPERATOR : Miss Wiraya Patchimboon

OPERATOR ID	RESPONSIBILITY/AREA	TIME	RESULTS		STANDARD*
			% DOSE	TWA (12 hr) (dBA)	
ID 26006554	Operator Panel 4	07.53-19.03	23.8	77.0	83.0


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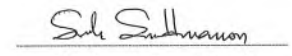
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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : PTT Global Chemical Public Co., Ltd. REFERENCE NO. : PTTGC6 (Refinery)_223010_Cert-NsD/Oct23
Branch 6 (Refinery) INSTRUMENT : Noise Dosimeter
MEASUREMENT BY : SECOT Co., Ltd. CALIBRATOR TYPE : RC 110A
MEASUREMENT DATE : 12/10/2023 SERIAL NO. : 95168
MEASUREMENT LOCATION : Process area CALIBRATOR REF. : 114 dB @1,000 Hz
SITE OPERATOR : Miss Wiraya Patchimboon

OPERATOR ID	RESPONSIBILITY/AREA	TIME	RESULTS		STANDARD*
			% DOSE	TWA (12 hr) (dBA)	
ID 26006894	Operator Panel 5	07.22-19.03	8.1	72.4	83.0


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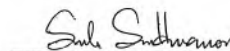
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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : PTT Global Chemical Public Co., Ltd. REFERENCE NO. : PTTGC6 (Refinery)_223010_Cert-NsD/Oct23
Branch 6 (Refinery) INSTRUMENT : Noise Dosimeter
MEASUREMENT BY : SECOT Co., Ltd. CALIBRATOR TYPE : RC 110A
MEASUREMENT DATE : 12/10/2023 SERIAL NO. : 95168
MEASUREMENT LOCATION : Maintenance CALIBRATOR REF. : 114 dB @1,000 Hz
SITE OPERATOR : Miss Wiraya Patchimboon

OPERATOR ID	RESPONSIBILITY/AREA	TIME	RESULTS		STANDARD*
			% DOSE	TWA (8 hr) (dBA)	TWA (8 hr) (dBA)
ID 00GI02576	Operator Maintenance	08.33-16.33	47.5	81.8	85.0


(Miss Katesarin Vorradetwittaya)
Environmental Scientist


(Miss Sununta Sirawuttinanon)
Technical Management Team

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TEL. (662) 959-3600 FAX (662) 959-3535 Website: secot.co.th E-mail: envserv@secot.co.th

ANALYSIS/TEST REPORT

Customer	: EED/SECOT Co., Ltd.	Request Service No.	: 1382/66
For	: PTT Global Chemical Public Co., Ltd, Branch 6 (Refinery GC6)	Sampling Date	: 15/08/2023
Address	: No.8, I-8 Road, Map Ta Phut Industrial Estate, Map Ta Phut, Mueang Rayong, Rayong Province 21150	Received Date	: 17/08/2023
		Test Date	: 19/08/2023
Tel/Fax	: 0-3897-1000 / -	Report Date	: 30/08/2023

SAMPLE DESCRIPTION / SAMPLING INFORMATION

Sample Designated As	: Workplace Air	Sampling Method	: Sorbent Adsorption
Sampling By	: SECOT Co., Ltd.	Sample Condition	: Normal

Sampling Location	Sampling Date/Time	Compound	Analytical Method	ND ppm	RESULT ppm	STANDARD ppm
Panel 1	15/08/2023 10:40-14:40	Hydrogen sulfide	NIOSH 6013/IC	< 0.03	ND	20 ^{1/2}

Analyst By: Phatchara Samanchan
(Miss Phatchara Samanchan)

Approved By: Nairisa Poowasanpetch
(Miss Narisa Poowasanpetch)
Technical Management Team

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- ^{1/}The maximum concentration limit during any working time.
- ^{2/}The concentration limit for short-term exposure.
- ND = non-detectable.



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ANALYSIS/TEST REPORT

Customer	: EED/SECOT Co., Ltd.	Request Service No.	: 1395/66
For	: PTT Global Chemical Public Co., Ltd, Branch 6 (Refinery GC6)	Sampling Date	: 16/08/2023
Address	: No.8, I-8 Road, Map Ta Phut Industrial Estate, Map Ta Phut, Mueang Rayong, Rayong Province 21150	Received Date	: 18/08/2023
		Test Date	: 24/08/2023
Tel/Fax	: 0-3897-1000 / -	Report Date	: 30/08/2023

SAMPLE DESCRIPTION / SAMPLING INFORMATION

Sample Designated As	: Workplace Air	Sampling Method	: Sorbent Adsorption
Sampling By	: SECOT Co., Ltd.	Sample Condition	: Normal

Sampling Location	Sampling Date/Time	Compound	Analytical Method	ND ppm	RESULT ppm	STANDARD ppm
Panel 2	16/08/2023 09:47-13:47	Hydrogen sulfide	NIOSH 6013/IC	< 0.03	ND	20

Analyst By: Phatchara Samanchan
(Miss Phatchara Samanchan)

Approved By: Nairisa Poowasanpetch
(Miss Narisa Poowasanpetch)
Technical Management Team

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ANALYSIS/TEST REPORT

Customer	: EED/SECOT Co., Ltd.	Request Service No.	: 1417/66
For	: PTT Global Chemical Public Co., Ltd, Branch 6 (Refinery GC6)	Sampling Date	: 18/08/2023
Address	: No.8, I-8 Road, Map Ta Phut Industrial Estate, Map Ta Phut, Mueang Rayong , Rayong Province 21150	Received Date	: 21/08/2023
		Test Date	: 24/08/2023
Tel/Fax	: 0-3897-1000 / -	Report Date	: 04/09/2023

SAMPLE DESCRIPTION / SAMPLING INFORMATION

Sample Designated As	: Workplace Air	Sampling Method	: Sorbent Adsorption
Sampling By	: SECOT Co., Ltd.	Sample Condition	: Normal

Sampling Location	Sampling Date/Time	Compound	Analytical Method	ND ppm	RESULT ppm	STANDARD ppm
Panel 3	18/08/2023 09:47-13:47	Hydrogen sulfide	NIOSH 6013/IC	< 0.03	ND	20

Analyst By: Phatchara Samanchan
(Miss Phatchara Samanchan)

Approved By:
(Miss Narisa Poowasanpetch)
Technical Management Team

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ANALYSIS/TEST REPORT

Customer	: EED/SECOT Co., Ltd.	Request Service No.	: 1446/66
For	: PTT Global Chemical Public Co., Ltd, Branch 6 (Refinery GC6)	Sampling Date	: 22/08/2023
Address	: No.8, I-8 Road, Map Ta Phut Industrial Estate, Map Ta Phut, Mueang Rayong , Rayong Province 21150	Received Date	: 25/08/2023
		Test Date	: 11/09/2023
Tel/Fax	: 0-3897-1000 / -	Report Date	: 13/09/2023

SAMPLE DESCRIPTION / SAMPLING INFORMATION

Sample Designated As	: Workplace Air	Sampling Method	: Sorbent Adsorption
Sampling By	: SECOT Co., Ltd.	Sample Condition	: Normal

Sampling Location	Sampling Date/Time	Compound	Analytical Method	ND ppm	RESULT ppm	STANDARD ppm
Panel 5	22/08/2023 09:40-13:40	Hydrogen sulfide	NIOSH 6013/IC	< 0.03	ND	20

Analyst By: Phatchara Samanchan
(Miss Phatchara Samanchan)

Approved By:
(Miss Narisa Poowasanpetch)
Technical Management Team

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ANALYSIS/TEST REPORT

Customer	: EED/SECOT Co., Ltd.	Request Service No.	: 1382/66
For	: PTT Global Chemical Public Co., Ltd, Branch 6 (Refinery GC6)	Sampling Date	: 15/08/2023
Address	: No.8, I-8 Road, Map Ta Phut Industrial Estate, Map Ta Phut, Mueang Rayong, Rayong Province 21150	Received Date	: 17/08/2023
Tel/Fax	: 0-3897-1000 / -	Test Date	: 18/08/2023
		Report Date	: 30/08/2023

SAMPLE DESCRIPTION / SAMPLING INFORMATION

Sample Designated As	: Workplace Air	Sampling Method	: Sampling Bag
Sampling By	: SECOT Co., Ltd.	Sample Condition	: Normal

Sampling Location	Sampling Date/Time	Compound	Analytical Method	ND ppm	RESULT ppm	STANDARD ppm
Panel 1	15/08/2023 10:25-10:40	Total Hydrocarbon	THC Analyzer / FID	< 0.10	2.90	-

Analyst By: Sudaporn S.
(Miss Sudaporn Soonthorn)

Approved By: Narisa Poowasanpetch
(Miss Narisa Poowasanpetch)
Technical Management Team

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4. - No Standard.



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ANALYSIS/TEST REPORT

Customer	: EED/SECOT Co., Ltd.	Request Service No.	: 1395/66
For	: PTT Global Chemical Public Co., Ltd, Branch 6 (Refinery GC6)	Sampling Date	: 16/08/2023
Address	: No.8, I-8 Road, Map Ta Phut Industrial Estate, Map Ta Phut, Mueang Rayong, Rayong Province 21150	Received Date	: 18/08/2023
Tel/Fax	: 0-3897-1000 / -	Test Date	: 18/08/2023
		Report Date	: 30/08/2023

SAMPLE DESCRIPTION / SAMPLING INFORMATION

Sample Designated As	: Workplace Air	Sampling Method	: Sampling Bag
Sampling By	: SECOT Co., Ltd.	Sample Condition	: Normal

Sampling Location	Sampling Date/Time	Compound	Analytical Method	ND ppm	RESULT ppm	STANDARD ppm
Panel 2	16/08/2023 10:40-10:55	Total Hydrocarbon	THC Analyzer / FID	< 0.10	3.83	-

Analyst By: Sudaporn S.
(Miss Sudaporn Soonthorn)

Approved By: Narisa Poowasanpetch
(Miss Narisa Poowasanpetch)
Technical Management Team

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ANALYSIS/TEST REPORT

Customer	: EED/SECOT Co., Ltd.	Request Service No.	: 1417/66
For	: PTT Global Chemical Public Co., Ltd, Branch 6 (Refinery GC6)	Sampling Date	: 19/08/2023
Address	: No.8, I-8 Road, Map Ta Phut Industrial Estate, Map Ta Phut, Mueang Rayong , Rayong Province 21150	Received Date	: 21/08/2023
		Test Date	: 25/08/2023
Tel/Fax	: 0-3897-1000 / -	Report Date	: 04/09/2023

SAMPLE DESCRIPTION / SAMPLING INFORMATION

Sample Designated As	: Workplace Air	Sampling Method	: Sampling Bag
Sampling By	: SECOT Co., Ltd.	Sample Condition	: Normal

Sampling Location	Sampling Date/Time	Compound	Analytical Method	ND ppm	RESULT ppm	STANDARD ppm
Panel 4	19/08/2023 09:48-10:03	Total Hydrocarbon	THC Analyzer / FID	< 0.10	3.05	-

Analyst By: Sudaporn S.
(Miss Sudaporn Soonthorn)

Approved By: Narisa Poowasanpetch
(Miss Narisa Poowasanpetch)
Technical Management Team

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239 RIMKLONGPRAPA ROAD, BANGSUE, BANGKOK 10800, THAILAND

TEL. (662) 959-3600 FAX (662) 959-3535 Website: secot.co.th E-mail: envserv@secot.co.th

ANALYSIS/TEST REPORT

Customer	: EED/SECOT Co., Ltd.	Request Service No.	: 1446/66
For	: PTT Global Chemical Public Co., Ltd, Branch 6 (Refinery GC6)	Sampling Date	: 22/08/2023
Address	: No.8, I-8 Road, Map Ta Phut Industrial Estate, Map Ta Phut, Mueang Rayong , Rayong Province 21150	Received Date	: 25/08/2023
		Test Date	: 30/08/2023
Tel/Fax	: 0-3897-1000 / -	Report Date	: 13/09/2023

SAMPLE DESCRIPTION / SAMPLING INFORMATION

Sample Designated As	: Workplace Air	Sampling Method	: Sampling Bag
Sampling By	: SECOT Co., Ltd.	Sample Condition	: Normal

Sampling Location	Sampling Date/Time	Compound	Analytical Method	ND ppm	RESULT ppm	STANDARD ppm
Panel 5	22/08/2023 10:05-10:20	Total Hydrocarbon	THC Analyzer / FID	< 0.10	3.86	-

Analyst By: Sudaporn S.
(Miss Sudaporn Soonthorn)

Approved By: Narisa Poowasanpetch
(Miss Narisa Poowasanpetch)
Technical Management Team

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ANALYSIS/TEST REPORT

Customer	: EED/SECOT Co., Ltd.	Request Service No.	: 1446/66
For	: PTT Global Chemical Public Co., Ltd, Branch 6 (Refinery GC6)	Sampling Date	: 21/08/2023
Address	: No.8, I-8 Road, Map Ta Phut Industrial Estate, Map Ta Phut, Mueang Rayong , Rayong Province 21150	Received Date	: 25/08/2023
		Test Date	: 30/08/2023
Tel/Fax	: 0-3897-1000 / -	Report Date	: 13/09/2023

SAMPLE DESCRIPTION / SAMPLING INFORMATION

Sample Designated As	: Workplace Air	Sampling Method	: Sampling Bag
Sampling By	: SECOT Co., Ltd.	Sample Condition	: Normal

Sampling Location	Sampling Date/Time	Compound	Analytical Method	ND ppm	RESULT ppm	STANDARD ppm
Panel 6	21/08/2023 13:25-13:40	Total Hydrocarbon	THC Analyzer / FID	< 0.10	4.57	-

Analyst By : Sudaporn S.
(Miss Sudaporn Soonthorn)

Approved By : Narisa Poowasanetch
(Miss Narisa Poowasanetch)

Technical Management Team

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ANALYSIS/TEST REPORT

Customer	: EED/SECOT Co., Ltd.	Request Service No.	: 1382/66
For	: PTT Global Chemical Public Co., Ltd, Branch 6 (Refinery GC6)	Sampling Date	: 15/08/2023
Address	: No.8, I-8 Road, Map Ta Phut Industrial Estate, Map Ta Phut, Mueang Rayong , Rayong Province 21150	Received Date	: 17/08/2023
		Test Date	: 22/08/2023
Tel/Fax	: 0-3897-1000 / -	Report Date	: 30/08/2023

SAMPLE DESCRIPTION / SAMPLING INFORMATION

Sample Designated As	: Workplace Air	Sampling Method	: Passive Diffusion
Sampling By	: SECOT Co., Ltd.	Sample Condition	: Normal

Sampling Location	Sampling Date/Time	Compound	Analytical Method	ND ppm	RESULT ppm	STANDARD ppm
Panel 1	15/08/2023 10:28-14:28	Benzene	OSHA 1005/ GC FID	< 0.04	ND	1

Analyst By : Sudaporn S.
(Miss Sudaporn Soonthorn)

Approved By : Narisa Poowasanetch
(Miss Narisa Poowasanetch)

Technical Management Team

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ANALYSIS/TEST REPORT

Customer	: EED/SECOT Co., Ltd.	Request Service No.	: 1395/66
For	: PTT Global Chemical Public Co., Ltd, Branch 6 (Refinery GC6)	Sampling Date	: 16/08/2023
Address	: No.8, I-8 Road, Map Ta Phut Industrial Estate, Map Ta Phut, Mueang Rayong , Rayong Province 21150	Received Date	: 18/08/2023
		Test Date	: 22/08/2023
Tel/Fax	: 0-3897-1000 / -	Report Date	: 30/08/2023

SAMPLE DESCRIPTION / SAMPLING INFORMATION

Sample Designated As	: Workplace Air	Sampling Method	: Passive Diffusion
Sampling By	: SECOT Co., Ltd.	Sample Condition	: Normal

Sampling Location	Sampling Date/Time	Compound	Analytical Method	ND ppm	RESULT ppm	STANDARD ppm
Panel 2	16/08/2023 10:40-10:55	Benzene	OSHA 1005/ GC FID	< 0.04	ND	5

Analyst By : Sudaporn S.
(Miss Sudaporn Soonthorn)

Approved By : Narisa Poowasanpetch
(Miss Narisa Poowasanpetch)
Technical Management Team

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ANALYSIS/TEST REPORT

Customer	: EED/SECOT Co., Ltd.	Request Service No.	: 1417/66
For	: PTT Global Chemical Public Co., Ltd, Branch 6 (Refinery GC6)	Sampling Date	: 18/08/2023
Address	: No.8, I-8 Road, Map Ta Phut Industrial Estate, Map Ta Phut, Mueang Rayong , Rayong Province 21150	Received Date	: 21/08/2023
		Test Date	: 22/08/2023
Tel/Fax	: 0-3897-1000 / -	Report Date	: 04/09/2023

SAMPLE DESCRIPTION / SAMPLING INFORMATION

Sample Designated As	: Workplace Air	Sampling Method	: Passive Diffusion
Sampling By	: SECOT Co., Ltd.	Sample Condition	: Normal

Sampling Location	Sampling Date/Time	Compound	Analytical Method	ND ppm	RESULT ppm	STANDARD ppm
Panel 3	18/08/2023 09:47-13:47	Benzene	OSHA 1005/ GC FID	< 0.04	ND	1

Analyst By : Sudaporn S.
(Miss Sudaporn Soonthorn)

Approved By : Narisa Poowasanpetch
(Miss Narisa Poowasanpetch)
Technical Management Team

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TEL. (662) 959-3600 FAX (662) 959-3535 Website : secot.co.th E-mail : envserv@secot.co.th

ANALYSIS/TEST REPORT

Customer	: EED/SECOT Co., Ltd.	Request Service No.	: 1446/66
For	: PTT Global Chemical Public Co., Ltd, Branch 6 (Refinery GC6)	Sampling Date	: 22/08/2023
Address	: No.8, I-8 Road, Map Ta Phut Industrial Estate, Map Ta Phut, Mueang Rayong , Rayong Province 21150	Received Date	: 25/08/2023
		Test Date	: 01/09/2023
Tel/Fax	: 0-3897-1000 / -	Report Date	: 13/09/2023

SAMPLE DESCRIPTION / SAMPLING INFORMATION

Sample Designated As	: Workplace Air	Sampling Method	: Passive Diffusion
Sampling By	: SECOT Co., Ltd.	Sample Condition	: Normal

Sampling Location	Sampling Date/Time	Compound	Analytical Method	ND	RESULT	STANDARD
				ppm	ppm	ppm
Panel 5	22/08/2023 09:40-13:40	Benzene	OSHA 1005/ GC FID	< 0.04	ND	1

Analyst By :

Sudaporn S.

(Miss Sudaporn Soonthorn)

Approved By :

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

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ANALYSIS/TEST REPORT

Customer	: EED/SECOT Co., Ltd.	Request Service No.	: 1446/66
For	: PTT Global Chemical Public Co., Ltd, Branch 6 (Refinery GC6)	Sampling Date	: 21/08/2023
Address	: No.8, I-8 Road, Map Ta Phut Industrial Estate, Map Ta Phut, Mueang Rayong , Rayong Province 21150	Received Date	: 25/08/2023
		Test Date	: 01/09/2023
Tel/Fax	: 0-3897-1000 / -	Report Date	: 13/09/2023

SAMPLE DESCRIPTION / SAMPLING INFORMATION

Sample Designated As	: Workplace Air	Sampling Method	: Passive Diffusion
Sampling By	: SECOT Co., Ltd.	Sample Condition	: Normal

Sampling Location	Sampling Date/Time	Compound	Analytical Method	ND	RESULT	STANDARD
				ppm	ppm	ppm
Panel 6	21/08/2023 13:25-13:40	Benzene	OSHA 1005/ GC FID	< 0.04	ND	5

Analyst By :

Sudaporn S.

(Miss Sudaporn Soonthorn)

Approved By :

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

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ANALYSIS/TEST REPORT

Customer	: EED/SECOT Co., Ltd.	Request Service No.	: 1446/66
For	: PTT Global Chemical Public Co., Ltd, Branch 6 (Refinery GC6)	Sampling Date	: 21/08/2023
Address	: No.8, I-8 Road, Map Ta Phut Industrial Estate, Map Ta Phut, Mueang Rayong, Rayong Province 21150	Received Date	: 25/08/2023
		Test Date	: 01/09/2023
Tel/Fax	: 0-3897-1000 / -	Report Date	: 13/09/2023

SAMPLE DESCRIPTION / SAMPLING INFORMATION

Sample Designated As	: Workplace Air	Sampling Method	: Passive Diffusion
Sampling By	: SECOT Co., Ltd.	Sample Condition	: Normal

Sampling Location	Sampling Date/Time	Compound	Analytical Method	ND	RESULT	STANDARD
				ppm	ppm	ppm
Truck Loading	21/08/2023 14:11-18:11	Benzene	OSHA 1005/ GC FID	< 0.04	ND	1

Analyst By: Sudaporn S.
(Miss Sudaporn Soonthorn)

Approved By: Narisa Poowasanpetch
(Miss Narisa Poowasanpetch)
Technical Management Team

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TEL. (662) 959-3600 FAX (662) 959-3535 Website: secot.co.th E-mail: envserv@secot.co.th

ANALYSIS/TEST REPORT

Customer	: EED/SECOT Co., Ltd.	Request Service No.	: 1417/66
For	: PTT Global Chemical Public Co., Ltd, Branch 6 (Refinery GC6)	Sampling Date	: 18/08/2023
Address	: No.8, I-8 Road, Map Ta Phut Industrial Estate, Map Ta Phut, Mueang Rayong, Rayong Province 21150	Received Date	: 21/08/2023
		Test Date	: 25/08/2023
Tel/Fax	: 0-3897-1000 / -	Report Date	: 04/09/2023

SAMPLE DESCRIPTION / SAMPLING INFORMATION

Sample Designated As	: Workplace Air	Sampling Method	: Sampling Bag
Sampling By	: SECOT Co., Ltd.	Sample Condition	: Normal

Sampling Location	Sampling Date/Time	Compound	Analytical Method	ND	RESULT	STANDARD
				ppm	ppm	ppm
Panel 3	18/08/2023 09:54-10:09	NMHC	THC Analyzer/FID	< 0.05	0.10	-

Analyst By: Sudaporn S.
(Miss Sudaporn Soonthorn)

Approved By: Narisa Poowasanpetch
(Miss Narisa Poowasanpetch)
Technical Management Team

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ANALYSIS/TEST REPORT

Customer	: EED/SECOT Co., Ltd.	Request Service No.	: 2021/66
For	: PTT Global Chemical Public Co., Ltd, Branch 6 (Refinery GC6)	Sampling Date	: 13-15/11/2023
Address	: No.8, I-8 Road, Map Ta Phut Industrial Estate, Map Ta Phut, Mueang Rayong , Rayong Province 21150	Received Date	: 17/11/2023
		Test Date	: 21/11/2023
Tel/Fax	: 0-3897-1000 / -	Report Date	: 28/11/2023

SAMPLE DESCRIPTION / SAMPLING INFORMATION

Sample Designated As	: Workplace Air	Sampling Method	: Sorbent Adsorption
Sampling By	: SECOT Co., Ltd.	Sample Condition	: Normal

Sampling Location	Sampling Date/Time	Compound	Analytical Method	ND ppm	RESULT ppm	STANDARD ppm
Panel 1	13/11/2023 09:36-13:36	Hydrogen sulfide	NIOSH 6013/IC	< 0.03	ND	20
Panel 2	14/11/2023 09:21-13:21	Hydrogen sulfide	NIOSH 6013/IC	< 0.03	ND	20
Panel 3	15/11/2023 09:24-13:24	Hydrogen sulfide	NIOSH 6013/IC	< 0.03	ND	20

Analyst By : Phatchara Samanchan
(Miss Phatchara Samanchan)

Approved By :
(Miss Narisa Poowasanpetch)
Technical Management Team

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ANALYSIS/TEST REPORT

Customer	: EED/SECOT Co., Ltd.	Request Service No.	: 1991/66
For	: PTT Global Chemical Public Co., Ltd, Branch 6 (Refinery GC6)	Sampling Date	: 07/11/2023
Address	: No.8, I-8 Road, Map Ta Phut Industrial Estate, Map Ta Phut, Mueang Rayong , Rayong Province 21150	Received Date	: 13/11/2023
		Test Date	: 14/11/2023
Tel/Fax	: 0-3897-1000 / -	Report Date	: 20/11/2023

SAMPLE DESCRIPTION / SAMPLING INFORMATION

Sample Designated As	: Workplace Air	Sampling Method	: Sorbent Adsorption
Sampling By	: SECOT Co., Ltd.	Sample Condition	: Normal

Sampling Location	Sampling Date/Time	Compound	Analytical Method	ND ppm	RESULT ppm	STANDARD ppm
Panel 5	07/11/2023 09:30-13:30	Hydrogen sulfide	NIOSH 6013/IC	< 0.03	ND	20

Analyst By : Phatchara Samanchan
(Miss Phatchara Samanchan)

Approved By :
(Miss Narisa Poowasanpetch)
Technical Management Team

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ANALYSIS/TEST REPORT

Customer	: EED/SECOT Co., Ltd.	Request Service No.	: 2021/66
For	: PTT Global Chemical Public Co., Ltd, Branch 6 (Refinery GC6)	Sampling Date	: 10, 13-14, 16/11/2023
Address	: No.8, I-8 Road, Map Ta Phut Industrial Estate, Map Ta Phut, Mueang Rayong , Rayong Province 21150	Received Date	: 17/11/2023
		Test Date	: 18/11/2023
Tel/Fax	: 0-3897-1000 / -	Report Date	: 28/11/2023

SAMPLE DESCRIPTION / SAMPLING INFORMATION

Sample Designated As	: Workplace Air	Sampling Method	: Sampling Bag
Sampling By	: SECOT Co., Ltd.	Sample Condition	: Normal

Sampling Location	Sampling Date/Time	Compound	Analytical Method	ND ppm	RESULT ppm	STANDARD ppm
Panel 1	13/11/2023 09:36-09:51	Total Hydrocarbon	THC Analyzer / FID	< 0.10	4.02	-
Panel 2	14/11/2023 09:21-09:36	Total Hydrocarbon	THC Analyzer / FID	< 0.10	4.45	-
Panel 4	10/11/2023 09:00-09:15	Total Hydrocarbon	THC Analyzer / FID	< 0.10	4.20	-
Panel 6	16/11/2023 09:42-09:57	Total Hydrocarbon	THC Analyzer / FID	< 0.10	4.10	-

Analyst By :

Sudaporn S.

(Miss Sudaporn Soonthorn)

Approved By :

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

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ANALYSIS/TEST REPORT

Customer	: EED/SECOT Co., Ltd.	Request Service No.	: 1991/66
For	: PTT Global Chemical Public Co., Ltd, Branch 6 (Refinery GC6)	Sampling Date	: 07/11/2023
Address	: No.8, I-8 Road, Map Ta Phut Industrial Estate, Map Ta Phut, Mueang Rayong , Rayong Province 21150	Received Date	: 13/11/2023
		Test Date	: 14/11/2023
Tel/Fax	: 0-3897-1000 / -	Report Date	: 20/11/2023

SAMPLE DESCRIPTION / SAMPLING INFORMATION

Sample Designated As	: Workplace Air	Sampling Method	: Sampling Bag
Sampling By	: SECOT Co., Ltd.	Sample Condition	: Normal

Sampling Location	Sampling Date/Time	Compound	Analytical Method	ND ppm	RESULT ppm	STANDARD ppm
Panel 5	07/11/2023 09:30-09:45	Total Hydrocarbon	THC Analyzer / FID	< 0.10	2.13	-

Analyst By :

Sudaporn S.

(Miss Sudaporn Soonthorn)

Approved By :

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

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TEL. (662) 959-3600 FAX (662) 959-3535 Website : secot.co.th E-mail : envserv@secot.co.th

ANALYSIS/TEST REPORT

Customer	: EED/SECOT Co., Ltd.	Request Service No.	: 2021/66
For	: PTT Global Chemical Public Co., Ltd, Branch 6 (Refinery GC6)	Sampling Date	: 13-16/11/2023
Address	: No.8, I-8 Road, Map Ta Phut Industrial Estate, Map Ta Phut, Mueang Rayong , Rayong Province 21150	Received Date	: 17/11/2023
		Test Date	: 27/11/2023
Tel/Fax	: 0-3897-1000 / -	Report Date	: 28/11/2023

SAMPLE DESCRIPTION / SAMPLING INFORMATION

Sample Designated As	: Workplace Air	Sampling Method	: Passive Diffusion
Sampling By	: SECOT Co., Ltd.	Sample Condition	: Normal

Sampling Location	Sampling Date/Time	Compound	Analytical Method	ND ppm	RESULT ppm	STANDARD ppm
Panel 1	13/11/2023 09:36-13:36	Benzene	OSHA 1005/ GC FID	< 0.04	ND	1
Panel 2	14/11/2023 09:21-13:21	Benzene	OSHA 1005/ GC FID	< 0.04	ND	1
Panel 3	15/11/2023 09:24-13:24	Benzene	OSHA 1005/ GC FID	< 0.04	ND	1
Panel 6	16/11/2023 09:42-13:42	Benzene	OSHA 1005/ GC FID	< 0.04	ND	1

Analyst By : Sudaporn S.
(Miss Sudaporn Soonthorn)

Approved By : Narisa Poowasanetch
(Miss Narisa Poowasanetch)
Technical Management Team

Remark : 1. Reported analysis refers to submitted sample only.

2. This report shall not be reproduced, except in full, without official approval.

3. Notification of the Department of Labour Protection and Welfare, B.E.2560 (2017).

The average concentration limit during normal working period.

4. ND = non-detectable.



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SECOT CO., LTD.

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239 RIMKLONGPRAPA ROAD, BANGSUE, BANGKOK 10800, THAILAND

TEL. (662) 959-3600 FAX (662) 959-3535 Website : secot.co.th E-mail : envserv@secot.co.th

ANALYSIS/TEST REPORT

Customer	: EED/SECOT Co., Ltd.	Request Service No.	: 1991/66
For	: PTT Global Chemical Public Co., Ltd, Branch 6 (Refinery GC6)	Sampling Date	: 07/11/2023
Address	: No.8, I-8 Road, Map Ta Phut Industrial Estate, Map Ta Phut, Mueang Rayong , Rayong Province 21150	Received Date	: 13/11/2023
		Test Date	: 17/11/2023
Tel/Fax	: 0-3897-1000 / -	Report Date	: 20/11/2023

SAMPLE DESCRIPTION / SAMPLING INFORMATION

Sample Designated As	: Workplace Air	Sampling Method	: Passive Diffusion
Sampling By	: SECOT Co., Ltd.	Sample Condition	: Normal

Sampling Location	Sampling Date/Time	Compound	Analytical Method	ND ppm	RESULT ppm	STANDARD ppm
Panel 5	07/11/2023 09:30-13:30	Benzene	OSHA 1005/GC FID	< 0.04	ND	1

Analyst By : Sudaporn S.
(Miss Sudaporn Soonthorn)

Approved By : Narisa Poowasanetch
(Miss Narisa Poowasanetch)
Technical Management Team

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TEL. (662) 959-3600 FAX (662) 959-3535 Website : secot.co.th E-mail : envserv@secot.co.th

ANALYSIS/TEST REPORT

Customer	: EED/SECOT Co., Ltd.	Request Service No.	: 1991/66
For	: PTT Global Chemical Public Co., Ltd, Branch 6 (Refinery GC6)	Sampling Date	: 08/11/2023
Address	: No.8, I-8 Road, Map Ta Phut Industrial Estate, Map Ta Phut, Mueang Rayong , Rayong Province 21150	Received Date	: 13/11/2023
		Test Date	: 17/11/2023
Tel/Fax	: 0-3897-1000 / -	Report Date	: 20/11/2023

SAMPLE DESCRIPTION / SAMPLING INFORMATION

Sample Designated As	: Workplace Air	Sampling Method	: Passive Diffusion
Sampling By	: SECOT Co., Ltd.	Sample Condition	: Normal

Sampling Location	Sampling Date/Time	Compound	Analytical Method	ND ppm	RESULT ppm	STANDARD ppm
สถานีขนถ่ายน้ำมันทางรอรทุก	08/11/2023 09:30-13:30	Benzene	OSHA 1005/GC FID	< 0.04	ND	1

Analyst By : Sudaporn S.
(Miss Sudaporn Soonthorn)

Approved By : Narisa Poowasanpetch
(Miss Narisa Poowasanpetch)
Technical Management Team

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- Notification of the Department of Labour Protection and Welfare, B.E.2560 (2017).
The average concentration limit during normal working period.
- ND = non-detectable.



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ANALYSIS/TEST REPORT

Customer	: EED/SECOT Co., Ltd.	Request Service No.	: 2021/66
For	: PTT Global Chemical Public Co., Ltd, Branch 6 (Refinery GC6)	Sampling Date	: 15/11/2023
Address	: No.8, I-8 Road, Map Ta Phut Industrial Estate, Map Ta Phut, Mueang Rayong , Rayong Province 21150	Received Date	: 17/11/2023
		Test Date	: 18/11/2023
Tel/Fax	: 0-3897-1000 / -	Report Date	: 28/11/2023

SAMPLE DESCRIPTION / SAMPLING INFORMATION

Sample Designated As	: Workplace Air	Sampling Method	: Sampling Bag
Sampling By	: SECOT Co., Ltd.	Sample Condition	: Normal

Sampling Location	Sampling Date/Time	Compound	Analytical Method	ND ppm	RESULT ppm	STANDARD ppm
Panel 3	15/11/2023 09:24-09:39	NMHC	THC Analyzer/FID	< 0.05	3.06	-

Analyst By : Sudaporn S.
(Miss Sudaporn Soonthorn)

Approved By : Narisa Poowasanpetch
(Miss Narisa Poowasanpetch)
Technical Management Team

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- ND = non-detectable.
- No Standard.