

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.	: 1356/67
	(Refinery GC 6)	SAMPLING METHOD	: Subatmospheric Pressure Sampling
SAMPLING BY	: SECOT Co., Ltd.	ANALYTICAL DATE	: 08/07/2024
SAMPLING DATE	: 02-03/07/2024	SAMPLE CONDITION	: Normal
SAMPLING TIME	: 11:55-12:10	FILE CODE	: 224010_TO-15_July
RECEIVED DATE	: 04/07/2024		
REPORT DATE	: 12/07/2024		

Compound	Non Detection		SAMPLING LOCATION		STANDARD*
	ppbv	µg/m ³	Takuan-Ao Pradu Community 1	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

Siriwan Chimsa-nga
(Miss Siriwan Chimsa-nga)

Analyst

Mrs. Anaya Tipparuk
(Mrs. Anaya Tipparuk)

Technical Management Team

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

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

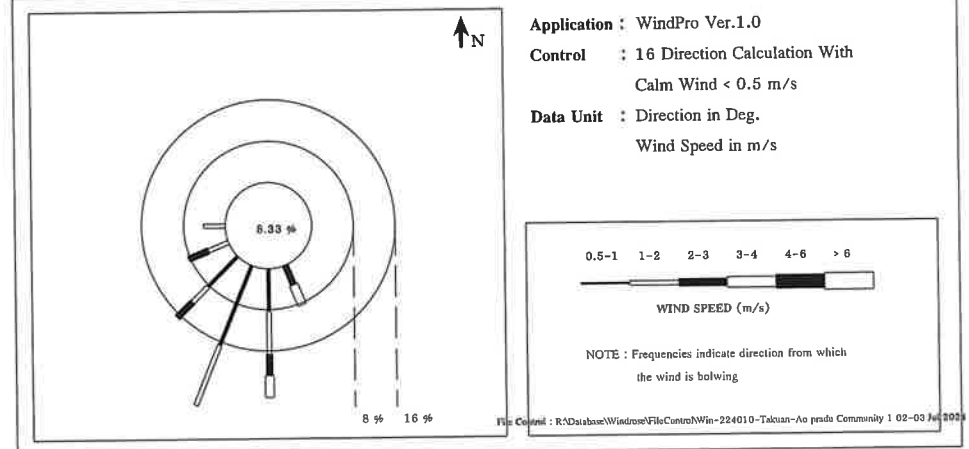
3. * Notification of the Pollution Control Department, dated December 18,B.E.2551(2008), which was published in the Royal Government Gazette Vol. 126, Special Part 13D dated January 27, B.E. 2552 (2009).



Meteorological Monitoring Results : Wind Rose MTR-PTTGC6-Refinery

Location : Takuan-Ao pradu Community 1
Wind Speed Model : Novalynx WS-25
Wind Direction Model : Novalynx WS-25
Monitor period : 02-03 Jul 2024
Serial No : A5088
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	0.0000	0.0000	0.0000	0.0000	0.0000
SSE	0.0000	0.0000	0.0417	0.0417	0.0000	0.0000	0.0833
S	0.0833	0.0833	0.0417	0.0417	0.0000	0.0000	0.2500
SSW	0.1667	0.1250	0.0000	0.0000	0.0000	0.0000	0.2917
SW	0.0833	0.0417	0.0417	0.0000	0.0000	0.0000	0.1667
WSW	0.0000	0.0417	0.0417	0.0000	0.0000	0.0000	0.0833
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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
CALM	0.0833						



(Miss Katesarin Vorradetwittaya)
(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
(Miss Preeda Somjai)
Technical Management Team



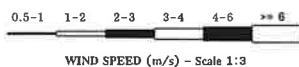
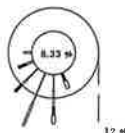
Meteorological Monitoring Results : Wind Rose

MTR-PTTGC6-Refinery

Location : Takuan-Ao pradu Community 1 Monitor period : 02-03 Jul 2024
 Wind Speed Model : Novalynx WS-25 Serial No : A5088
 Wind Direction Model : Novalynx WS-25 Serial No : A5088

Time	02-03 Jul 2024	
	WS(m/s)	WD
12:00 - 13:00	2.6	S
13:00 - 14:00	3.0	S
14:00 - 15:00	0.9	S
15:00 - 16:00	2.5	SSE
16:00 - 17:00	3.0	SSE
17:00 - 18:00	2.1	WSW
18:00 - 19:00	2.0	SW
19:00 - 20:00	1.0	SSW
20:00 - 21:00	0.4	SSW
21:00 - 22:00	1.4	SSW
22:00 - 23:00	1.6	S
23:00 - 24:00	1.1	SSW
00:00 - 01:00	0.9	SW
01:00 - 02:00	0.4	SSW
02:00 - 03:00	0.5	SSW
03:00 - 04:00	0.8	SSW
04:00 - 05:00	0.5	SSW
05:00 - 06:00	0.5	SW
06:00 - 07:00	0.5	SSW
07:00 - 08:00	0.7	S
08:00 - 09:00	1.9	S
09:00 - 10:00	1.5	WSW
10:00 - 11:00	1.8	W
11:00 - 12:00	1.1	SW

Wind Rose



File Control : R:\Database\Windrose\FileControl\Win-224010-Takuan-Ao pradu Community 1 02-03 Jul 2024

(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. : 1356/67
 (Refinery GC 6) SAMPLING METHOD : Subatmospheric Pressure Sampling
 SAMPLING BY : SECOT Co., Ltd. ANALYTICAL DATE : 08/07/2024
 SAMPLING DATE : 02-03/07/2024 SAMPLE CONDITION : Normal
 SAMPLING TIME : 11:45-12:15 FILE CODE : 224010_TO-15_July
 RECEIVED DATE : 04/07/2024
 REPORT DATE : 12/07/2024

Compound	SAMPLING LOCATION				STANDARD* (µg/m ³)
	Non Detection		Takuan-Ao Pradu Community 2		
	ppbv	µg/m ³	ppbv	µg/m ³	
Benzene	0.004	0.013	0.44	1.41	7.6

Methods for the Determination of Toxic Organic Compound in Ambient Air, 7th : EPA Methods TO-15,1999

Siriwan Chimsa-nga

(Miss Siriwan Chimsa-nga)

Analyst

(Mrs. Araya Tipparuk)

(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 Jul 2024

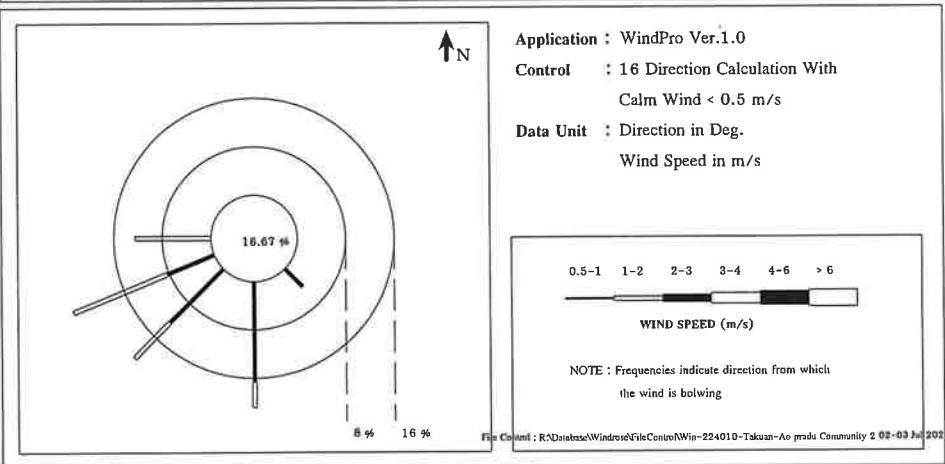
Wind Speed Model : Novalynx WS-25

Serial No : A5092

Wind Direction Model : Novalynx WS-25

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	0.0000	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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
SSE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S	0.1667	0.0417	0.0000	0.0000	0.0000	0.0000	0.2083
SSW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SW	0.1250	0.0833	0.0000	0.0000	0.0000	0.0000	0.2083
WSW	0.0833	0.1667	0.0000	0.0000	0.0000	0.0000	0.2500
W	0.0000	0.1250	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	0.1667						



(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 : 02-03 Jul 2024

Wind Speed Model : Novalynx WS-25

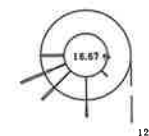
Serial No : A5092

Wind Direction Model : Novalynx WS-25

Serial No : A5092

Time	02-03 Jul 2024	
	WS(m/s)	WD
12:00 - 13:00	0.4	S
13:00 - 14:00	0.8	SE
14:00 - 15:00	0.5	WSW
15:00 - 16:00	0.7	SW
16:00 - 17:00	1.4	W
17:00 - 18:00	1.1	WSW
18:00 - 19:00	1.2	S
19:00 - 20:00	1.0	W
20:00 - 21:00	1.3	W
21:00 - 22:00	1.0	WSW
22:00 - 23:00	0.6	SW
23:00 - 24:00	1.3	SW
00:00 - 01:00	0.4	S
01:00 - 02:00	0.8	WSW
02:00 - 03:00	0.4	SSW
03:00 - 04:00	0.5	S
04:00 - 05:00	0.3	SSE
05:00 - 06:00	0.7	S
06:00 - 07:00	0.8	SW
07:00 - 08:00	0.6	S
08:00 - 09:00	1.1	WSW
09:00 - 10:00	0.7	S
10:00 - 11:00	1.1	WSW
11:00 - 12:00	1.3	SW

Wind Rose



File Control : R:\Database\Windrose\FileControl\Win-224010-Takuan-Ao pradu Community 2 02-03 Jul 2024

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
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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.	: 1546/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Subatmospheric Pressure Sampling
SAMPLING DATE	: 01-02/08/2024	ANALYTICAL DATE	: 07/08/2024
SAMPLING TIME	: 09:21-08:40	SAMPLE CONDITION	: Normal
RECEIVED DATE	: 03/08/2024	FILE CODE	: 224010_TO-15_August
REPORT DATE	: 17/08/2024		

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	0.22	0.70	7.6

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Siriwan Chimsa-nga
(Miss Siriwan Chimsa-nga)

Analyst

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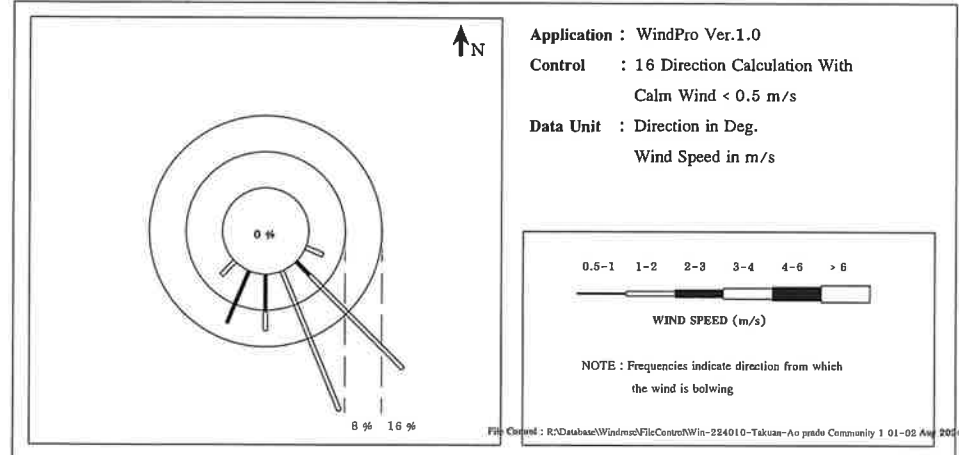
R:\Database\Windrose\FileControlWin-224010-Takuan-Ao pradu Community 1 01-02 Aug 2024



Meteorological Monitoring Results : Wind Rose
MTR-PTTGC6-Refinery

Location : Takuan-Ao pradu Community 1
Wind Speed Model : NRG Symphonie
Wind Direction Model : NRG Symphonie
Monitor period : 01-02 Aug 2024
Serial No : 428003640
Serial No : 428003640

Direction	Percentage of Occurrence of Wind Direct Grouped in Various Wind Speed						
	0.5-1 m/s	1-2 m/s	2-3 m/s	3-4 m/s	4-6 m/s	More than 6	Total
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	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
SE	0.0417	0.2917	0.0000	0.0000	0.0000	0.0000	0.3333
SSE	0.0000	0.3333	0.0000	0.0000	0.0000	0.0000	0.3333
S	0.0833	0.0417	0.0000	0.0000	0.0000	0.0000	0.1250
SSW	0.1250	0.0000	0.0000	0.0000	0.0000	0.0000	0.1250
SW	0.0000	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
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
(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team



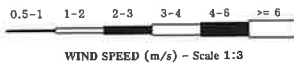
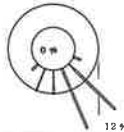
Meteorological Monitoring Results : Wind Rose

MTR-PTTGC6-Refinery

Location : Takuan-Ao pradu Community 1 Monitor period : 01-02 Aug 2024
 Wind Speed Model : NRG Symphonie Serial No : 428003640
 Wind Direction Model : NRG Symphonie Serial No : 428003640

Time	01-02 Aug 2024	
	WS(m/s)	WD
08:00 - 09:00	1.2	SSE
09:00 - 10:00	1.6	SSE
10:00 - 11:00	1.5	SE
11:00 - 12:00	1.3	SE
12:00 - 13:00	1.3	SSE
13:00 - 14:00	1.3	SE
14:00 - 15:00	1.0	SE
15:00 - 16:00	0.7	SE
16:00 - 17:00	1.0	SSE
17:00 - 18:00	1.2	SSE
18:00 - 19:00	1.0	ESE
19:00 - 20:00	1.0	SE
20:00 - 21:00	1.0	SE
21:00 - 22:00	1.7	SSE
22:00 - 23:00	1.1	SSE
23:00 - 24:00	0.9	SSW
00:00 - 01:00	0.8	SSW
01:00 - 02:00	1.1	SW
02:00 - 03:00	1.1	S
03:00 - 04:00	0.6	S
04:00 - 05:00	0.6	SSW
05:00 - 06:00	0.6	S
06:00 - 07:00	1.1	SSE
07:00 - 08:00	1.1	SE

Wind Rose



File Control : R:\Database\Windrose\FileControl\Win-224010-Takuan-Ao pradu Community 1 01-02 Aug 2024

(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. : 1546/67
 (Refinery GC 6) SAMPLING METHOD : Subatmospheric Pressure Sampling
 SAMPLING BY : SECOT Co., Ltd. ANALYTICAL DATE : 07/08/2024
 SAMPLING DATE : 01-02/08/2024 SAMPLE CONDITION : Normal
 RECEIVED DATE : 03/08/2024 FILE CODE : 224010_TO-15_August
 REPORT DATE : 17/08/2024

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

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)
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Meteorological Monitoring Results : Wind Rose

MTR-PTTGC6-Refinery

Location : Takuan-Ao pradu Community 2

Monitor period : 01-02 Aug 2024

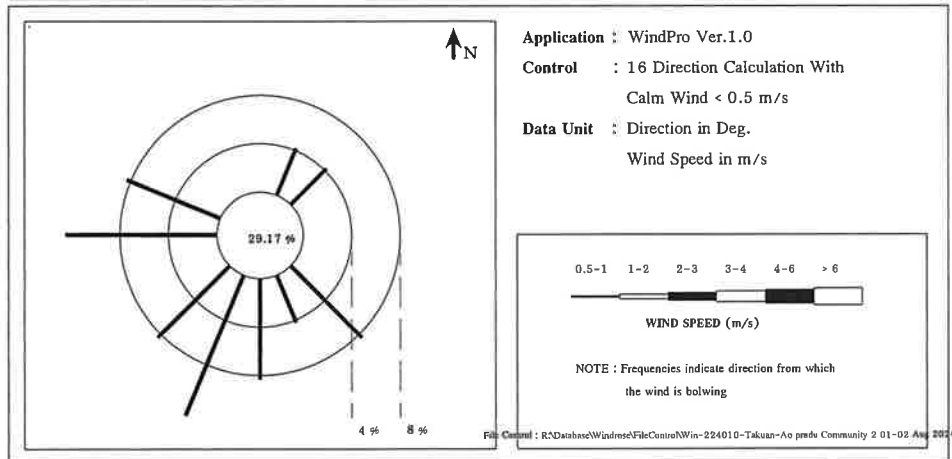
Wind Speed Model : NRG Symphonie

Serial No : 309016178

Wind Direction Model : NRG Symphonie

Serial No : 309016178

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	0.0417	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	0.0000	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	0.0833	0.0000	0.0000	0.0000	0.0000	0.0000	0.0833
SSE	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
S	0.0833	0.0000	0.0000	0.0000	0.0000	0.0000	0.0833
SSW	0.1250	0.0000	0.0000	0.0000	0.0000	0.0000	0.1250
SW	0.0833	0.0000	0.0000	0.0000	0.0000	0.0000	0.0833
WSW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
W	0.1250	0.0000	0.0000	0.0000	0.0000	0.0000	0.1250
WNW	0.0833	0.0000	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	0.2917						



(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 Aug 2024

Wind Speed Model : NRG Symphonie

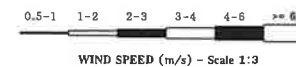
Serial No : 309016178

Wind Direction Model : NRG Symphonie

Serial No : 309016178

Time	01-02 Aug 2024	
	WS(m/s)	WD
08:00 - 09:00	0.4	SSE
09:00 - 10:00	0.6	S
10:00 - 11:00	0.7	SSE
11:00 - 12:00	0.6	S
12:00 - 13:00	0.8	SW
13:00 - 14:00	0.8	SSW
14:00 - 15:00	0.8	SSW
15:00 - 16:00	0.6	SSW
16:00 - 17:00	0.6	NNE
17:00 - 18:00	0.4	E
18:00 - 19:00	0.7	SE
19:00 - 20:00	0.5	SE
20:00 - 21:00	0.5	NE
21:00 - 22:00	0.4	WSW
22:00 - 23:00	0.4	W
23:00 - 24:00	0.4	W
00:00 - 01:00	0.4	W
01:00 - 02:00	0.4	W
02:00 - 03:00	0.5	SW
03:00 - 04:00	0.6	WNW
04:00 - 05:00	0.7	WNW
05:00 - 06:00	0.7	W
06:00 - 07:00	0.8	W
07:00 - 08:00	0.6	W

Wind Rose



File Control : R:\Database\Windrose\FileControlWin-224010-Takuan-Ao pradu Community 2 01-02 Aug 2024

(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.	: 1822/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Subatmospheric Pressure Sampling
SAMPLING DATE	: 02-03/09/2024	ANALYTICAL DATE	: 06/09/2024
SAMPLING TIME	: 12:00-12:38	SAMPLE CONDITION	: Normal
RECEIVED DATE	: 04/09/2024	FILE CODE	: 224010_TO-15_September
REPORT DATE	: 09/09/2024		

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	0.55	1.76	7.6

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

Sitwan Chimsa-nga
(Miss Siriwan Chimsa-nga)

Analyst

(Mrs. Araya Tipparak)

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).

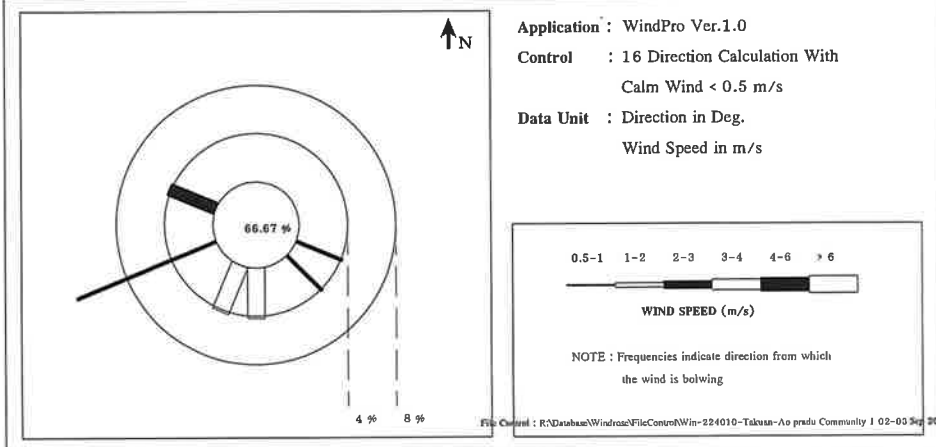
R:\Database\Windrose\FileControl\Win-224010-Takuan-Ao pradu Community 1 02-03 Sep 2024



Meteorological Monitoring Results : Wind Rose MTR-PTTGC6-Refinery

Location : Takuan-Ao pradu Community 1
Wind Speed Model : Novalynx WS-25
Wind Direction Model : Novalynx WS-25
Monitor period : 02-03 Sep 2024
Serial No : A4905
Serial No : A4905

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	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
SE	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
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	0.0417	0.0417
SSW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417	0.0417
SW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
WSW	0.1250	0.0000	0.0000	0.0000	0.0000	0.0000	0.1250
W	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
WNW	0.0000	0.0000	0.0000	0.0000	0.0417	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	0.6667						




(Miss Katesarin Vorradetwittaya)
Environmental Scientist

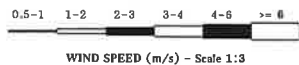
Preeda S.
(Miss Preeda Somjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose

MTR-PTTGC6-Refinery

Location : Takuan-Ao pradu Community 1		Monitor period : 02-03 Sep 2024	
Wind Speed Model : Novalynx WS-25		Serial No : A4905	
Wind Direction Model : Novalynx WS-25		Serial No : A4905	
Time	02-03 Sep 2024		WD
	WS(m/s)		
11:00 - 12:00	6.0		S
12:00 - 13:00	6.8		SSW
13:00 - 14:00	4.9		WNW
14:00 - 15:00	0.0		SW
15:00 - 16:00	0.0		SW
16:00 - 17:00	0.0		SW
17:00 - 18:00	0.0		ENE
18:00 - 19:00	0.0		NNE
19:00 - 20:00	0.0		ENE
20:00 - 21:00	0.0		NNE
21:00 - 22:00	0.0		N
22:00 - 23:00	0.0		NNE
23:00 - 24:00	0.0		NNE
00:00 - 01:00	0.6		ESE
01:00 - 02:00	0.5		SE
02:00 - 03:00	0.0		NNE
03:00 - 04:00	0.0		NNE
04:00 - 05:00	0.0		SW
05:00 - 06:00	0.0		NW
06:00 - 07:00	0.0		SE
07:00 - 08:00	0.7		WSW
08:00 - 09:00	0.8		WSW
09:00 - 10:00	0.0		SW
10:00 - 11:00	0.5		WSW
Wind Rose			



(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team



บริษัท ซีคอต จำกัด

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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.	: 1822/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Subatmospheric Pressure Sampling
SAMPLING DATE	: 02-03/09/2024	ANALYTICAL DATE	: 06/09/2024
SAMPLING TIME	: 11:50-12:26	SAMPLE CONDITION	: Normal
RECEIVED DATE	: 04/09/2024	FILE CODE	: 224010_TO-15_September
REPORT DATE	: 09/09/2024		

Compound	Non Detection		SAMPLING LOCATION		STANDARD*
	ppbv	µg/m ³	Takuan-Ao Pradu Community 2	µg/m ³	
Benzene	0.004	0.013	0.40	1.28	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

(Mrs. Araya Tippanuk)
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 : 02-03 Sep 2024

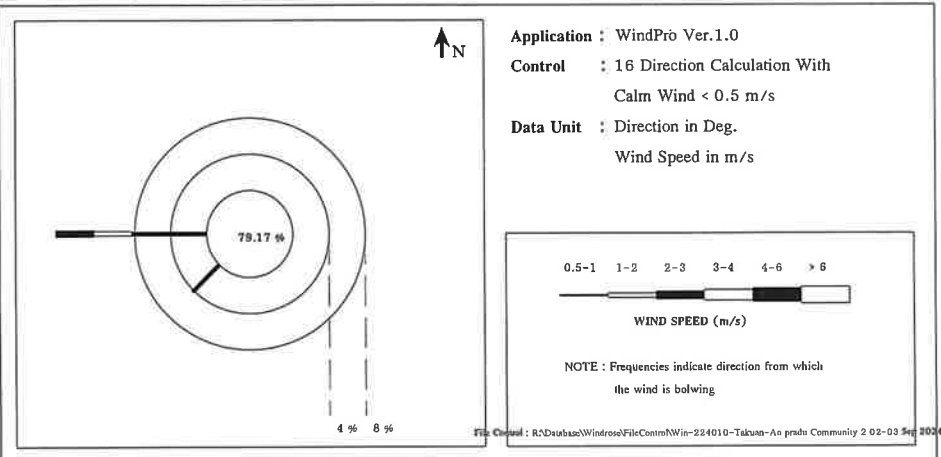
Wind Speed Model : Novalynx WS-25

Serial No : A5091

Wind Direction Model : Novalynx WS-25

Serial No : A5091

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SW	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
WSW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
W	0.0833	0.0417	0.0417	0.0000	0.0000	0.0000	0.1667
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	0.7917						



(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 Sep 2024

Wind Speed Model : Novalynx WS-25

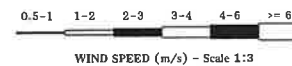
Serial No : A5091

Wind Direction Model : Novalynx WS-25

Serial No : A5091

Time	02-03 Sep 2024	
	WS(m/s)	WD
11:00 - 12:00	0.0	W
12:00 - 13:00	1.4	W
13:00 - 14:00	0.6	SW
14:00 - 15:00	0.0	SW
15:00 - 16:00	2.2	W
16:00 - 17:00	0.0	W
17:00 - 18:00	0.0	W
18:00 - 19:00	0.0	W
19:00 - 20:00	0.0	W
20:00 - 21:00	0.0	W
21:00 - 22:00	0.0	ENE
22:00 - 23:00	0.0	ENE
23:00 - 24:00	0.0	ENE
00:00 - 01:00	0.0	NNE
01:00 - 02:00	0.0	NNE
02:00 - 03:00	0.0	NNE
03:00 - 04:00	0.0	NNE
04:00 - 05:00	0.0	WNW
05:00 - 06:00	0.0	WNW
06:00 - 07:00	0.0	E
07:00 - 08:00	0.0	E
08:00 - 09:00	0.6	W
09:00 - 10:00	0.7	W
10:00 - 11:00	0.4	SW

Wind Rose



File Control : R:\Database\Windrose\FileControl\Win-224010-Takuan-Ao pradu Community 2 02-03 Sep 2024

(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.	: 2082/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Subatmospheric Pressure Sampling
SAMPLING DATE	: 07-08/10/2024	ANALYTICAL DATE	: 16-17/10/2024
SAMPLING TIME	: 12:50-12:32	SAMPLE CONDITION	: Normal
RECEIVED DATE	: 09/10/2024	FILE CODE	: 224010_TO-15_October
REPORT DATE	: 28/10/2024		

Compound	SAMPLING LOCATION				STANDARD* (µg/m ³)
	Non Detection		Takuan-Ao Pradu Community 1		
	ppbv	µg/m ³	ppbv	µg/m ³	
Benzene	0.004	0.013	0.52	1.66	7.6
Methods for the Determination of Toxic Organic Compound in Ambient Air, 2 nd - EPA Methods TO-15,1999					

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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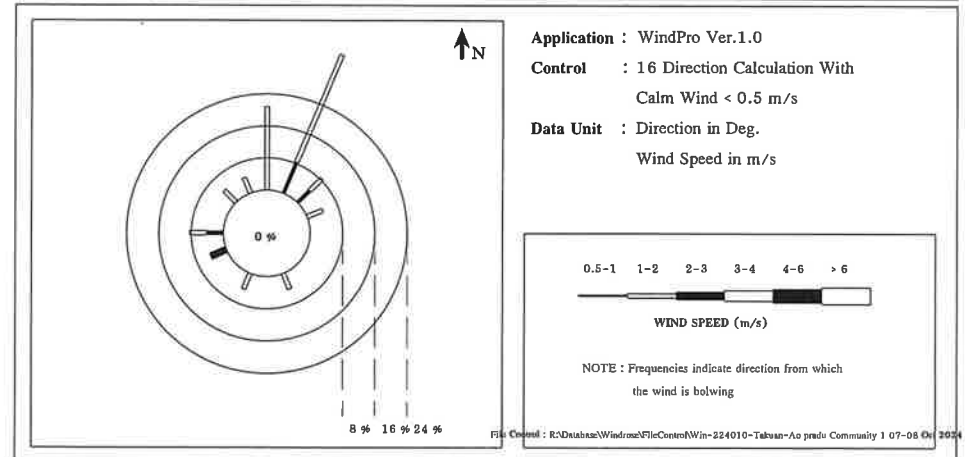
R:\Databases\Windrose\FileControl\Win-224010-Takuan-Ao pradu Community 1 07-08 Oct 2024



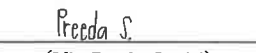
Meteorological Monitoring Results : Wind Rose
MTR-PTTGC6-Refinery

Location : Takuan-Ao pradu Community 1 Monitor period : 07-08 Oct 2024
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	0.2083	0.0000	0.0000	0.0000	0.0000	0.2083
NNE	0.0833	0.2917	0.0000	0.0000	0.0000	0.0000	0.3750
NE	0.0417	0.0417	0.0000	0.0000	0.0000	0.0000	0.0833
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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SSW	0.0000	0.0417	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	0.0417	0.0000	0.0000	0.0000	0.0417
W	0.0417	0.0417	0.0000	0.0000	0.0000	0.0000	0.0833
WNW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NW	0.0000	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
NNW	0.0000	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
CALM	0.0000						




(Miss Katesarin Vorradetwittaya)
Environmental Scientist


(Miss Preeda Somjai)
Technical Management Team

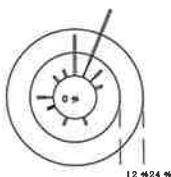


Meteorological Monitoring Results : Wind Rose MTR-PTTGC6-Refinery

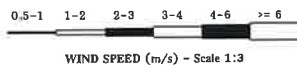
Location : Takuan-Ao pradu Community 1 Monitor period : 07-08 Oct 2024
Wind Speed Model : NRG Symphonie Serial No : 309018842
Wind Direction Model : NRG Symphonie Serial No : 309018842

Time	07-08 Oct 2024	
	WS(m/s)	WD
11:00 - 12:00	0.6	NE
12:00 - 13:00	1.6	SSE
13:00 - 14:00	1.6	SSW
14:00 - 15:00	2.3	WSW
15:00 - 16:00	1.9	W
16:00 - 17:00	0.7	W
17:00 - 18:00	1.4	NNW
18:00 - 19:00	1.2	ENE
19:00 - 20:00	1.3	N
20:00 - 21:00	1.2	N
21:00 - 22:00	1.2	NNE
22:00 - 23:00	0.9	NNE
23:00 - 24:00	1.2	NNE
00:00 - 01:00	1.3	NNE
01:00 - 02:00	1.2	NNE
02:00 - 03:00	0.9	NNE
03:00 - 04:00	1.1	N
04:00 - 05:00	1.0	NNE
05:00 - 06:00	1.4	N
06:00 - 07:00	1.2	N
07:00 - 08:00	1.4	NNE
08:00 - 09:00	1.2	NNE
09:00 - 10:00	1.4	NE
10:00 - 11:00	1.1	NW

Wind Rose



12 #24 #



File Control :R:\Database\Windrose\FileComm\Win-224010-Takuan-Ao pradu Community 1 07-08 Oct 2024

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team



บริษัท ซีคอต จำกัด SECOT CO., LTD.

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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. : 2082/67
(Refinery GC 6) SAMPLING METHOD : Subatmospheric Pressure Sampling
SAMPLING BY : SECOT Co., Ltd. ANALYTICAL DATE : 16-17/10/2024
SAMPLING DATE : 07-08/10/2024 SAMPLE CONDITION : Normal
SAMPLING TIME : 14:00-14:21 FILE CODE : 224010_TO-15_October
RECEIVED DATE : 09/10/2024
REPORT DATE : 28/10/2024

Compound	SAMPLING LOCATION				STANDARD* (µg/m ³)
	Non Detection		Takuan-Ao Pradu Community 2		
	ppbv	µg/m ³	ppbv	µg/m ³	
Benzene	0.004	0.013	0.31	0.99	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

(Mrs. Araya Tipparuk)

Technical Management Team

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Gazette Vol. 126, Special Part 13D dated January 27, B.E. 2552 (2009).



Meteorological Monitoring Results : Wind Rose MTR-PTTGC6-Refinery

Location : Takuan-Ao pradu Community 2

Monitor period : 07-08 Oct 2024

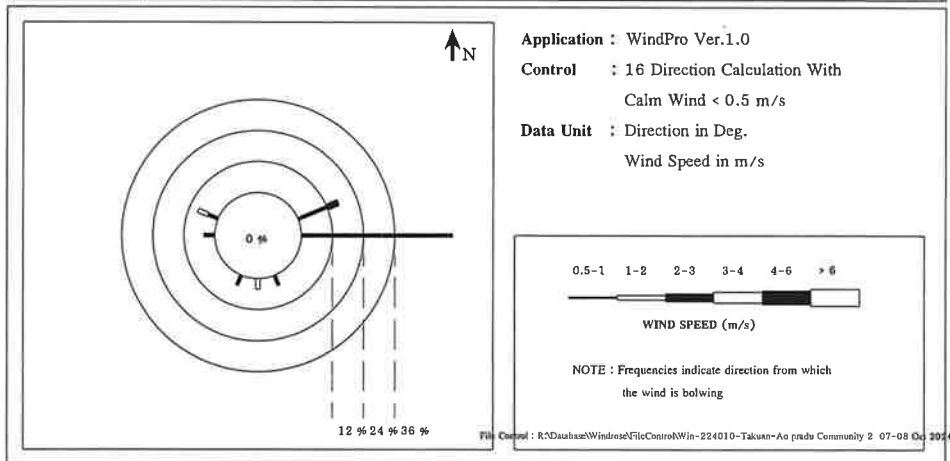
Wind Speed Model : Novalynx WS-25

Serial No : A4904

Wind Direction Model : Novalynx WS-25

Serial No : A4904

Direction	Percentage of Occurrence of Wind Direct Grouped in Various Wind Speed						
	0.5-1 m/s	1-2 m/s	2-3 m/s	3-4 m/s	4-6 m/s	More than 6	Total
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	0.1250	0.0000	0.0417	0.0000	0.0000	0.0000	0.1667
E	0.5833	0.0000	0.0000	0.0000	0.0000	0.0000	0.5833
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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
S	0.0000	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
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	0.0000	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	0.0000	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 2

Monitor period : 07-08 Oct 2024

Wind Speed Model : Novalynx WS-25

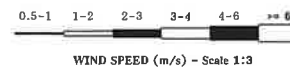
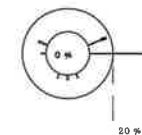
Serial No : A4904

Wind Direction Model : Novalynx WS-25

Serial No : A4904

Time	07-08 Oct 2024	
	WS(m/s)	WD
12:00 - 13:00	0.7	SSE
13:00 - 14:00	1.5	S
14:00 - 15:00	0.7	SSW
15:00 - 16:00	2.1	ENE
16:00 - 17:00	0.7	E
17:00 - 18:00	0.7	E
18:00 - 19:00	0.5	E
19:00 - 20:00	0.7	E
20:00 - 21:00	0.7	E
21:00 - 22:00	0.5	E
22:00 - 23:00	0.7	E
23:00 - 24:00	0.5	E
00:00 - 01:00	0.7	E
01:00 - 02:00	0.7	E
02:00 - 03:00	0.5	E
03:00 - 04:00	0.5	E
04:00 - 05:00	0.7	E
05:00 - 06:00	0.7	E
06:00 - 07:00	0.6	ENE
07:00 - 08:00	0.7	ENE
08:00 - 09:00	0.5	ENE
09:00 - 10:00	1.0	WNW
10:00 - 11:00	0.5	WNW
11:00 - 12:00	0.6	W

Wind Rose



(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team



บริษัท ซีคอต จำกัด SECOT CO., LTD.

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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. : 2292/67
SAMPLING METHOD : Subatmospheric Pressure Sampling
SAMPLING BY : SECOT Co., Ltd.
ANALYTICAL DATE : 15/11/2024
SAMPLING DATE : 06-07/11/2024
SAMPLE CONDITION : Normal
SAMPLING TIME : 14:20-14:39
FILE CODE : 224010_TO-15_November
RECEIVED DATE : 08/11/2024
REPORT DATE : 18/11/2024

Compound	Non Detection		SAMPLING LOCATION		STANDARD* ($\mu\text{g}/\text{m}^3$)
	ppbv	$\mu\text{g}/\text{m}^3$	Takuan-Ao Pradu Community 1	$\mu\text{g}/\text{m}^3$	
Benzene	0.004	0.013	0.46	1.47	7.6

Methods for the Determination of Toxic Organic Compound in Ambient Air, 3rd : EPA Methods TO-15,1999

Siriwan Chimsa-nga
(Miss Siriwan Chimsa-nga)

Analyst

Araya Tipparuk

(Mrs. Araya Tipparuk)

Technical Management Team

- Remark : 1. Reported analysis refers to submitted sample only.
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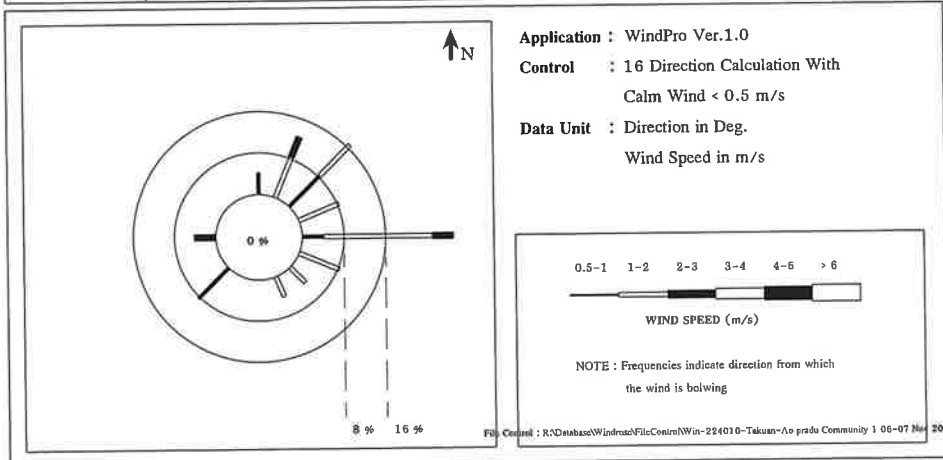
R:\Database\Windrose\FileControl\Win-224010-Takuan-Ao pradu Community 1 06-07 Nov 2024



Meteorological Monitoring Results : Wind Rose MTR-PTTGC6-Refinery

Location : Takuan-Ao pradu Community 1
Monitor period : 06-07 Nov 2024
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	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
NNE	0.0000	0.0833	0.0417	0.0000	0.0000	0.0000	0.1250
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	0.0417	0.2083	0.0417	0.0000	0.0000	0.0000	0.2917
ESE	0.0000	0.0833	0.0000	0.0000	0.0000	0.0000	0.0833
SE	0.0000	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
SSE	0.0000	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
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	0.0833	0.0000	0.0000	0.0000	0.0000	0.0000	0.0833
WSW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
W	0.0000	0.0000	0.0417	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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
CALM	0.0000						



Katesarin Vorradetwittaya

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preeda S.

(Miss Preeda Somjai)
Technical Management Team



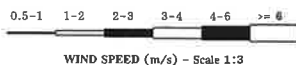
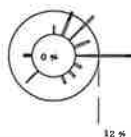
Meteorological Monitoring Results : Wind Rose

MTR-PTTGC6-Refinery

Location : Takuan-Ao pradu Community 1 Monitor period : 06-07 Nov 2024
 Wind Speed Model : NRG Symphonie Serial No : 30909366
 Wind Direction Model : NRG Symphonie Serial No : 30909366

Time	06-07 Nov 2024	
	WS(m/s)	WD
14:00 - 15:00	1.2	SE
15:00 - 16:00	2.1	W
16:00 - 17:00	1.8	E
17:00 - 18:00	1.4	E
18:00 - 19:00	1.9	E
19:00 - 20:00	1.6	E
20:00 - 21:00	0.7	E
21:00 - 22:00	1.3	E
22:00 - 23:00	0.8	N
23:00 - 24:00	2.0	E
00:00 - 01:00	1.9	NNE
01:00 - 02:00	1.1	NE
02:00 - 03:00	0.9	NE
03:00 - 04:00	1.8	NE
04:00 - 05:00	0.5	NE
05:00 - 06:00	1.6	ENE
06:00 - 07:00	1.6	ENE
07:00 - 08:00	1.0	SSE
08:00 - 09:00	0.8	SW
09:00 - 10:00	0.7	SW
10:00 - 11:00	2.0	NNE
11:00 - 12:00	1.5	NNE
12:00 - 13:00	1.4	ESE
13:00 - 14:00	1.3	ESE

Wind Rose



File Control : R:\Database\Windrose\Windrose\224010-Takuan-Ao pradu Community 1 06-07 Nov 2024

(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. : 2292/67
 (Refinery GC 6) SAMPLING METHOD : Subatmospheric Pressure Sampling
 SAMPLING BY : SECOT Co., Ltd. ANALYTICAL DATE : 15/11/2024
 SAMPLING DATE : 06-07/11/2024 SAMPLE CONDITION : Normal
 RECEIVED DATE : 08/11/2024 FILE CODE : 224010_TO-15_November
 REPORT DATE : 18/11/2024

Compound	SAMPLING LOCATION				STANDARD* (µg/m ³)
	Non Detection		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 ed. EPA Methods TO-15, 1999

(Miss Siriwan Chimsa-nga)

Analyst

(Mrs. Araya Tippasuk)

Technical Management Team

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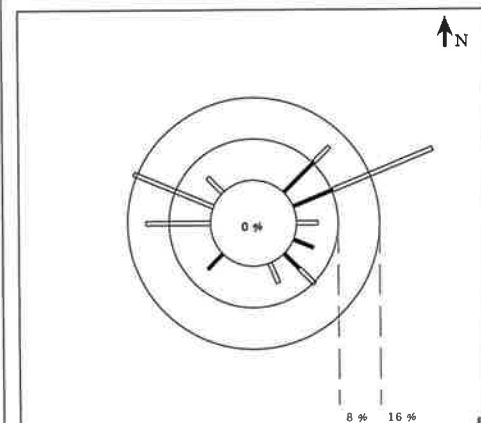
3. * Notification of the Pollution Control Department, dated December 18, B.E.2551(2008), which was published in the Royal Government Gazette Vol. 126, Special Part 13D dated January 27, B.E. 2552 (2009).



Meteorological Monitoring Results : Wind Rose MTR-PTTGC6-Refinery

Location : Takuan-Ao pradu Community 2 Monitor period : 06-07 Nov 2024
Wind Speed Model : NRG Symphonie Serial No : 35262609
Wind Direction Model : NRG Symphonie Serial No : 35262609

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	0.0833	0.0417	0.0000	0.0000	0.0000	0.0000	0.1250
ENE	0.0833	0.2083	0.0000	0.0000	0.0000	0.0000	0.2917
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	0.0417	0.0417	0.0000	0.0000	0.0000	0.0000	0.0833
SSE	0.0000	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
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	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
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	0.1667	0.0000	0.0000	0.0000	0.0000	0.1667
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	0.0000						



Application : WindPro Ver.1.0
Control : 16 Direction Calculation With
Calm Wind < 0.5 m/s
Data Unit : Direction in Deg.
Wind Speed in m/s



NOTE : Frequencies indicate direction from which the wind is blowing

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team

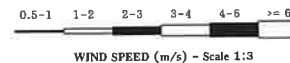
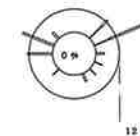


Meteorological Monitoring Results : Wind Rose MTR-PTTGC6-Refinery

Location : Takuan-Ao pradu Community 2 Monitor period : 06-07 Nov 2024
Wind Speed Model : NRG Symphonie Serial No : 35262609
Wind Direction Model : NRG Symphonie Serial No : 35262609

Time	06-07 Nov 2024	
	WS(m/s)	WD
14:00 - 15:00	1.4	W
15:00 - 16:00	0.9	SE
16:00 - 17:00	1.7	W
17:00 - 18:00	1.8	WNW
18:00 - 19:00	1.9	W
19:00 - 20:00	1.1	WNW
20:00 - 21:00	1.2	WNW
21:00 - 22:00	1.8	WNW
22:00 - 23:00	1.4	NW
23:00 - 24:00	0.5	ENE
00:00 - 01:00	1.6	ENE
01:00 - 02:00	0.9	ENE
02:00 - 03:00	0.9	NE
03:00 - 04:00	1.6	ENE
04:00 - 05:00	1.9	E
05:00 - 06:00	1.6	NE
06:00 - 07:00	1.8	ENE
07:00 - 08:00	1.0	ENE
08:00 - 09:00	0.6	NE
09:00 - 10:00	0.8	ESE
10:00 - 11:00	1.9	ENE
11:00 - 12:00	0.5	SW
12:00 - 13:00	1.9	SSE
13:00 - 14:00	1.3	SE

Wind Rose



File Control : R:\Database\Windrose\FileControl\Win-224010-Takuan-Ao pradu Community 2 06-07 Nov 2024

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



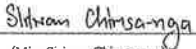
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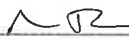
AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical Public Co., Ltd, Branch 6 (Refinery GC 6)	REQUEST SERVICE No.	: 2514/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Subatmospheric Pressure Sampling
SAMPLING DATE	: 02-03/12/2024	ANALYTICAL DATE	: 11/12/2024
SAMPLING TIME	: 10:30-10:20	SAMPLE CONDITION	: Normal
RECEIVED DATE	: 04/12/2024	FILE CODE	: 224010_TO-15_December
REPORT DATE	: 14/12/2024		

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	0.77	2.46	7.6

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


(Miss Siriwan Chimsa-nga)
Analyst


(Mrs. Araya Tipparuk)
Technical Management Team

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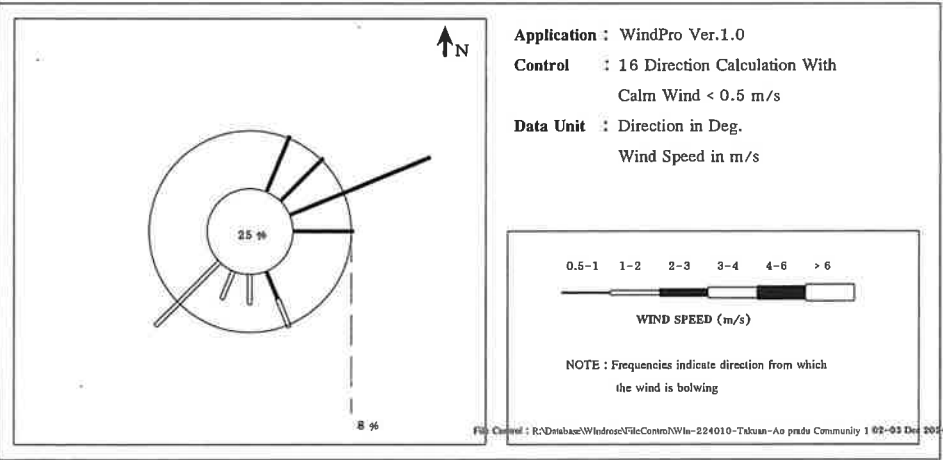
K:\Database\Windrose\FileControl\Win-224010-Takuan-Ao pradu Community 1 02-03 Dec 2024





Meteorological Monitoring Results : Wind Rose
MTR-PTTGC6-Refinery

Location	: Takuan -Ao pradu Community 1	Monitor period	: 02-03 Dec 2024
Wind Speed Model	: NRG Symphonie	Serial No	: 309013230
Wind Direction Model	: NRG Symphonie	Serial No	: 309013230

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	0.0833	0.0000	0.0000	0.0000	0.0000	0.0000	0.0833
ENE	0.2083	0.0000	0.0000	0.0000	0.0000	0.0000	0.2083
E	0.0833	0.0000	0.0000	0.0000	0.0000	0.0000	0.0833
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	0.0000	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
SSW	0.0000	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
SW	0.0000	0.1250	0.0000	0.0000	0.0000	0.0000	0.1250
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	0.2500						




(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 : 02-03 Dec 2024
 Wind Speed Model : NRG Symphonie Serial No : 309013230
 Wind Direction Model : NRG Symphonie Serial No : 309013230

Time	02-03 Dec 2024	
	WS(m/s)	WD
10:00 - 11:00	0.5	NE
11:00 - 12:00	1.1	SSE
12:00 - 13:00	1.6	S
13:00 - 14:00	1.7	SSW
14:00 - 15:00	1.8	SW
15:00 - 16:00	1.3	SW
16:00 - 17:00	1.2	SW
17:00 - 18:00	0.7	NNE
18:00 - 19:00	0.6	NNE
19:00 - 20:00	0.5	E
20:00 - 21:00	0.7	E
21:00 - 22:00	0.7	NE
22:00 - 23:00	0.8	ENE
23:00 - 24:00	0.8	ENE
00:00 - 01:00	0.6	ENE
01:00 - 02:00	0.7	ENE
02:00 - 03:00	0.6	ENE
03:00 - 04:00	0.3	N
04:00 - 05:00	0.3	E
05:00 - 06:00	0.4	E
06:00 - 07:00	0.3	NNW
07:00 - 08:00	0.3	NNE
08:00 - 09:00	0.4	NNE
09:00 - 10:00	0.5	SSE

Wind Rose



0.5-1 1-2 2-3 3-4 4-6 >= 6
 WIND SPEED (m/s) - Scale 1:3

File Control :R:\Database\Windrose\FileControl\Win-224010-Takuan-Ao pradu Community 1 02-03 Dec 2024

(Miss Katesarin Vorradetwittaya)
 Environmental Scientist

Preeda S.
 (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. : 2514/67
 (Refinery GC 6) SAMPLING METHOD : Subatmospheric Pressure Sampling
 SAMPLING BY : SECOT Co., Ltd. ANALYTICAL DATE : 11/12/2024
 SAMPLING DATE : 02-03/12/2024 SAMPLE CONDITION : Normal
 SAMPLING TIME : 10:45-10:30 FILE CODE : 224010_TO-15_December
 RECEIVED DATE : 04/12/2024
 REPORT DATE : 14/12/2024

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	0.11	0.35	7.6

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

Siriwan Chimsa-nga
 (Miss Siriwan Chimsa-nga)

Analyst

(Mrs. Araya Tipparuk)

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Gazette Vol. 126, Special Part 13D dated January 27, B.E. 2552 (2009).



Meteorological Monitoring Results : Wind Rose MTR-PTTGC6-Refinery

Location : Takuan-Ao pradu Community 2

Monitor period : 02-03 Dec 2024

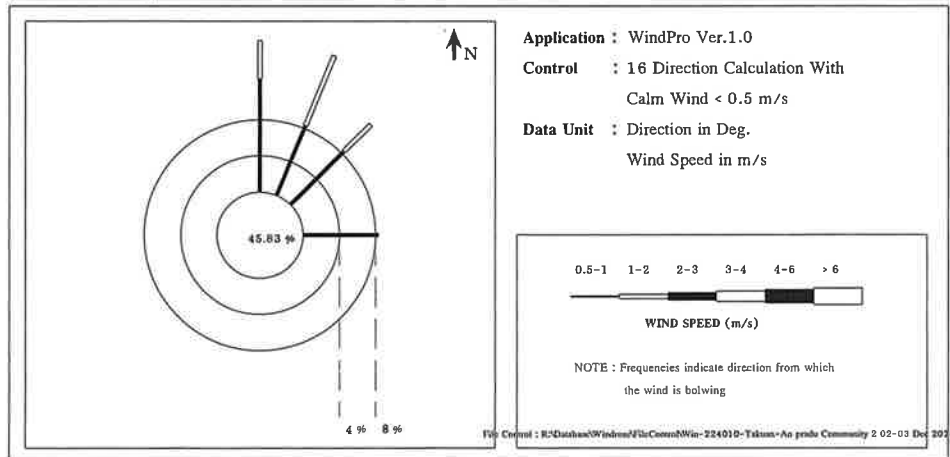
Wind Speed Model : NRG Symphonie

Serial No : 309016055

Wind Direction Model : NRG Symphonie

Serial No : 309016055

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	0.1250	0.0417	0.0000	0.0000	0.0000	0.0000	0.1667
NNE	0.0833	0.0833	0.0000	0.0000	0.0000	0.0000	0.1667
NE	0.0833	0.0417	0.0000	0.0000	0.0000	0.0000	0.1250
ENE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
E	0.0833	0.0000	0.0000	0.0000	0.0000	0.0000	0.0833
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	0.0000	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	0.4583						



(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 Dec 2024

Wind Speed Model : NRG Symphonie

Serial No : 309016055

Wind Direction Model : NRG Symphonie

Serial No : 309016055

Time	02-03 Dec 2024	
	WS(m/s)	WD
11:00 - 12:00	0.5	E
12:00 - 13:00	0.5	NE
13:00 - 14:00	0.4	ENE
14:00 - 15:00	0.6	N
15:00 - 16:00	0.5	N
16:00 - 17:00	0.7	N
17:00 - 18:00	1.3	NNE
18:00 - 19:00	1.2	NE
19:00 - 20:00	1.3	N
20:00 - 21:00	0.4	NNE
21:00 - 22:00	0.4	ENE
22:00 - 23:00	0.4	NE
23:00 - 24:00	0.4	ENE
00:00 - 01:00	0.4	NNE
01:00 - 02:00	0.4	NNE
02:00 - 03:00	0.4	N
03:00 - 04:00	0.4	N
04:00 - 05:00	0.4	NE
05:00 - 06:00	0.4	NNE
06:00 - 07:00	0.5	NE
07:00 - 08:00	0.8	NNE
08:00 - 09:00	0.8	NNE
09:00 - 10:00	0.9	E
10:00 - 11:00	1.2	NNE

Wind Rose



File Control : R:\Database\Windrose\FireControlWin-224010-Takuan-Ao pradu Community 2 02-03 Dec 2024

(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)_224010_Cert-Amb/TSP (Dec24)
Branch 6 (Refinery) SAMPLING DATE : 06-13/12/2024
SAMPLING BY : SECOT Co., Ltd. ANALYTICAL DATE : 17-19/12/2024
RECEIVED DATE : 16/12/2024 SAMPLE CONDITION : Normal
REPORT DATE : 23/12/2024 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)	06-07/12/2024	mg/m ³	0.076	0.047	0.060	0.096	0.330	High Volume Air
	07-08/12/2024	mg/m ³	0.075	0.042	0.071	0.112		Sampler / Gravimetric
	08-09/12/2024	mg/m ³	0.059	0.040	0.055	0.097		Method
	09-10/12/2024	mg/m ³	0.064	0.052	0.045	0.111		
	10-11/12/2024	mg/m ³	0.090	0.081	0.081	0.282		
	11-12/12/2024	mg/m ³	0.069	0.045	0.052	0.122		
	12-13/12/2024	mg/m ³	0.051	0.045	0.040	0.095		

Pornapa Budthum

(Miss Pornnapa Budthum)

Analyst

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

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)_224010_Cert-Amb/PM-10 (Dec24)
Branch 6 (Refinery) SAMPLING DATE : 06-13/12/2024
SAMPLING BY : SECOT Co., Ltd. ANALYTICAL DATE : 17-19/12/2024
RECEIVED DATE : 16/12/2024 SAMPLE CONDITION : Normal
REPORT DATE : 23/12/2024 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)	06-07/12/2024	mg/m ³	0.049	0.040	0.056	0.037	0.120	High Volume
	07-08/12/2024	mg/m ³	0.043	0.040	0.055	0.035		Air Sampler
	08-09/12/2024	mg/m ³	0.037	0.036	0.037	0.036		(Hi-Vol. PM-10 Size
	09-10/12/2024	mg/m ³	0.041	0.048	0.041	0.031		Selective Inlet) /
	10-11/12/2024	mg/m ³	0.058	0.030	0.065	0.075		Gravimetric Method
	11-12/12/2024	mg/m ³	0.044	0.030	0.050	0.041		
	12-13/12/2024	mg/m ³	0.026	0.027	0.031	0.020		

Pornapa Budthum

(Miss Pornnapa Budthum)

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)_224010_Cert-Amb/THC (Dec24)
Branch 6 (Refinery) SAMPLING DATE : 06-12/12/2024
SAMPLING BY : SECOT Co., Ltd. ANALYTICAL DATE : 17/12/2024
RECEIVED DATE : 16/12/2024 SAMPLE CONDITION : Normal
REPORT DATE : 25/12/2024 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	06/12/2024	ppm	<0.10	2.99	4.08	2.79	3.98	Flame Ionization
(THC)	07/12/2024	ppm	<0.10	2.82	3.59	3.18	3.55	Detection Method
	08/12/2024	ppm	<0.10	2.58	3.05	2.63	3.46	
	09/12/2024	ppm	<0.10	2.63	2.78	3.67	3.92	
	10/12/2024	ppm	<0.10	2.60	2.75	3.71	3.28	
	11/12/2024	ppm	<0.10	2.67	3.79	3.52	3.78	
	12/12/2024	ppm	<0.10	3.07	3.09	3.23	3.30	

Sudaporn S.
(Miss Sudaporn Soonthorn)

Analyst

Miss 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)_224010_Cert-Amb/NMHC (Dec24)
Branch 6 (Refinery) SAMPLING DATE : 06-12/12/2024
SAMPLING BY : SECOT Co., Ltd. ANALYTICAL DATE : 17/12/2024
RECEIVED DATE : 16/12/2024 SAMPLE CONDITION : Normal
REPORT DATE : 25/12/2024 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	06/12/2024	ppm	<0.05	0.32	0.32	0.91	0.96	Flame Ionization
Hydrocarbon	07/12/2024	ppm	<0.05	0.94	0.93	0.83	0.78	Detection Method
(NMHC)	08/12/2024	ppm	<0.05	0.88	0.95	0.99	0.92	
	09/12/2024	ppm	<0.05	0.93	0.93	0.92	0.73	
	10/12/2024	ppm	<0.05	0.87	0.92	0.74	0.79	
	11/12/2024	ppm	<0.05	0.79	0.88	0.91	0.93	
	12/12/2024	ppm	<0.05	0.82	0.93	0.98	0.92	

Sudaporn S.
(Miss Sudaporn Soonthorn)

Analyst

Miss 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)_224010_Cert-Amb/H₂S (Dec24)
Branch 6 (Refinery) SAMPLING DATE : 06-12/12/2024
SAMPLING BY : SECOT Co., Ltd. ANALYTICAL DATE : 24/12/2024
RECEIVED DATE : 16/12/2024 SAMPLE CONDITION : Normal
REPORT DATE : 25/12/2024 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	RESULTS				REFERENCE METHOD
				Non-detectable	1	2	3	
Hydrogen Sulfide	06/12/2024	ppm	<0.001	ND	ND	ND	ND	Intersociety Committee Method 701
(H ₂ S)	07/12/2024	ppm	<0.001	ND	ND	ND	ND	
	08/12/2024	ppm	<0.001	ND	ND	ND	ND	
	09/12/2024	ppm	<0.001	ND	ND	ND	ND	
	10/12/2024	ppm	<0.001	ND	ND	ND	ND	
	11/12/2024	ppm	<0.001	ND	ND	ND	ND	
	12/12/2024	ppm	<0.001	ND	ND	ND	ND	

Pongpa Buddum
(Miss Pornnapa Buddum)

Analyst

Maing Poowasanpetch
(Miss Narisa Poowasanpetch)

Technical Management Team

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R:\Database\Ambient\FileControl\Ambi-224010-North of Refinery Area-SO2 06-13 Dec 2024



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

Location : North of Refinery Area Monitor Period : 06-13 Dec 2024
Analyzer Model : API 100A Station No : Mobile 10
Serial No : 906 Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Teledyne 700E Serial No : 587
Calibration Gas Cylinder I.D.: EB0102326
Certified Date : 08 Jan 2024 Cal Concentration (ppb) : 0,100,200,400
Expire Date : 07 Jan 2025

Time	SO2 Concentration (ppb)						
	06-07 Dec 2024	07-08 Dec 2024	08-09 Dec 2024	09-10 Dec 2024	10-11 Dec 2024	11-12 Dec 2024	12-13 Dec 2024
10:00 - 11:00	9.0	16.9	9.8	8.4	7.7	3.1	9.5
11:00 - 12:00	10.0	21.4	8.8	8.4	10.2	10.1	6.3
12:00 - 13:00	15.5	25.3	8.0	7.7	21.6	5.7	16.8
13:00 - 14:00	12.4	17.7	8.1	10.8	12.3	10.7	14.5
14:00 - 15:00	9.4	13.6	9.6	6.5	7.8	8.6	18.7
15:00 - 16:00	9.7	7.7	8.2	8.0	5.4	6.6	14.3
16:00 - 17:00	9.9	10.1	9.2	5.6	6.9	4.0	7.8
17:00 - 18:00	12.6	11.0	10.0	7.5	5.6	4.8	14.1
18:00 - 19:00	10.2	11.1	7.4	6.2	5.6	10.2	5.7
19:00 - 20:00	8.7	8.9	9.2	5.5	5.7	2.7	10.3
20:00 - 21:00	13.4	10.8	8.8	11.5	10.6	4.4	9.9
21:00 - 22:00	15.9	10.2	6.6	10.3	21.2	6.3	13.6
22:00 - 23:00	12.4	11.4	9.0	11.0	18.0	6.4	17.0
23:00 - 00:00	15.1	11.2	6.8	18.2	10.2	9.6	14.9
00:00 - 01:00	8.6	12.6	8.1	10.2	19.7	11.7	18.7
01:00 - 02:00	12.0	14.9	8.7	12.6	7.5	8.6	12.0
02:00 - 03:00	8.2	10.9	7.9	9.3	7.6	17.9	7.9
03:00 - 04:00	10.8	10.8	6.3	7.6	20.4	10.9	7.4
04:00 - 05:00	11.3	10.4	6.2	13.4	18.6	15.5	6.3
05:00 - 06:00	15.6	8.7	6.4	10.7	21.8	8.3	17.2
06:00 - 07:00	16.9	8.6	10.1	16.4	26.6	18.7	5.8
07:00 - 08:00	14.5	8.0	9.5	6.1	21.3	12.6	18.2
08:00 - 09:00	14.1	7.6	8.2	5.1	20.9	18.3	10.0
09:00 - 10:00	20.2	6.8	14.4	7.3	8.9	6.5	10.6
Average-24Hr*	12.3	12.0	8.6	9.3	13.4	9.3	12.0
Max-1Hr	20.2	25.3	14.4	18.2	26.6	18.7	18.7
Min-1Hr	8.2	6.8	6.2	5.1	5.4	2.7	5.7
Standard-1Hr	300 ppb(780 ug/cu.m)						
Standard-24Hr	120 ppb(300 ug/cu.m)						

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

(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 : 06-13 Dec 2024
Analyzer Model : API 100E Station No : SCT-14
Serial No : 069 Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Teledyne 700E Serial No : 587
Calibration Gas Cylinder I.D.: EB0102326
Certified Date : 05 Jan 2024 Cal Concentration (ppb) : 0,100,200,400
Expire Date : 04 Jan 2025

Time	SO2 Concentration (ppb)						
	06-07 Dec 2024	07-08 Dec 2024	08-09 Dec 2024	09-10 Dec 2024	10-11 Dec 2024	11-12 Dec 2024	12-13 Dec 2024
11:00 - 12:00	9.0	25.0	9.2	6.7	11.0	6.5	9.0
12:00 - 13:00	15.6	20.7	5.9	5.2	19.6	5.0	15.5
13:00 - 14:00	8.2	15.7	6.2	12.1	9.7	9.7	13.9
14:00 - 15:00	10.3	13.3	6.5	8.1	5.9	7.0	9.9
15:00 - 16:00	11.0	8.8	5.5	5.2	4.2	5.0	15.4
16:00 - 17:00	9.8	8.1	7.7	6.1	4.2	5.6	6.0
17:00 - 18:00	9.6	7.9	9.2	7.7	3.7	2.2	18.6
18:00 - 19:00	9.0	9.0	6.4	6.2	3.3	9.9	5.8
19:00 - 20:00	10.5	9.5	8.0	4.0	5.6	2.6	6.8
20:00 - 21:00	14.8	9.7	9.0	9.6	10.8	2.4	9.4
21:00 - 22:00	14.9	8.9	6.5	10.6	15.7	5.2	13.1
22:00 - 23:00	14.5	12.0	6.0	10.3	15.0	2.4	11.7
23:00 - 00:00	12.9	10.2	7.6	22.6	9.2	9.6	19.1
00:00 - 01:00	7.8	10.5	5.8	11.3	18.0	12.8	11.9
01:00 - 02:00	9.5	13.1	8.6	11.8	7.6	5.9	18.6
02:00 - 03:00	9.1	9.1	8.8	8.4	7.1	17.4	4.9
03:00 - 04:00	10.1	7.5	8.6	6.2	20.6	6.3	6.6
04:00 - 05:00	10.9	8.4	6.6	11.4	18.9	13.5	4.2
05:00 - 06:00	14.2	8.1	5.8	8.7	11.8	5.8	13.4
06:00 - 07:00	11.5	6.3	9.9	17.4	24.5	10.1	5.7
07:00 - 08:00	12.8	5.8	4.9	4.3	19.3	17.2	14.7
08:00 - 09:00	15.9	7.9	6.0	3.6	14.9	15.5	14.2
09:00 - 10:00	19.1	6.1	10.2	6.7	10.2	7.3	17.8
10:00 - 11:00	21.8	7.7	7.1	5.5	4.2	7.7	13.3
Average-24Hr*	12.2	10.4	7.3	8.7	11.5	8.0	11.6
Max-1Hr	21.8	25.0	10.2	22.6	24.5	17.4	19.1
Min-1Hr	7.8	5.8	4.9	3.6	3.3	2.2	4.2
Standard-1Hr	300 ppb(780 ug/cu.m)						
Standard-24Hr	120 ppb(300 ug/cu.m)						

Remark : * Average time between 11:00-11:00

(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 : 06-13 Dec 2024
Analyzer Model : API 100A Station No : SCT-16
Serial No : 342 Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Teledyne 700E Serial No : 587
Calibration Gas Cylinder I.D.: EB0102326
Certified Date : 05 Jan 2024 Cal Concentration (ppb) : 0,100,200,400
Expire Date : 04 Jan 2025

Time	SO2 Concentration (ppb)						
	06-07 Dec 2024	07-08 Dec 2024	08-09 Dec 2024	09-10 Dec 2024	10-11 Dec 2024	11-12 Dec 2024	12-13 Dec 2024
13:00 - 14:00	4.2	10.4	5.9	7.3	5.9	5.4	9.5
14:00 - 15:00	5.9	7.8	6.3	6.1	4.2	4.7	6.5
15:00 - 16:00	12.5	5.3	4.2	4.7	9.4	3.9	8.0
16:00 - 17:00	10.4	4.8	5.4	4.4	9.6	4.5	5.8
17:00 - 18:00	10.7	6.4	6.2	5.2	7.7	3.8	6.6
18:00 - 19:00	5.1	5.1	4.0	4.8	4.2	6.4	6.2
19:00 - 20:00	5.2	5.3	4.8	4.2	4.3	3.0	5.1
20:00 - 21:00	8.2	4.8	5.2	6.9	5.3	3.5	3.7
21:00 - 22:00	7.1	6.4	5.3	5.1	8.2	4.6	9.7
22:00 - 23:00	7.5	9.5	4.5	6.7	11.3	3.1	6.3
23:00 - 00:00	9.5	8.1	4.7	10.0	5.1	6.5	10.0
00:00 - 01:00	4.0	7.0	4.7	7.8	9.8	7.6	7.5
01:00 - 02:00	6.4	7.3	4.2	6.0	7.0	5.0	7.8
02:00 - 03:00	5.5	4.4	6.2	4.8	5.8	11.5	6.8
03:00 - 04:00	4.2	5.7	6.3	5.2	9.9	7.1	6.3
04:00 - 05:00	6.5	4.6	3.2	7.1	11.1	9.8	6.1
05:00 - 06:00	7.4	3.7	5.5	5.7	12.1	7.5	11.5
06:00 - 07:00	7.3	6.9	8.1	9.3	14.3	10.1	5.3
07:00 - 08:00	7.2	5.8	5.0	4.6	11.3	8.7	7.3
08:00 - 09:00	9.7	5.7	5.4	5.0	11.2	8.9	7.7
09:00 - 10:00	13.3	5.1	9.0	5.3	4.9	5.7	9.4
10:00 - 11:00	13.0	3.9	5.5	5.8	2.8	5.4	7.8
11:00 - 12:00	13.9	5.3	5.9	4.8	7.9	6.0	7.0
12:00 - 13:00	13.4	4.6	5.0	10.7	5.2	8.7	11.1
Average-24Hr*	8.3	6.0	5.4	6.1	7.9	6.3	7.5
Max-1Hr	13.9	10.4	9.0	10.7	14.3	11.5	11.5
Min-1Hr	4.0	3.7	3.2	4.2	2.8	3.0	3.7
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 : 06-13 Dec 2024
Analyzer Model : API 100A Station No : SECOT-016
Serial No : 376 Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Teledyne 700E Serial No : 587
Calibration Gas Cylinder I.D.: EB0102326
Certified Date : 04 Jan 2024 Cal Concentration (ppb) : 0,100,200,400
Expire Date : 03 Jan 2025

Time	SO2 Concentration (ppb)						
	06-07 Dec 2024	07-08 Dec 2024	08-09 Dec 2024	09-10 Dec 2024	10-11 Dec 2024	11-12 Dec 2024	12-13 Dec 2024
14:00 - 15:00	5.3	9.8	4.3	4.3	1.9	6.1	7.3
15:00 - 16:00	9.6	3.8	4.2	5.7	9.4	1.5	7.1
16:00 - 17:00	10.8	5.2	4.3	5.4	8.2	4.5	5.1
17:00 - 18:00	10.4	6.6	4.8	4.1	6.5	1.3	7.4
18:00 - 19:00	6.7	3.7	2.9	2.8	3.1	5.7	5.8
19:00 - 20:00	5.9	5.4	5.5	3.3	2.6	3.4	4.0
20:00 - 21:00	6.5	4.2	5.6	6.5	5.0	2.5	6.2
21:00 - 22:00	9.8	4.9	3.4	7.9	9.0	2.5	8.0
22:00 - 23:00	6.8	6.8	4.2	4.6	11.4	2.9	10.0
23:00 - 00:00	8.3	6.1	3.7	12.6	4.4	5.0	7.0
00:00 - 01:00	4.5	7.5	3.1	8.1	7.5	7.2	8.6
01:00 - 02:00	6.2	7.6	4.1	5.9	6.5	5.0	8.0
02:00 - 03:00	5.7	5.5	3.9	6.1	5.8	11.0	4.6
03:00 - 04:00	4.1	4.0	4.0	4.0	10.6	4.8	3.0
04:00 - 05:00	6.4	5.5	4.4	5.4	10.2	9.8	2.4
05:00 - 06:00	8.0	5.4	3.6	4.2	10.9	5.9	9.0
06:00 - 07:00	8.7	7.0	7.7	11.1	13.0	11.0	3.7
07:00 - 08:00	9.2	5.8	4.6	3.5	7.9	7.2	5.5
08:00 - 09:00	7.9	5.3	4.2	2.7	10.9	10.2	10.0
09:00 - 10:00	12.6	6.4	5.8	5.3	4.8	2.9	9.2
10:00 - 11:00	13.3	4.0	4.7	2.5	3.0	4.4	8.3
11:00 - 12:00	9.4	4.3	3.9	7.3	4.4	5.4	9.2
12:00 - 13:00	9.1	3.6	4.6	6.9	3.0	7.8	9.5
13:00 - 14:00	10.5	4.5	7.0	5.1	5.1	8.9	4.3
Average-24Hr*	8.2	5.5	4.5	5.6	6.9	5.7	6.8
Max-1Hr	13.3	9.8	7.7	12.6	13.0	11.0	10.0
Min-1Hr	4.1	3.6	2.9	2.5	1.9	1.3	2.4
Standard-1Hr	300 ppb(780 ug/cu.m)						
Standard-24Hr	120 ppb(300 ug/cu.m)						

Remark : * Average time between 14:00-14:00

(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 : 06-13 Dec 2024
Analyzer Model : API 200A Station No : Mobile 10
Serial No : 2385 Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Teledyne 700E Serial No : 587
Calibration Gas Cylinder I.D.: EB0102326
Certified Date : 03 Jan 2024 Cal Concentration (ppb) : 0,100,200,400
Expire Date : 02 Jan 2025

Time	NO2 Concentration (ppb)						
	06-07 Dec 2024	07-08 Dec 2024	08-09 Dec 2024	09-10 Dec 2024	10-11 Dec 2024	11-12 Dec 2024	12-13 Dec 2024
10:00 - 11:00	11.2	5.8	4.4	9.3	6.9	6.4	10.7
11:00 - 12:00	19.3	8.8	5.6	7.3	6.4	7.3	6.5
12:00 - 13:00	11.9	3.0	5.0	11.2	8.3	6.2	10.5
13:00 - 14:00	9.5	4.6	5.7	10.7	6.1	7.0	11.1
14:00 - 15:00	7.4	4.4	5.9	9.5	7.5	9.5	11.2
15:00 - 16:00	8.0	11.7	4.6	10.1	9.8	8.6	8.1
16:00 - 17:00	18.1	10.6	11.7	7.2	10.5	17.3	6.0
17:00 - 18:00	24.0	11.4	9.6	17.5	16.5	4.9	21.4
18:00 - 19:00	26.7	10.7	11.6	17.2	3.7	19.1	20.8
19:00 - 20:00	12.7	10.0	12.1	5.6	21.1	12.2	17.8
20:00 - 21:00	19.9	9.0	4.8	21.4	7.8	21.6	9.2
21:00 - 22:00	9.3	5.0	7.7	8.0	10.3	9.4	7.5
22:00 - 23:00	5.9	9.8	4.6	5.7	9.1	9.9	10.3
23:00 - 00:00	14.6	13.8	5.2	5.4	18.0	7.0	7.0
00:00 - 01:00	7.1	8.8	4.2	6.1	10.8	10.3	6.7
01:00 - 02:00	5.1	4.0	6.4	6.4	6.3	4.7	6.0
02:00 - 03:00	5.7	7.3	5.3	5.1	9.1	3.9	6.1
03:00 - 04:00	5.4	3.4	5.3	6.4	9.3	3.4	6.3
04:00 - 05:00	9.8	3.8	6.1	3.7	9.1	6.0	6.9
05:00 - 06:00	8.6	5.9	6.8	4.3	19.6	6.1	3.7
06:00 - 07:00	8.5	5.7	3.5	5.0	19.1	6.3	11.0
07:00 - 08:00	11.8	5.3	6.9	7.2	11.5	3.8	11.9
08:00 - 09:00	11.7	3.1	8.7	10.4	7.4	5.1	11.1
09:00 - 10:00	3.9	5.1	10.7	9.8	11.2	7.4	7.8
Average-24Hr*	11.5	7.1	6.8	8.8	10.6	6.5	9.8
Max-1Hr	26.7	13.8	12.1	21.4	21.1	21.6	21.4
Min-1Hr	3.9	3.0	3.5	3.7	3.7	3.4	3.7
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 : 06-13 Dec 2024			
Analyzer Model : API 200A				Station No : SCT-14			
Serial No : 1645				Site Operator : Mr. Siwanon Kulawong			
Calibrator Model : Teledyne 700E				Serial No : 587			
Calibration Gas Cylinder I.D.: EB0102326							
Certified Date : 05 Jan 2024				Cal Concentration (ppb) : 0,100,200,400			
Expire Date : 04 Jan 2025							
Time	NO2 Concentration (ppb)						
	06-07 Dec 2024	07-08 Dec 2024	08-09 Dec 2024	09-10 Dec 2024	10-11 Dec 2024	11-12 Dec 2024	12-13 Dec 2024
11:00 - 12:00	21.5	9.8	4.2	9.4	6.0	9.0	5.9
12:00 - 13:00	8.9	6.8	6.5	8.1	9.8	4.0	7.9
13:00 - 14:00	10.9	3.7	5.4	12.2	5.9	7.6	8.0
14:00 - 15:00	7.4	4.3	5.1	8.2	7.8	8.0	11.6
15:00 - 16:00	11.8	9.2	6.9	9.4	11.8	12.4	10.8
16:00 - 17:00	16.1	7.5	10.4	11.0	9.8	20.5	5.4
17:00 - 18:00	24.0	9.2	10.8	13.7	22.5	4.5	14.8
18:00 - 19:00	25.3	7.2	10.6	20.2	3.9	22.6	22.5
19:00 - 20:00	22.0	7.2	17.0	5.3	14.0	19.9	16.3
20:00 - 21:00	19.1	8.9	4.1	13.5	9.5	21.1	8.8
21:00 - 22:00	10.5	4.0	11.8	8.0	11.8	9.9	8.5
22:00 - 23:00	6.0	7.8	6.3	4.5	9.4	12.2	9.1
23:00 - 00:00	15.1	18.2	4.4	6.9	16.3	12.3	4.6
00:00 - 01:00	8.9	11.4	5.7	7.5	11.3	10.9	5.3
01:00 - 02:00	7.1	5.4	5.8	5.4	3.7	4.8	5.7
02:00 - 03:00	3.7	11.1	3.8	6.2	9.6	3.9	6.7
03:00 - 04:00	4.3	3.2	4.0	6.4	12.6	4.7	5.9
04:00 - 05:00	8.9	5.7	6.0	7.3	9.4	4.9	6.8
05:00 - 06:00	8.8	4.9	7.3	3.9	21.3	4.3	7.2
06:00 - 07:00	7.3	5.1	6.9	4.4	13.0	5.5	11.1
07:00 - 08:00	9.2	5.6	7.3	11.6	8.7	5.4	10.4
08:00 - 09:00	7.4	4.0	11.8	10.4	11.7	4.2	9.0
09:00 - 10:00	6.8	6.3	11.6	11.0	12.4	8.0	11.3
10:00 - 11:00	6.9	4.7	10.0	6.5	7.0	9.3	12.1
Average-24Hr*	11.6	7.1	7.7	8.8	10.8	9.6	9.4
Max-1Hr	25.3	18.2	17.0	20.2	22.5	22.6	22.5
Min-1Hr	3.7	3.2	3.8	3.9	3.7	3.9	4.6
Standard-1Hr	170 ppb(320 ug/cu.m)						
Standard-24Hr							

Remark : * Average time between 11:00-11:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team



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

Location : Takuan-Ao Pradu Community 1				Monitor Period : 06-13 Dec 2024			
Analyzer Model : API 200A				Station No : SCT-16			
Serial No : 2384				Site Operator : Mr. Siwanon Kulawong			
Calibrator Model : Teledyne 700E				Serial No : 587			
Calibration Gas Cylinder I.D.: EB0102326							
Certified Date : 04 Jan 2024				Cal Concentration (ppb) : 0,100,200,400			
Expire Date : 03 Jan 2025							
Time	NO2 Concentration (ppb)						
	06-07 Dec 2024	07-08 Dec 2024	08-09 Dec 2024	09-10 Dec 2024	10-11 Dec 2024	11-12 Dec 2024	12-13 Dec 2024
13:00 - 14:00	6.1	4.2	4.4	8.4	6.9	5.4	9.0
14:00 - 15:00	7.7	4.5	4.9	8.6	8.8	7.6	7.1
15:00 - 16:00	7.0	6.9	5.0	7.1	7.3	10.4	8.4
16:00 - 17:00	9.6	6.8	7.8	9.2	9.1	9.3	6.0
17:00 - 18:00	16.6	6.8	7.0	11.0	18.2	6.9	12.4
18:00 - 19:00	16.6	13.0	8.8	15.3	12.2	11.2	15.4
19:00 - 20:00	17.6	11.8	10.4	7.0	18.7	12.7	13.1
20:00 - 21:00	21.9	10.3	5.6	14.4	14.9	14.5	10.1
21:00 - 22:00	13.3	7.6	6.1	7.0	15.3	9.0	8.8
22:00 - 23:00	13.7	11.5	3.9	5.8	10.8	9.5	8.1
23:00 - 00:00	19.6	14.3	5.8	5.0	14.4	9.8	7.3
00:00 - 01:00	15.9	6.8	5.0	6.3	11.1	9.8	7.4
01:00 - 02:00	9.0	3.8	6.0	6.1	8.5	6.1	7.0
02:00 - 03:00	13.0	6.6	5.3	4.6	12.0	8.3	6.4
03:00 - 04:00	11.5	6.3	5.2	5.7	8.7	5.1	6.0
04:00 - 05:00	11.1	5.7	4.7	5.1	11.3	5.0	7.3
05:00 - 06:00	8.7	6.0	5.7	5.7	16.0	5.6	6.8
06:00 - 07:00	6.7	5.7	7.1	6.7	12.0	7.4	11.4
07:00 - 08:00	6.0	5.5	4.0	9.4	9.4	6.8	7.1
08:00 - 09:00	8.0	4.8	6.9	10.1	10.0	6.4	9.3
09:00 - 10:00	2.8	5.1	8.0	7.9	8.9	9.5	8.7
10:00 - 11:00	5.4	3.6	8.5	5.7	6.8	8.8	9.2
11:00 - 12:00	7.3	4.8	6.4	4.3	9.8	5.9	9.1
12:00 - 13:00	5.1	5.4	7.0	8.8	4.6	9.1	10.4
Average-24Hr*	10.8	7.0	6.2	7.7	11.1	8.3	8.8
Max-1Hr	21.9	14.3	10.4	15.3	18.7	14.5	15.4
Min-1Hr	2.8	3.6	3.9	4.3	4.6	5.0	6.0
Standard-1Hr	170 ppb(320 ug/cu.m)						
Standard-24Hr							

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

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team



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

Location : Takuan-Ao Pradu Community 2 Monitor Period : 06-13 Dec 2024
Analyzer Model : API 200AU Station No : SECOT-016
Serial No : 144 Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Teledyne 700E Serial No : 587
Calibration Gas Cylinder I.D.: EB0102326
Certified Date : 04 Jan 2024 Cal Concentration (ppb) : 0,100,200,400
Expire Date : 03 Jan 2025

Time	NO2 Concentration (ppb)						
	06-07 Dec 2024	07-08 Dec 2024	08-09 Dec 2024	09-10 Dec 2024	10-11 Dec 2024	11-12 Dec 2024	12-13 Dec 2024
14:00 - 15:00	5.3	1.9	1.0	3.9	6.3	5.7	4.9
15:00 - 16:00	4.1	3.3	0.8	4.4	5.0	6.1	6.1
16:00 - 17:00	7.5	3.1	4.1	4.8	4.1	10.6	3.8
17:00 - 18:00	14.4	4.0	3.6	6.5	14.5	3.6	7.6
18:00 - 19:00	18.2	10.9	6.4	11.3	10.8	10.5	10.8
19:00 - 20:00	13.8	8.4	6.3	3.7	15.6	8.3	12.4
20:00 - 21:00	18.7	9.0	3.7	9.7	11.0	9.4	8.7
21:00 - 22:00	10.2	3.7	3.9	4.5	10.2	6.1	6.4
22:00 - 23:00	11.6	9.0	1.6	1.5	6.2	5.9	4.4
23:00 - 00:00	18.0	10.6	1.6	2.2	9.4	6.1	5.6
00:00 - 01:00	12.6	4.2	1.8	3.3	7.6	6.8	4.9
01:00 - 02:00	8.2	2.3	3.5	1.9	5.0	3.2	4.6
02:00 - 03:00	8.6	2.2	3.4	3.4	8.7	2.3	5.2
03:00 - 04:00	4.1	3.2	3.9	2.0	6.1	3.7	3.6
04:00 - 05:00	8.1	2.0	1.1	3.2	7.3	3.3	4.7
05:00 - 06:00	6.1	0.5	0.8	3.3	11.9	1.6	3.9
06:00 - 07:00	3.6	1.3	0.9	1.6	13.3	5.0	6.8
07:00 - 08:00	5.1	1.4	1.9	7.9	4.6	5.2	6.0
08:00 - 09:00	4.4	1.5	3.3	7.4	5.0	3.1	5.0
09:00 - 10:00	0.8	1.5	4.1	2.8	5.1	7.8	5.9
10:00 - 11:00	0.9	2.7	6.1	3.5	4.3	5.0	5.5
11:00 - 12:00	4.3	0.9	3.1	2.1	5.6	3.3	4.9
12:00 - 13:00	1.9	2.1	6.1	4.3	1.9	6.6	7.4
13:00 - 14:00	1.9	2.3	4.1	2.2	2.6	6.1	6.9
Average-24Hr*	8.0	3.8	3.2	4.2	7.6	5.6	6.1
Max-1Hr	18.7	10.9	6.4	11.3	15.6	10.6	12.4
Min-1Hr	0.8	0.5	0.8	1.5	1.9	1.6	3.6
Standard-1Hr	170 ppb(320 ug/cu.m)						
Standard-24Hr	-						

Remark : * Average time between 14:00-14:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

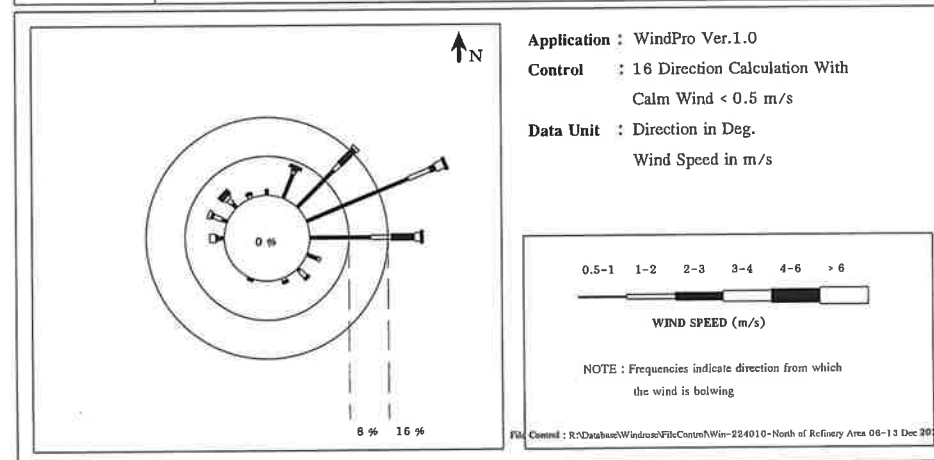
Preeda S.
(Miss Preeda Somjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose MTR-PTTGC6-Refinery

Location : North of Refinery Area Monitor period : 06-13 Dec 2024
Wind Speed Model : Novalynx WS-25 Serial No : A4904
Wind Direction Model : Novalynx WS-25 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	0.0119	0.0000	0.0000	0.0000	0.0000	0.0000	0.0119
NNE	0.0536	0.0060	0.0060	0.0000	0.0060	0.0000	0.0714
NE	0.1071	0.0179	0.0417	0.0060	0.0000	0.0000	0.1726
ENE	0.2262	0.0476	0.0119	0.0179	0.0060	0.0000	0.3095
E	0.1250	0.0417	0.0476	0.0119	0.0060	0.0000	0.2321
ESE	0.0238	0.0060	0.0000	0.0000	0.0000	0.0000	0.0298
SE	0.0060	0.0179	0.0060	0.0000	0.0000	0.0000	0.0298
SSE	0.0000	0.0060	0.0060	0.0000	0.0000	0.0000	0.0119
S	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SSW	0.0000	0.0000	0.0060	0.0000	0.0000	0.0000	0.0060
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	0.0119	0.0000	0.0060	0.0119	0.0000	0.0000	0.0298
WNW	0.0119	0.0179	0.0060	0.0060	0.0000	0.0000	0.0417
NW	0.0119	0.0119	0.0000	0.0060	0.0119	0.0000	0.0417
NNW	0.0000	0.0060	0.0060	0.0000	0.0000	0.0000	0.0119
CALM	0.0000						



(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team



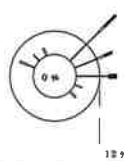
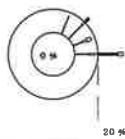
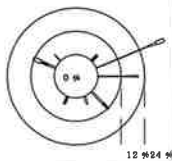
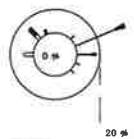
Meteorological Monitoring Results : Wind Rose

MTR-PTTGC6-Refinery

Location : North of Refinery Area Monitor period : 06-13 Dec 2024
 Wind Speed Model : Novalynx WS-25 Serial No : A4904
 Wind Direction Model : Novalynx WS-25 Serial No : A4904

Time	06-07 Dec 2024		07-08 Dec 2024		08-09 Dec 2024		09-10 Dec 2024	
	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD
10:00 - 11:00	0.6	E	1.7	SSE	3.6	E	4.6	E
11:00 - 12:00	0.6	ESE	2.2	SSW	1.7	NE	0.7	E
12:00 - 13:00	0.6	SE	2.3	SE	1.5	ENE	0.8	NW
13:00 - 14:00	4.7	NW	1.8	SE	2.1	E	0.5	WNW
14:00 - 15:00	4.8	NW	1.8	SE	3.9	ENE	1.9	WNW
15:00 - 16:00	3.9	NW	3.4	WNW	0.7	E	1.5	SE
16:00 - 17:00	3.3	W	1.8	WNW	2.0	E	0.7	ESE
17:00 - 18:00	3.5	W	2.3	WNW	0.6	E	0.6	E
18:00 - 19:00	2.2	NNW	0.7	NW	1.6	E	2.0	ENE
19:00 - 20:00	2.5	E	2.0	NE	1.0	E	2.9	NE
20:00 - 21:00	2.3	ENE	1.1	E	2.1	E	0.5	NE
21:00 - 22:00	0.7	ENE	0.7	E	0.5	ENE	0.6	E
22:00 - 23:00	0.5	ENE	0.7	E	0.5	E	0.5	ENE
23:00 - 24:00	0.6	ENE	0.7	E	0.7	NNE	0.5	ENE
00:00 - 01:00	0.6	ENE	1.4	ENE	0.5	NNE	0.7	NE
01:00 - 02:00	0.7	ENE	0.5	E	0.6	NE	0.5	NE
02:00 - 03:00	0.6	ENE	0.6	ENE	0.5	NE	2.5	NE
03:00 - 04:00	0.7	ENE	0.7	ENE	2.0	NE	0.5	NE
04:00 - 05:00	0.6	ENE	0.7	ENE	0.5	NNE	0.5	ENE
05:00 - 06:00	0.6	E	0.5	ENE	0.5	NE	0.6	E
06:00 - 07:00	0.7	NE	0.6	ENE	0.6	NE	1.4	NE
07:00 - 08:00	0.7	E	0.5	ENE	0.5	ENE	0.6	NE
08:00 - 09:00	4.0	ENE	0.5	ENE	0.5	NNE	1.3	ENE
09:00 - 10:00	0.7	ENE	3.9	ENE	2.0	E	1.6	NNW

Wind Rose



File Control :R:\Database\Windrose\FileControl\Win-224010-North of Refinery Area 06-13 Dec 2024

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



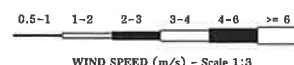
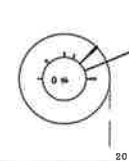
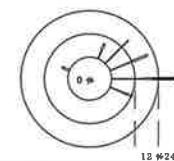
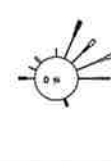
Meteorological Monitoring Results : Wind Rose

MTR-PTTGC6-Refinery

Location : North of Refinery Area Monitor period : 06-13 Dec 2024
 Wind Speed Model : Novalynx WS-25 Serial No : A4904
 Wind Direction Model : Novalynx WS-25 Serial No : A4904

Time	10-11 Dec 2024		11-12 Dec 2024		12-13 Dec 2024	
	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD
10:00 - 11:00	1.0	E	1.9	ENE	2.1	NE
11:00 - 12:00	1.0	ENE	3.2	E	0.7	ENE
12:00 - 13:00	3.0	ENE	2.3	E	0.6	ENE
13:00 - 14:00	2.6	W	2.4	E	1.4	NW
14:00 - 15:00	0.5	WNW	1.2	WNW	1.1	ENE
15:00 - 16:00	0.6	W	1.0	ESE	0.7	NNE
16:00 - 17:00	2.5	SSE	0.5	ESE	0.7	ENE
17:00 - 18:00	1.4	NW	0.5	E	0.9	E
18:00 - 19:00	2.3	NE	0.6	ESE	1.3	NE
19:00 - 20:00	0.5	NE	0.5	E	0.6	ENE
20:00 - 21:00	0.6	NE	0.6	E	0.7	ENE
21:00 - 22:00	0.7	NNE	0.5	E	0.7	ENE
22:00 - 23:00	0.5	ENE	1.6	ENE	0.7	NE
23:00 - 24:00	1.9	E	0.6	ENE	0.5	ENE
00:00 - 01:00	0.6	NNE	0.5	ENE	0.7	ENE
01:00 - 02:00	0.7	NNE	0.7	NE	0.6	ENE
02:00 - 03:00	0.9	ENE	0.7	NE	0.5	ENE
03:00 - 04:00	0.5	E	1.5	NNE	0.5	NE
04:00 - 05:00	0.6	E	0.6	NE	0.7	ENE
05:00 - 06:00	0.7	ENE	0.5	ENE	1.0	E
06:00 - 07:00	2.5	NNE	0.7	NE	2.4	NE
07:00 - 08:00	3.3	NE	0.6	NNE	1.1	ENE
08:00 - 09:00	4.8	NNE	1.6	E	0.5	N
09:00 - 10:00	0.7	N	2.3	E	0.7	W

Wind Rose



File Control :R:\Database\Windrose\FileControl\Win-224010-North of Refinery Area 06-13 Dec 2024

(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 : 06-13 Dec 2024

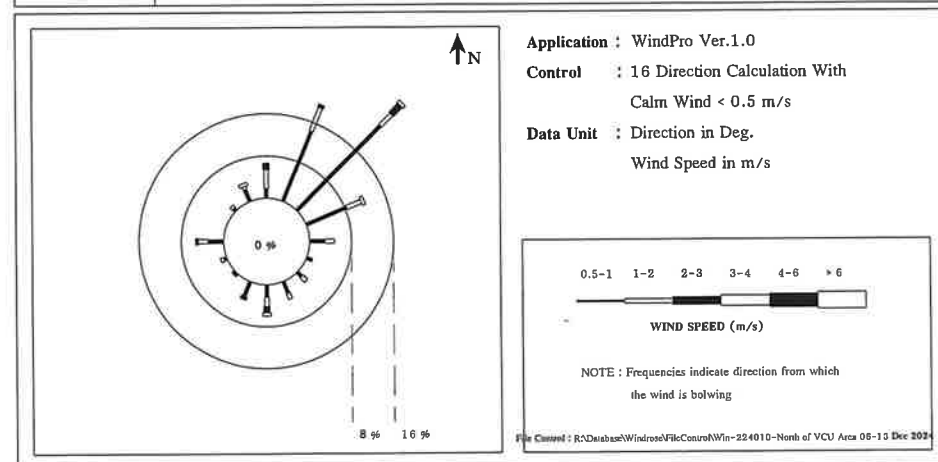
Wind Speed Model : Novalynx WS-25

Serial No : A4907

Wind Direction Model : Novalynx WS-25

Serial No : A4907

Direction	Percentage of Occurrence of Wind Direct Grouped in Various Wind Speed						
	0.5-1 m/s	1-2 m/s	2-3 m/s	3-4 m/s	4-6 m/s	More than 6	Total
N	0.0179	0.0357	0.0119	0.0000	0.0000	0.0000	0.0655
NNE	0.1429	0.0476	0.0060	0.0000	0.0000	0.0000	0.1964
NE	0.2262	0.0298	0.0238	0.0060	0.0000	0.0000	0.2857
ENE	0.0833	0.0298	0.0000	0.0060	0.0000	0.0000	0.1190
E	0.0298	0.0179	0.0000	0.0000	0.0000	0.0000	0.0476
ESE	0.0119	0.0000	0.0000	0.0000	0.0000	0.0000	0.0119
SE	0.0119	0.0119	0.0000	0.0000	0.0000	0.0000	0.0238
SSE	0.0238	0.0119	0.0000	0.0000	0.0000	0.0000	0.0357
S	0.0238	0.0179	0.0119	0.0060	0.0000	0.0000	0.0595
SSW	0.0298	0.0000	0.0060	0.0000	0.0000	0.0000	0.0357
SW	0.0000	0.0000	0.0060	0.0000	0.0000	0.0000	0.0060
WSW	0.0060	0.0060	0.0000	0.0000	0.0000	0.0000	0.0119
W	0.0298	0.0179	0.0060	0.0000	0.0000	0.0000	0.0536
WNW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NW	0.0060	0.0060	0.0000	0.0000	0.0000	0.0000	0.0119
NNW	0.0238	0.0060	0.0000	0.0060	0.0000	0.0000	0.0357
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 : North of VCU Area

Monitor period : 06-13 Dec 2024

Wind Speed Model : Novalynx WS-25

Serial No : A4907

Wind Direction Model : Novalynx WS-25

Serial No : A4907

Time	06-07 Dec 2024		07-08 Dec 2024		08-09 Dec 2024		09-10 Dec 2024	
	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD
11:00 - 12:00	0.5	S	1.0	SE	1.4	NE	1.6	S
12:00 - 13:00	1.6	E	0.6	ESE	0.5	N	3.0	S
13:00 - 14:00	2.1	SSW	0.5	ESE	0.6	ENE	2.3	S
14:00 - 15:00	2.9	SW	0.6	SE	1.8	NE	0.5	SSE
15:00 - 16:00	0.7	SSW	2.5	W	1.3	ENE	0.6	SSE
16:00 - 17:00	0.5	SSW	0.7	W	0.9	ENE	0.6	E
17:00 - 18:00	1.6	S	1.2	W	0.7	ENE	1.7	ENE
18:00 - 19:00	0.7	S	1.9	W	0.6	ENE	0.6	NE
19:00 - 20:00	0.7	SSW	0.5	NNW	0.6	NE	1.9	ENE
20:00 - 21:00	0.5	SSW	0.6	NW	0.6	NE	1.6	NNE
21:00 - 22:00	0.5	SSW	1.6	WSW	0.5	NE	2.0	NE
22:00 - 23:00	1.8	SE	0.6	WSW	0.7	NE	0.5	NE
23:00 - 24:00	1.8	E	0.7	W	0.5	NE	0.5	NE
00:00 - 01:00	0.5	ENE	2.1	NE	0.7	NNE	0.6	NE
01:00 - 02:00	0.5	NNE	0.7	NNE	0.9	NE	0.6	NE
02:00 - 03:00	0.7	NE	0.5	NE	1.3	NNE	0.9	NNE
03:00 - 04:00	0.7	NE	1.1	NNE	0.8	NNW	0.5	NNE
04:00 - 05:00	0.7	NE	1.7	NE	1.9	ENE	0.5	NNE
05:00 - 06:00	0.9	NE	0.5	NE	1.9	N	0.9	NE
06:00 - 07:00	1.6	NE	0.6	NE	2.3	NE	0.7	NNE
07:00 - 08:00	0.6	NNE	0.7	NE	1.0	N	0.5	NNE
08:00 - 09:00	0.5	NNE	0.7	NE	3.7	NNW	0.5	NNE
09:00 - 10:00	1.9	ENE	1.6	NNE	0.8	NNE	2.1	N
10:00 - 11:00	0.5	E	0.9	N	2.1	N	1.0	N



(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team

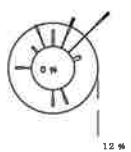


Meteorological Monitoring Results : Wind Rose MTR-PTTGC6-Refinery

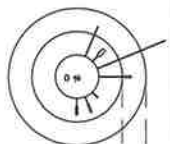
Location : North of VCU Area Monitor period : 06-13 Dec 2024
Wind Speed Model : Novalynx WS-25 Serial No : A4907
Wind Direction Model : Novalynx WS-25 Serial No : A4907

Time	10-11 Dec 2024		11-12 Dec 2024		12-13 Dec 2024		
	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD	
11:00 - 12:00	0.7	NNW	0.7	NNE	0.5	NE	
12:00 - 13:00	3.1	ENE	0.7	ENE	0.9	NE	
13:00 - 14:00	1.6	SSE	0.5	ENE	0.9	NNE	
14:00 - 15:00	1.9	S	0.8	S	0.6	NE	
15:00 - 16:00	0.9	S	2.0	S	0.5	NE	
16:00 - 17:00	0.7	SSE	1.4	SSE	0.6	NE	
17:00 - 18:00	1.0	W	0.5	SSE	0.6	NE	
18:00 - 19:00	0.8	W	0.7	SE	1.6	NNE	
19:00 - 20:00	0.5	NNW	1.1	E	0.7	NNE	
20:00 - 21:00	1.9	N	0.6	ENE	0.6	NE	
21:00 - 22:00	0.5	NNE	0.5	E	0.7	NE	
22:00 - 23:00	1.5	NNW	0.5	ENE	0.5	NNE	
23:00 - 24:00	2.5	NNE	0.5	E	0.5	NE	
00:00 - 01:00	0.7	NE	0.5	ENE	0.5	NE	
01:00 - 02:00	0.6	NNE	0.7	ENE	0.7	NNE	
02:00 - 03:00	1.5	NW	0.5	E	1.4	NNE	
03:00 - 04:00	1.1	NNE	0.6	ENE	0.5	NNE	
04:00 - 05:00	0.6	NE	0.7	ENE	0.8	NNE	
05:00 - 06:00	0.5	NE	0.5	NNE	0.7	N	
06:00 - 07:00	0.8	NE	0.6	NNE	0.7	NE	
07:00 - 08:00	1.8	NE	0.6	ENE	1.6	N	
08:00 - 09:00	0.7	NE	0.5	NNE	1.8	NNE	
09:00 - 10:00	2.3	NE	3.0	NE	0.8	W	
10:00 - 11:00	1.6	N	0.5	NE	0.5	W	

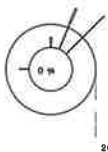
Wind Rose



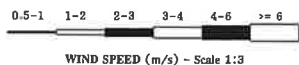
12 %



12 % 24 %



20 %



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

File Control : R:\Database\Windrose\FireControl\Win-224010-North of VCU Area 06-13 Dec 2024

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

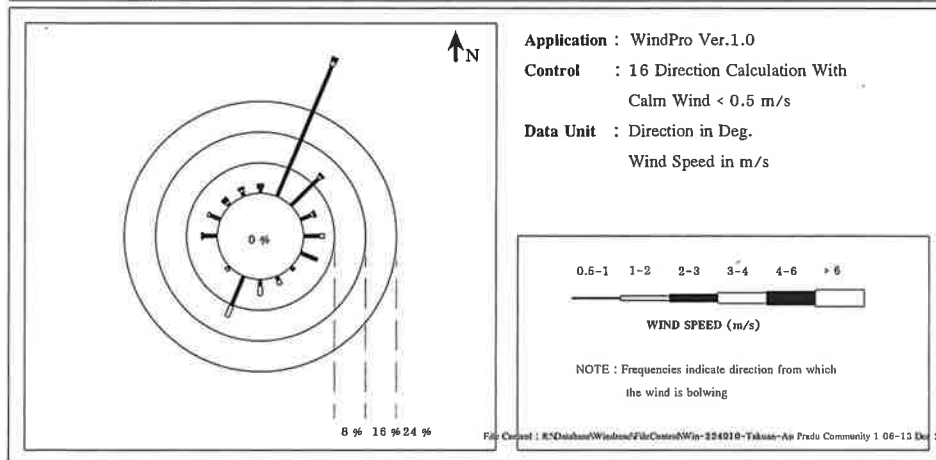
(Miss Preeda Somjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose MTR-PTTGC6-Refinery

Location : Takuan-Ao Pradu Community 1 Monitor period : 06-13 Dec 2024
Wind Speed Model : Novalynx NL-32 Serial No : 1203
Wind Direction Model : Novalynx NL-32 Serial No : 1203

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	0.0000	0.0119	0.0000	0.0000	0.0000	0.0238
NNE	0.3690	0.0119	0.0119	0.0000	0.0000	0.0000	0.3929
NE	0.1012	0.0060	0.0060	0.0000	0.0000	0.0000	0.1131
ENE	0.0298	0.0060	0.0060	0.0000	0.0000	0.0000	0.0417
E	0.0417	0.0119	0.0000	0.0000	0.0000	0.0000	0.0536
ESE	0.0476	0.0000	0.0000	0.0000	0.0000	0.0000	0.0476
SE	0.0119	0.0000	0.0000	0.0000	0.0000	0.0000	0.0119
SSE	0.0119	0.0119	0.0000	0.0000	0.0000	0.0000	0.0238
S	0.0179	0.0238	0.0000	0.0000	0.0000	0.0000	0.0417
SSW	0.0833	0.0298	0.0000	0.0000	0.0000	0.0000	0.1131
SW	0.0060	0.0060	0.0000	0.0000	0.0000	0.0000	0.0119
WSW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
W	0.0357	0.0000	0.0060	0.0000	0.0000	0.0000	0.0417
WNW	0.0298	0.0060	0.0000	0.0000	0.0000	0.0000	0.0357
NW	0.0060	0.0060	0.0119	0.0000	0.0000	0.0000	0.0238
NNW	0.0119	0.0060	0.0060	0.0000	0.0000	0.0000	0.0238
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 1

Monitor period : 06-13 Dec 2024

Wind Speed Model : Novalynx NL-32

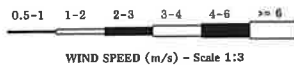
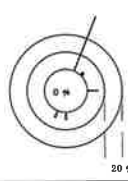
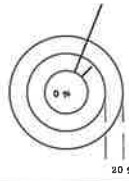
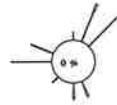
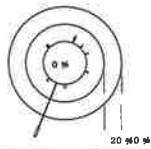
Serial No : 1203

Wind Direction Model : Novalynx NL-32

Serial No : 1203


Time	06-07 Dec 2024		07-08 Dec 2024		08-09 Dec 2024		09-10 Dec 2024	
	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD
13:00 - 14:00	2.5	NW	1.1	S	0.6	NNE	0.9	S
14:00 - 15:00	1.6	SSW	1.1	SSE	0.5	NE	1.4	SSW
15:00 - 16:00	1.9	SW	0.6	SSE	0.6	NE	1.1	S
16:00 - 17:00	1.4	SSW	0.7	S	0.5	NE	0.5	SSW
17:00 - 18:00	1.2	SSW	0.5	SW	0.6	NE	0.5	E
18:00 - 19:00	0.7	SSW	0.5	W	0.5	NNE	0.5	E
19:00 - 20:00	0.7	SSW	0.6	WNW	0.5	NNE	0.6	E
20:00 - 21:00	0.7	SSW	0.6	WNW	0.6	NNE	2.1	NE
21:00 - 22:00	0.5	SSW	0.5	WNW	0.5	NNE	0.7	NNE
22:00 - 23:00	0.5	SSW	0.7	W	0.6	NNE	0.7	NNE
23:00 - 24:00	0.5	SSW	0.7	W	0.5	NNE	0.7	NNE
00:00 - 01:00	0.6	SSW	0.6	W	0.5	NNE	0.6	NNE
01:00 - 02:00	0.5	SSW	0.5	W	0.7	NNE	0.7	NNE
02:00 - 03:00	0.5	SSW	0.5	N	0.5	NNE	0.6	NNE
03:00 - 04:00	0.6	SSW	1.0	NNE	0.5	NNE	0.5	NNE
04:00 - 05:00	0.5	SSW	0.7	NNE	0.5	NNE	0.5	NNE
05:00 - 06:00	0.6	SSW	0.5	NNE	0.6	NNE	0.7	NNE
06:00 - 07:00	0.6	SSW	0.7	NNE	0.5	NNE	0.7	NNE
07:00 - 08:00	1.5	NNE	0.6	NE	0.7	NNE	0.7	NNE
08:00 - 09:00	0.5	NNE	0.7	NE	0.5	NNE	0.6	NNE
09:00 - 10:00	0.5	NE	0.5	NE	0.5	NNE	0.6	NNE
10:00 - 11:00	0.6	ENE	0.5	NE	0.7	NNE	0.7	NNE
11:00 - 12:00	0.7	ESE	0.5	NE	0.5	NNE	0.5	NNE
12:00 - 13:00	1.4	S	0.7	NNE	0.6	NNE	0.6	NNE

Wind Rose



File Control :R:\Database\Windrose\FileControl\Win-224010-Takuan-Ao Pradu Community 1 06-13 Dec 2024


(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 : 06-13 Dec 2024

Wind Speed Model : Novalynx NL-32

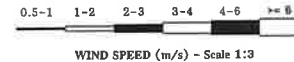
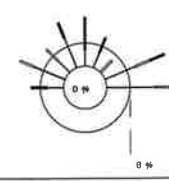
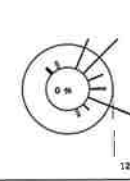
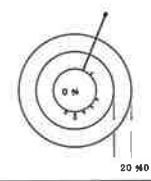
Serial No : 1203

Wind Direction Model : Novalynx NL-32

Serial No : 1203

Time	10-11 Dec 2024		11-12 Dec 2024		12-13 Dec 2024	
	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD
13:00 - 14:00	0.7	NE	0.5	NE	1.8	NW
14:00 - 15:00	1.1	S	0.5	NE	0.7	WNW
15:00 - 16:00	1.4	SSW	0.5	NE	0.5	N
16:00 - 17:00	0.6	S	1.1	SSE	0.5	NNW
17:00 - 18:00	0.9	SSE	0.5	SE	2.5	NNE
18:00 - 19:00	0.5	SE	0.7	ESE	0.5	E
19:00 - 20:00	0.6	ESE	0.5	ESE	0.6	ENE
20:00 - 21:00	2.0	NNE	0.5	ESE	0.5	ENE
21:00 - 22:00	0.6	NNE	0.6	ESE	0.6	E
22:00 - 23:00	0.6	NNE	0.5	ESE	2.0	NNW
23:00 - 24:00	0.6	NNE	0.6	ESE	0.5	NW
00:00 - 01:00	0.6	NNE	1.2	NNW	1.4	ENE
01:00 - 02:00	0.5	NNE	1.4	E	0.5	E
02:00 - 03:00	0.7	NNE	0.7	NNE	0.7	NNE
03:00 - 04:00	0.6	NNE	0.7	NE	1.6	WNW
04:00 - 05:00	0.5	NNE	2.2	NW	2.4	N
05:00 - 06:00	0.7	NNE	0.7	NNE	1.5	E
06:00 - 07:00	0.5	NNE	0.7	ENE	1.2	NE
07:00 - 08:00	0.5	NNE	0.7	NNE	2.5	N
08:00 - 09:00	0.6	NNE	0.6	E	2.1	ENE
09:00 - 10:00	0.7	NNE	0.6	NE	2.0	W
10:00 - 11:00	0.5	NNE	0.6	NNE	0.7	NNW
11:00 - 12:00	0.6	NNE	0.7	ENE	0.7	WNW
12:00 - 13:00	0.6	NNE	0.5	NE	0.6	W

Wind Rose



File Control :R:\Database\Windrose\FileControl\Win-224010-Takuan-Ao Pradu Community 1 06-13 Dec 2024


(Miss Katesarin Vorradetwittaya)
Environmental Scientist

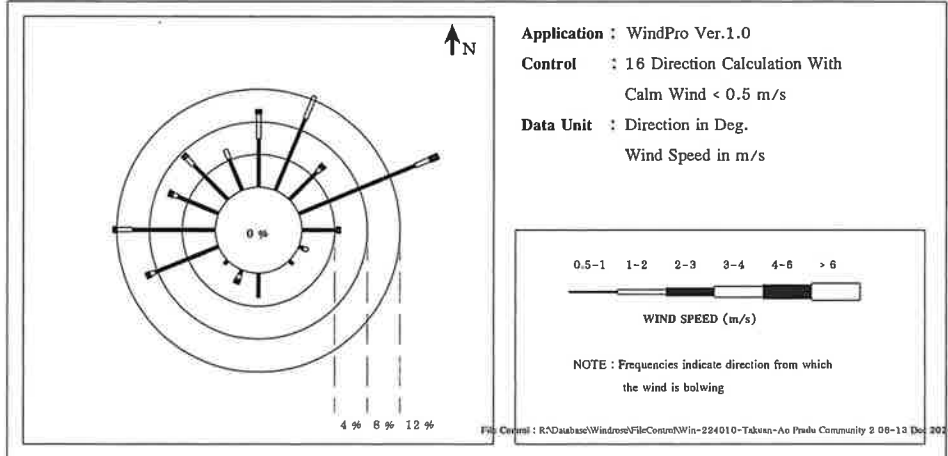

(Miss Preeda Somjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose MTR-PTTGC6-Refinery

Location : Takuan-Ao Pradu Community 2 Monitor period : 06-13 Dec 2024
Wind Speed Model : Novalynx WS-25 Serial No : A5092
Wind Direction Model : Novalynx WS-25 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	0.0595	0.0298	0.0060	0.0000	0.0000	0.0000	0.0952
NNE	0.0952	0.0298	0.0000	0.0000	0.0000	0.0000	0.1250
NE	0.0476	0.0060	0.0060	0.0000	0.0000	0.0000	0.0595
ENE	0.1548	0.0179	0.0119	0.0000	0.0000	0.0000	0.1845
E	0.0417	0.0000	0.0060	0.0000	0.0000	0.0000	0.0476
ESE	0.0060	0.0060	0.0000	0.0000	0.0000	0.0000	0.0119
SE	0.0060	0.0000	0.0000	0.0000	0.0000	0.0000	0.0060
SSE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S	0.0298	0.0000	0.0000	0.0000	0.0000	0.0000	0.0298
SSW	0.0060	0.0060	0.0060	0.0000	0.0000	0.0000	0.0179
SW	0.0060	0.0000	0.0000	0.0000	0.0000	0.0000	0.0060
WSW	0.0833	0.0060	0.0060	0.0000	0.0000	0.0000	0.0952
W	0.1012	0.0179	0.0060	0.0000	0.0000	0.0000	0.1250
WNW	0.0536	0.0060	0.0060	0.0000	0.0000	0.0000	0.0655
NW	0.0595	0.0119	0.0060	0.0000	0.0000	0.0000	0.0774
NNW	0.0417	0.0119	0.0000	0.0000	0.0000	0.0000	0.0536
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 2 Monitor period : 06-13 Dec 2024
Wind Speed Model : Novalynx WS-25 Serial No : A5092
Wind Direction Model : Novalynx WS-25 Serial No : A5092

Time	06-07 Dec 2024		07-08 Dec 2024		08-09 Dec 2024		09-10 Dec 2024	
	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD
14:00 - 15:00	2.4	SSW	0.6	S	1.8	ENE	0.8	WSW
15:00 - 16:00	0.7	WSW	0.5	S	0.5	E	0.7	SSW
16:00 - 17:00	2.1	WNW	2.3	W	0.7	ENE	0.7	ENE
17:00 - 18:00	1.2	WSW	0.6	W	0.5	ENE	0.6	ENE
18:00 - 19:00	0.5	WSW	0.5	W	0.5	ENE	0.6	ENE
19:00 - 20:00	0.7	WSW	0.7	W	0.7	ENE	0.6	E
20:00 - 21:00	0.5	WSW	0.6	W	0.5	ENE	0.6	ENE
21:00 - 22:00	0.6	WSW	0.7	W	0.7	ENE	1.5	NNW
22:00 - 23:00	0.5	WSW	0.7	W	0.7	ENE	0.6	WNW
23:00 - 24:00	0.7	WSW	0.7	W	0.7	ENE	1.2	N
00:00 - 01:00	0.5	WSW	0.5	W	0.7	ENE	0.6	ENE
01:00 - 02:00	0.6	WSW	0.6	W	0.5	ENE	1.3	NW
02:00 - 03:00	0.7	WSW	0.5	W	0.6	ENE	0.5	NW
03:00 - 04:00	0.7	WSW	0.5	W	0.5	NNE	0.8	N
04:00 - 05:00	0.6	WSW	0.5	W	0.8	NNE	0.8	NNW
05:00 - 06:00	0.7	WSW	0.5	W	0.7	NNE	0.6	NNW
06:00 - 07:00	2.2	N	0.7	W	0.6	NNE	2.0	ENE
07:00 - 08:00	0.5	N	0.5	W	0.6	NNE	0.7	ENE
08:00 - 09:00	0.5	ENE	1.9	ENE	0.7	NE	0.8	WNW
09:00 - 10:00	0.5	NNE	0.7	NE	0.6	N	0.5	NW
10:00 - 11:00	0.5	SW	0.9	ENE	0.9	N	0.6	NW
11:00 - 12:00	0.7	S	0.9	ENE	0.8	N	1.3	NNE
12:00 - 13:00	0.6	S	0.7	N	0.6	NNE	0.8	WNW
13:00 - 14:00	0.7	ESE	0.5	E	1.4	SSW	0.6	NW



File Control : R:\Database\Windrose\FileControl\Win-224010-Takuan-Ao Pradu Community 2 06-13 Dec 2024

(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 : 06-13 Dec 2024

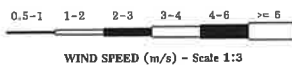
Wind Speed Model : Novalynx WS-25

Serial No : A5092

Wind Direction Model : Novalynx WS-25

Serial No : A5092

Time	10-11 Dec 2024		11-12 Dec 2024		12-13 Dec 2024	
	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD
14:00 - 15:00	0.7	N	0.5	E	0.7	WNW
15:00 - 16:00	2.3	WSW	1.4	W	0.5	NNW
16:00 - 17:00	0.5	S	2.4	ENE	0.7	NW
17:00 - 18:00	0.8	SE	0.7	ENE	2.0	NE
18:00 - 19:00	1.5	NNW	0.6	ENE	0.5	NE
19:00 - 20:00	0.5	NW	0.5	E	0.7	NNE
20:00 - 21:00	0.5	WNW	0.6	NNE	0.7	E
21:00 - 22:00	0.5	NNW	0.6	NE	0.5	ENE
22:00 - 23:00	0.5	N	1.4	ESE	1.2	N
23:00 - 24:00	0.5	NW	2.1	E	0.5	W
00:00 - 01:00	0.7	WNW	1.6	W	1.5	N
01:00 - 02:00	0.7	WNW	1.4	NNE	0.5	E
02:00 - 03:00	0.6	NW	0.7	NNE	0.6	ENE
03:00 - 04:00	0.6	NW	0.6	NE	0.7	NNW
04:00 - 05:00	0.6	WNW	2.0	NW	1.4	ENE
05:00 - 06:00	1.6	NE	1.5	NNE	0.6	NE
06:00 - 07:00	0.7	NNE	0.7	NNE	0.6	NNE
07:00 - 08:00	1.0	N	0.7	NNE	1.9	WNW
08:00 - 09:00	1.2	NNE	0.5	NE	1.9	NNE
09:00 - 10:00	1.8	N	0.7	NNE	1.1	W
10:00 - 11:00	0.6	W	0.5	NE	0.6	NNW
11:00 - 12:00	0.5	N	0.5	ENE	0.7	N
12:00 - 13:00	0.7	NNW	0.6	ENE	0.5	WNW
13:00 - 14:00	0.9	NNE	1.0	NW	0.5	NW
Wind Rose						



File Control :R:\Database\Windrose\FileControl\NWIn-224010-Takuan-Ao Pradu Community 2 06-13 Dec 2024

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team

คุณภาพอากาศจากปล่องระบายอากาศ



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)_224010_Cert-Stk/Main
	Branch 6 (Refinery)	SAMPLING DATE	: 09/12/2024
SAMPLING BY	: SECOT Co., Ltd.	ANALYTICAL DATE	: 13-14/12/2024
RECEIVED DATE	: 13/12/2024	SAMPLE CONDITION	: Normal
REPORT DATE	: 23/12/2024	OPERATOR	: Mr. Song Hangchhwanun
STACK LOCATION	: Main Stack	SOURCE DESCRIPTION	: Combustion
FUEL TYPE	: Fuel gas and Fuel Oil		

STACK DESCRIPTION

Height	: 140.0	m	Gas Velocity	: 13.3	m/s
Diameter	: 4.5	m	Flow rate ^{1/}	: 6,929	Ncu.m/min
Temperature	: 205	°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	1.00	0.84	240	240	US. EPA Method 5



(Miss Pornnapa Budthum)

Analyst

REG.NO. 7-239-ก-0018



(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO. 7-239-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.

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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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)_224010_Cert-Stk/Main
	Branch 6 (Refinery)	SAMPLING DATE	: 09/12/2024
SAMPLING BY	: SECOT Co., Ltd.	ANALYTICAL DATE	: 13-20/12/2024
RECEIVED DATE	: 13/12/2024	SAMPLE CONDITION	: Normal
REPORT DATE	: 26/12/2024	OPERATOR	: Mr. Song Hangchhwanun
STACK LOCATION	: Main Stack	SOURCE DESCRIPTION	: Combustion
FUEL TYPE	: Fuel gas and Fuel Oil		

STACK DESCRIPTION

Height	: 140.0	m	Gas Velocity	: 13.3	m/s
Diameter	: 4.5	m	Flow rate ^{1/}	: 6,929	Ncu.m/min
Temperature	: 205	°C	Excess Oxygen	: 4.4	%

PARAMETER	UNIT	ND	RESULTS		ASSIGN VALUE ^{2/}	STANDARD ^{3/}	REFERENCE METHODS
		Non-detectable	4.4%O ₂	7%O ₂			
Lead	mg/m ³	<0.02	0.03	0.03	5.0	5.0	US. EPA Method 29
Mercury	mg/m ³	<0.0003	ND	ND	2.4	2.4	US. EPA Method 29



(Miss Krisana Chanthoom)

Analyst

REG.NO. 7-239-ก-0017



(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO. 7-239-ก-0010

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

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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.



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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)_224010_Cert-Stk/Main
Branch 6 (Refinery) SAMPLING DATE : 09/12/2024
SAMPLING BY : SECOT Co., Ltd. ANALYTICAL DATE : 17/12/2024
RECEIVED DATE : 13/12/2024 SAMPLE CONDITION : Normal
REPORT DATE : 26/12/2024 OPERATOR : Mr. Song Hanghchwankun
STACK LOCATION : Main Stack SOURCE DESCRIPTION : Combustion
FUEL TYPE : Fuel gas and Fuel Oil

STACK DESCRIPTION

Height : 140.0 m Gas Velocity : 13.3 m/s
Diameter : 4.5 m Flow rate^{1/} : 6,929 Ncu.m/min
Temperature : 205 °C Excess Oxygen : 4.4 %

PARAMETER	UNIT	ND	RESULTS		ASSIGN	STANDARD ^{3/}	REFERENCE
		Non-detecable	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.



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STACK EMISSION ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Co., Ltd. REF. NO. : PTTGC6 (Refinery)_224010_Cert-Stk/Main
Branch 6 (Refinery) SAMPLING DATE : 09/12/2024
SAMPLING BY : SECOT Co., Ltd. ANALYTICAL DATE : 13/12/2024
RECEIVED DATE : 13/12/2024 SAMPLE CONDITION : Normal
REPORT DATE : 26/12/2024 OPERATOR : Mr. Song Hanghchwankun
STACK LOCATION : Main Stack SOURCE DESCRIPTION : Combustion
FUEL TYPE : Fuel gas and Fuel Oil

STACK DESCRIPTION

Height : 140.0 m Gas Velocity : 13.3 m/s
Diameter : 4.5 m Flow rate^{1/} : 6,929 Ncu.m/min
Temperature : 205 °C Excess Oxygen : 4.4 %

PARAMETER	UNIT	ND	RESULTS		ASSIGN	STANDARD ^{3/}	REFERENCE
		Non-detecable	4.4%O ₂	7%O ₂	VALUE ^{2/}		
TVOC	ppm	-	1.87	1.57	-	-	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.

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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.

**The Monitoring Result of Emission Concentration
Main Stack
PTT Global Chemical Public Company Limited
December 9, 2024**

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	4.45	4.41	40.36	40.36	34.02
2	4.51	4.47	40.94	40.94	34.64
3	4.33	4.29	40.36	40.36	33.78
Average	4.43	4.39	40.55	40.55	34.14

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	4.45	4.41	16.91	16.88	14.23
2	4.51	4.47	19.76	19.74	16.70
3	4.33	4.29	20.85	20.83	17.43
Average	4.43	4.39	19.17	19.15	16.12

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	4.45	4.41	10.65	10.63	8.96
2	4.51	4.47	10.45	10.43	8.82
3	4.33	4.29	10.82	10.79	9.03
Average	4.43	4.39	10.64	10.62	8.94

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

Date: December 9, 2024
 Start time: 12:10 PM
 O₂ instrument Model: AMI 70
 NO_x instrument Model: TELEDYNE 200 EH
 SO₂ instrument Model: API 100 AH
 CO instrument Model: THERMO 48 C
 Fuel Type : Fuel Gas and Fuel Oil

Run # : 1
 Location : Main Stack
 Finish time : 12:30 PM
 Serial No.: 071023-47
 Serial No.: 435
 Serial No.: 058
 Serial No.: 388
 Test Operator : Kittipong T.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
12:10 PM	4.70	39.84	13.17	11.23
12:11 PM	4.66	40.22	14.11	11.23
12:12 PM	4.59	40.33	14.86	11.23
12:13 PM	4.51	40.29	14.23	11.23
12:14 PM	4.43	40.15	15.31	11.23
12:15 PM	4.34	40.16	16.55	11.15
12:16 PM	4.47	40.24	16.92	11.05
12:17 PM	4.48	40.50	17.11	10.88
12:18 PM	4.38	40.41	16.90	10.61
12:19 PM	4.16	39.88	16.13	10.37
12:20 PM	4.21	39.63	16.99	10.29
12:21 PM	4.32	39.82	17.56	10.31
12:22 PM	4.52	40.30	18.06	10.45
12:23 PM	4.42	40.69	18.37	10.53
12:24 PM	4.40	40.64	18.37	10.54
12:25 PM	4.41	40.54	18.30	10.52
12:26 PM	4.39	40.68	18.04	10.36
12:27 PM	4.42	40.66	18.05	10.13
12:28 PM	4.49	40.67	18.26	9.98
12:29 PM	4.61	40.87	18.72	10.10
12:30 PM	4.61	41.14	19.11	10.33
Average	4.45	40.36	16.91	10.65

Signature



(Miss Katesarin Vorradetwittaya)

Environmental Scientist

PTT Global Chemical Public Company Limited

EMISSION TEST RESULT

Date: December 9, 2024
Start time: 12:31 PM
O₂ instrument Model: AMI 70
NO_x instrument Model: TELEDYNE 200 EH
SO₂ instrument Model: API 100 AH
CO instrument Model: THERMO 48 C
Fuel Type : Fuel Gas and Fuel Oil

Run # : 2
Location : Main Stack
Finish time : 12:51 PM
Serial No.: 071023-47
Serial No.: 435
Serial No.: 058
Serial No.: 388
Test Operator : Kittipong T.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
12:31 PM	4.54	41.20	19.42	10.68
12:32 PM	4.44	40.96	19.64	10.96
12:33 PM	4.39	40.80	20.05	11.09
12:34 PM	4.50	40.80	20.44	11.12
12:35 PM	4.56	40.91	20.50	11.12
12:36 PM	4.66	41.09	20.41	11.12
12:37 PM	4.67	41.28	20.28	11.06
12:38 PM	4.56	41.34	19.87	10.93
12:39 PM	4.37	40.96	19.50	10.71
12:40 PM	4.34	40.54	19.25	10.48
12:41 PM	4.50	40.62	18.97	10.28
12:42 PM	4.58	41.00	18.95	10.13
12:43 PM	4.60	41.23	19.25	10.07
12:44 PM	4.49	41.23	19.42	10.07
12:45 PM	4.41	40.95	19.54	10.07
12:46 PM	4.35	40.57	19.73	10.17
12:47 PM	4.47	40.54	19.76	10.14
12:48 PM	4.60	40.82	19.84	10.04
12:49 PM	4.59	41.02	19.91	9.90
12:50 PM	4.56	41.05	20.02	9.74
12:51 PM	4.43	40.84	20.30	9.59
Average	4.51	40.94	19.76	10.45

Signature

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

PTT Global Chemical Public Company Limited

EMISSION TEST RESULT

Date: December 9, 2024
Start time: 12:52 PM
O₂ instrument Model: AMI 70
NO_x instrument Model: TELEDYNE 200 EH
SO₂ instrument Model: API 100 AH
CO instrument Model: THERMO 48 C
Fuel Type : Fuel Gas and Fuel Oil

Run # : 3
Location : Main Stack
Finish time : 1:12 PM
Serial No.: 071023-47
Serial No.: 435
Serial No.: 058
Serial No.: 388
Test Operator : Kittipong T.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
12:52 PM	4.26	40.48	20.44	9.70
12:53 PM	4.35	40.42	20.30	9.79
12:54 PM	4.46	40.62	20.29	10.03
12:55 PM	4.34	40.69	20.01	10.23
12:56 PM	4.37	40.60	20.41	10.41
12:57 PM	4.20	40.28	20.72	10.54
12:58 PM	4.19	39.94	20.66	10.64
12:59 PM	4.26	39.83	20.69	10.66
1:00 PM	4.32	39.96	20.81	10.77
1:01 PM	4.43	40.23	20.64	10.79
1:02 PM	4.45	40.51	20.33	10.88
1:03 PM	4.36	40.44	20.12	10.88
1:04 PM	4.24	40.19	20.09	10.88
1:05 PM	4.23	39.99	20.12	10.88
1:06 PM	4.41	40.27	20.20	10.96
1:07 PM	4.41	40.58	20.36	11.13
1:08 PM	4.45	40.85	21.39	11.37
1:09 PM	4.29	40.81	22.24	11.57
1:10 PM	4.24	40.42	22.40	11.71
1:11 PM	4.23	40.18	22.70	11.71
1:12 PM	4.35	40.24	22.91	11.68
Average	4.33	40.36	20.85	10.82

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)_224010_Cert-Stk/CRS
Branch 6 (Refinery) SAMPLING DATE : 11/12/2024
SAMPLING BY : SECOT Co., Ltd. ANALYTICAL DATE : 16/12/2024
RECEIVED DATE : 13/12/2024 SAMPLE CONDITION : Normal
REPORT DATE : 26/12/2024 OPERATOR : Mr. Song Hanghchwankun
STACK LOCATION : CRS Stack SOURCE DESCRIPTION : Combustion
FUEL TYPE : Fuel gas

STACK DESCRIPTION

Height : 100 m Gas Velocity : 4.1 m/s
Diameter : 1.66 m Flow rate^{1/} : 318 Ncu.m/min
Temperature : 164 °C Excess Oxygen : 3.7 %

PARAMETER	UNIT	ND	RESULTS		STANDARD	REFERENCE METHODS
		Non-detectable	3.7%O ₂	7%O ₂		
TVOC	ppm	-	1.78	1.44	-	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 CRS Stack

PTT Global Chemical Public Company Limited
December 11, 2024

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	3.79	3.74	31.08	31.07	25.17
2	3.79	3.74	31.21	31.20	25.27
3	3.72	3.66	31.13	31.12	25.09
Average	3.76	3.71	31.14	31.13	25.18

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	3.79	3.74	1.30	1.26	1.02
2	3.79	3.74	1.65	1.60	1.30
3	3.72	3.66	1.77	1.72	1.39
Average	3.76	3.71	1.58	1.53	1.23

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	3.79	3.74	0.39	0.34	0.28
2	3.79	3.74	0.31	0.25	0.20
3	3.72	3.66	0.26	0.2	0.16
Average	3.76	3.71	0.32	0.26	0.21

PTT Global Chemical Public Company Limited EMISSION TEST RESULT

Date: December 11, 2024
Start time: 11:40 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 : Fuel Gas

Run # : 1
Location : CRS Stack
Finish time : 12:00 PM
Serial No.: 121121-10
Serial No.: 433
Serial No.: 060
Serial No.: 365
Test Operator : Kittipong T.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
11:40 AM	3.90	30.73	1.05	0.46
11:41 AM	3.99	31.23	1.01	0.45
11:42 AM	3.78	31.23	1.05	0.44
11:43 AM	3.71	30.97	1.09	0.43
11:44 AM	3.70	30.79	1.15	0.42
11:45 AM	3.70	30.87	1.19	0.42
11:46 AM	3.89	31.22	1.24	0.41
11:47 AM	3.98	31.57	1.26	0.40
11:48 AM	3.84	31.40	1.30	0.40
11:49 AM	3.65	30.85	1.28	0.39
11:50 AM	3.55	30.38	1.27	0.39
11:51 AM	3.71	30.59	1.32	0.38
11:52 AM	3.92	31.16	1.38	0.37
11:53 AM	3.87	31.53	1.35	0.37
11:54 AM	3.73	31.39	1.42	0.37
11:55 AM	3.68	30.98	1.45	0.36
11:56 AM	3.52	30.63	1.48	0.36
11:57 AM	3.69	30.69	1.49	0.35
11:58 AM	3.93	31.29	1.49	0.35
11:59 AM	3.98	31.63	1.53	0.34
12:00 PM	3.81	31.52	1.54	0.34
Average	3.79	31.08	1.30	0.39

Signature



(Miss Katesarin Vorradetwittaya)

Environmental Scientist

PTT Global Chemical Public Company Limited EMISSION TEST RESULT

Date: December 11, 2024
Start time: 12:01 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 : CRS Stack
Finish time : 12:21 PM
Serial No.: 121121-10
Serial No.: 433
Serial No.: 060
Serial No.: 365
Test Operator : Kittipong T.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
12:01 PM	3.65	31.08	1.55	0.34
12:02 PM	3.60	30.67	1.52	0.33
12:03 PM	3.77	30.72	1.51	0.33
12:04 PM	3.93	31.17	1.54	0.33
12:05 PM	4.02	31.55	1.55	0.33
12:06 PM	4.01	31.70	1.53	0.32
12:07 PM	3.79	31.49	1.56	0.32
12:08 PM	3.61	31.01	1.60	0.32
12:09 PM	3.73	30.90	1.60	0.32
12:10 PM	4.00	31.37	1.67	0.32
12:11 PM	4.06	31.88	1.66	0.32
12:12 PM	3.92	31.80	1.71	0.31
12:13 PM	3.68	31.23	1.72	0.31
12:14 PM	3.54	30.77	1.67	0.31
12:15 PM	3.63	30.68	1.77	0.31
12:16 PM	3.76	31.02	1.76	0.30
12:17 PM	3.93	31.46	1.81	0.30
12:18 PM	3.98	31.73	1.79	0.30
12:19 PM	3.76	31.47	1.75	0.30
12:20 PM	3.56	30.92	1.73	0.29
12:21 PM	3.65	30.80	1.73	0.29
Average	3.79	31.21	1.65	0.31

Signature



(Miss Katesarin Vorradetwittaya)

Environmental Scientist

PTT Global Chemical Public Company Limited

EMISSION TEST RESULT

Date: December 11, 2024
Start time: 12:22 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 : CRS Stack
Finish time : 12:42 PM
Serial No.: 121121-10
Serial No.: 433
Serial No.: 060
Serial No.: 365
Test Operator : Kittipong T.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
12:22 PM	3.80	31.03	1.69	0.28
12:23 PM	3.82	31.28	1.69	0.28
12:24 PM	3.95	31.54	1.69	0.27
12:25 PM	3.88	31.64	1.71	0.27
12:26 PM	3.73	31.32	1.71	0.26
12:27 PM	3.69	31.02	1.73	0.26
12:28 PM	3.72	31.00	1.77	0.26
12:29 PM	3.72	31.15	1.72	0.26
12:30 PM	3.70	31.20	1.77	0.26
12:31 PM	3.65	31.15	1.79	0.25
12:32 PM	3.62	31.05	1.83	0.25
12:33 PM	3.68	31.00	1.87	0.25
12:34 PM	3.63	31.04	1.83	0.25
12:35 PM	3.72	31.13	1.83	0.25
12:36 PM	3.77	31.28	1.80	0.25
12:37 PM	3.70	31.21	1.83	0.25
12:38 PM	3.69	31.08	1.84	0.25
12:39 PM	3.67	31.01	1.80	0.25
12:40 PM	3.55	30.80	1.81	0.25
12:41 PM	3.61	30.73	1.73	0.25
12:42 PM	3.76	31.10	1.77	0.25
Average	3.72	31.13	1.77	0.26

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)_224010_Cert-Stk/HCU
Branch 6 (Refinery)
SAMPLING DATE : 13/12/2024
SAMPLING BY : SECOT Co., Ltd. **ANALYTICAL DATE :** 16/12/2024
RECEIVED DATE : 13/12/2024 **SAMPLE CONDITION :** Normal
REPORT DATE : 26/12/2024 **OPERATOR :** Mr. Song Hanghchwankun
STACK LOCATION : HCU Stack **SOURCE DESCRIPTION :** Combustion
FUEL TYPE : Fuel gas

STACK DESCRIPTION

Height : 61.0 m **Gas Velocity :** 9.9 m/s
Diameter : 1.7 m **Flow rate^{1/} :** 694 Ncu.m/min
Temperature : 234 °C **Excess Oxygen :** 2.7 %

PARAMETER	UNIT	ND	RESULTS		STANDARD	REFERENCE METHODS
		Non-detecable	2.7%O ₂	7%O ₂		
TVOC	ppm	-	1.93	1.48	-	US. EPA Method 25A



(Miss Sudaporn Soonthorn)

Analyst



(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
December 13, 2024**

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	2.84	2.80	44.87	44.88	34.47
2	2.77	2.73	45.58	45.59	34.88
3	2.72	2.67	45.64	45.65	34.81
Average	2.78	2.73	45.36	45.37	34.72

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	2.84	2.80	2.13	2.08	1.60
2	2.77	2.73	2.54	2.49	1.90
3	2.72	2.67	2.65	2.60	1.98
Average	2.78	2.73	2.44	2.39	1.83

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	2.84	2.80	0.46	0.43	0.33
2	2.77	2.73	0.47	0.43	0.33
3	2.72	2.67	0.48	0.43	0.33
Average	2.78	2.73	0.47	0.43	0.33

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

Date: December 13, 2024
 Start time: 10:00 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 : Fuel Gas

Run # : 1
 Location : HCU Stack
 Finish time : 10:20 AM
 Serial No.: 121121-10
 Serial No.: 433
 Serial No.: 060
 Serial No.: 365
 Test Operator : Kittipong T.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
10:00 AM	2.84	43.36	1.76	0.46
10:01 AM	2.79	43.26	1.76	0.46
10:02 AM	2.82	43.19	1.59	0.46
10:03 AM	2.85	43.92	1.56	0.46
10:04 AM	2.85	44.55	1.58	0.46
10:05 AM	2.86	44.46	1.71	0.46
10:06 AM	2.72	44.39	1.95	0.46
10:07 AM	2.64	44.43	2.12	0.46
10:08 AM	2.86	44.99	2.25	0.46
10:09 AM	2.85	45.54	2.20	0.46
10:10 AM	2.94	45.63	2.17	0.46
10:11 AM	2.82	45.39	2.30	0.47
10:12 AM	2.95	45.75	2.38	0.47
10:13 AM	2.88	46.19	2.42	0.47
10:14 AM	2.95	46.30	2.47	0.47
10:15 AM	2.95	46.18	2.45	0.47
10:16 AM	2.80	45.52	2.39	0.47
10:17 AM	2.77	44.85	2.43	0.47
10:18 AM	2.81	44.72	2.42	0.47
10:19 AM	2.90	44.89	2.37	0.47
10:20 AM	2.73	44.82	2.47	0.47
Average	2.84	44.87	2.13	0.46

Signature



(Miss Katesarin Vorradetwittaya)

Environmental Scientist

PTT Global Chemical Public Company Limited
EMISSION TEST RESULT

Date: December 13, 2024
Start time: 10:21 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 : Fuel Gas

Run # : 2
Location : HCU Stack
Finish time : 10:41 AM
Serial No.: 121121-10
Serial No.: 433
Serial No.: 060
Serial No.: 365
Test Operator : Kittipong T.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
10:21 AM	2.96	45.14	2.45	0.47
10:22 AM	2.88	45.77	2.45	0.47
10:23 AM	2.89	45.84	2.50	0.47
10:24 AM	3.00	45.61	2.45	0.47
10:25 AM	2.98	45.49	2.43	0.47
10:26 AM	2.74	45.44	2.45	0.47
10:27 AM	2.74	45.26	2.46	0.47
10:28 AM	2.81	45.44	2.53	0.47
10:29 AM	2.79	45.91	2.55	0.47
10:30 AM	2.63	45.88	2.54	0.47
10:31 AM	2.71	45.39	2.57	0.47
10:32 AM	2.73	45.25	2.60	0.47
10:33 AM	2.66	45.45	2.56	0.47
10:34 AM	2.70	45.68	2.67	0.47
10:35 AM	2.73	45.90	2.59	0.47
10:36 AM	2.75	46.04	2.66	0.47
10:37 AM	2.74	46.09	2.64	0.47
10:38 AM	2.70	45.81	2.58	0.48
10:39 AM	2.60	45.12	2.60	0.48
10:40 AM	2.61	44.89	2.57	0.48
10:41 AM	2.83	45.83	2.51	0.48
Average	2.77	45.58	2.54	0.47

Signature



(Miss Katesarin Vorradetwittaya)

Environmental Scientist

PTT Global Chemical Public Company Limited
EMISSION TEST RESULT

Date: December 13, 2024
Start time: 10:42 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 : Fuel Gas

Run # : 3
Location : HCU Stack
Finish time : 11:02 AM
Serial No.: 121121-10
Serial No.: 433
Serial No.: 060
Serial No.: 365
Test Operator : Kittipong T.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
10:42 AM	2.80	46.53	2.48	0.48
10:43 AM	2.75	46.42	2.54	0.48
10:44 AM	2.66	46.27	2.55	0.48
10:45 AM	2.61	45.77	2.53	0.48
10:46 AM	2.78	45.81	2.55	0.48
10:47 AM	2.84	46.34	2.56	0.48
10:48 AM	2.73	45.90	2.59	0.48
10:49 AM	2.60	45.28	2.75	0.48
10:50 AM	2.75	45.46	2.76	0.48
10:51 AM	2.75	45.59	2.71	0.48
10:52 AM	2.66	45.29	2.74	0.48
10:53 AM	2.63	45.10	2.70	0.48
10:54 AM	2.77	45.64	2.75	0.48
10:55 AM	2.97	45.95	2.74	0.48
10:56 AM	2.79	45.48	2.73	0.48
10:57 AM	2.65	45.06	2.65	0.48
10:58 AM	2.70	44.90	2.67	0.48
10:59 AM	2.68	44.92	2.62	0.48
11:00 AM	2.71	45.27	2.67	0.48
11:01 AM	2.76	45.83	2.70	0.48
11:02 AM	2.62	45.57	2.61	0.48
Average	2.72	45.64	2.65	0.48

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)_224010_Cert-Sik/HMU
	Branch 6 (Refinery)	SAMPLING DATE	: 10/12/2024
SAMPLING BY	: SECOT Co., Ltd.	ANALYTICAL DATE	: 16/12/2024
RECEIVED DATE	: 13/12/2024	SAMPLE CONDITION	: Normal
REPORT DATE	: 26/12/2024	OPERATOR	: Mr. Song Hanghchwankun
STACK LOCATION	: HMU Stack	SOURCE DESCRIPTION	: Combustion
FUEL TYPE	: Fuel gas		

STACK DESCRIPTION

Height	: 60.0	m	Gas Velocity	: 13.6	m/s
Diameter	: 2.4	m	Flow rate ^{1/}	: 2,184	Ncu.m/min
Temperature	: 173	°C	Excess Oxygen	: 5.7	%

PARAMETER	UNIT	ND	RESULTS		STANDARD	REFERENCE
		Non-detectable	5.7%O ₂	7%O ₂		
TVOC	ppm	-	2.47	2.27	-	US. EPA Method 25A

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

Naing 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 December 10, 2024

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	5.86	5.75	39.38	39.38	36.13
2	6.14	6.03	39.24	39.24	36.68
3	5.55	5.45	39.06	39.06	35.14
Average	5.85	5.74	39.23	39.23	35.97

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	5.86	5.75	0.88	0.80	0.73
2	6.14	6.03	0.83	0.76	0.71
3	5.55	5.45	0.94	0.87	0.78
Average	5.85	5.74	0.88	0.81	0.74

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	5.86	5.75	0.46	0.40	0.37
2	6.14	6.03	0.46	0.40	0.37
3	5.55	5.45	0.46	0.40	0.36
Average	5.85	5.74	0.46	0.40	0.37

PTT Global Chemical Public Company Limited
EMISSION TEST RESULT

Date: December 10, 2024	Run # : 1
Start time: 10:40 AM	Location : HMU Stack
O₂ instrument Model: AMI 70	Finish time : 11:00 AM
NO_x instrument Model: TELEDYNE 200 EM	Serial No.: 121121-10
SO₂ instrument Model: API 100 AH	Serial No.: 433
CO instrument Model: THERMO 48 C	Serial No.: 060
Fuel Type : Fuel Gas	Serial No.: 365
	Test Operator : Song H.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
10:40 AM	5.90	39.15	0.95	0.45
10:41 AM	5.48	38.95	0.95	0.45
10:42 AM	5.95	38.46	0.94	0.45
10:43 AM	5.95	38.84	0.97	0.45
10:44 AM	5.33	37.26	0.98	0.46
10:45 AM	5.75	37.54	0.96	0.46
10:46 AM	5.95	38.66	0.96	0.46
10:47 AM	5.51	39.42	0.93	0.46
10:48 AM	5.60	38.98	0.94	0.46
10:49 AM	5.85	41.44	0.95	0.46
10:50 AM	5.77	38.85	0.88	0.46
10:51 AM	5.77	38.41	0.86	0.46
10:52 AM	5.95	40.63	0.79	0.46
10:53 AM	5.94	40.53	0.80	0.46
10:54 AM	5.79	39.62	0.80	0.46
10:55 AM	6.19	40.57	0.77	0.46
10:56 AM	6.43	41.39	0.80	0.46
10:57 AM	5.92	40.31	0.80	0.46
10:58 AM	5.99	39.82	0.78	0.46
10:59 AM	6.13	39.20	0.79	0.46
11:00 AM	5.95	38.87	0.79	0.46
Average	5.86	39.38	0.88	0.46

Signature

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

PTT Global Chemical Public Company Limited
EMISSION TEST RESULT

Date: December 10, 2024	Run # : 2
Start time: 11:01 AM	Location : HMU Stack
O₂ instrument Model: AMI 70	Finish time : 11:21 AM
NO_x instrument Model: TELEDYNE 200 EM	Serial No.: 121121-10
SO₂ instrument Model: API 100 AH	Serial No.: 433
CO instrument Model: THERMO 48 C	Serial No.: 060
Fuel Type : Fuel Gas	Serial No.: 365
	Test Operator : Song H.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
11:01 AM	5.86	38.28	0.72	0.46
11:02 AM	6.28	37.56	0.75	0.46
11:03 AM	6.25	38.10	0.75	0.46
11:04 AM	5.98	39.30	0.77	0.46
11:05 AM	6.14	39.05	0.74	0.46
11:06 AM	6.25	39.05	0.80	0.46
11:07 AM	6.16	40.10	0.81	0.46
11:08 AM	6.12	38.27	0.81	0.46
11:09 AM	6.63	38.08	0.82	0.46
11:10 AM	6.49	40.91	0.86	0.46
11:11 AM	5.93	39.17	0.84	0.46
11:12 AM	6.24	38.20	0.86	0.46
11:13 AM	6.49	39.32	0.85	0.46
11:14 AM	6.35	40.67	0.89	0.46
11:15 AM	5.93	39.44	0.88	0.46
11:16 AM	6.39	39.16	0.86	0.46
11:17 AM	6.36	40.15	0.88	0.46
11:18 AM	5.79	40.75	0.90	0.46
11:19 AM	5.78	39.73	0.85	0.46
11:20 AM	5.87	39.25	0.86	0.46
11:21 AM	5.57	39.52	0.91	0.46
Average	6.14	39.24	0.83	0.46

Signature

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

PTT Global Chemical Public Company Limited

EMISSION TEST RESULT

Date: December 10, 2024
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 : Fuel Gas

Run # : 3
Location : HMU Stack
Finish time : 11:42 AM
Serial No.: 121121-10
Serial No.: 433
Serial No.: 060
Serial No.: 365
Test Operator : Song H.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
11:22 AM	5.64	39.29	0.91	0.46
11:23 AM	6.00	39.45	0.91	0.46
11:24 AM	6.14	40.53	0.94	0.46
11:25 AM	5.44	40.26	0.94	0.46
11:26 AM	5.67	39.18	0.87	0.46
11:27 AM	5.94	39.46	0.91	0.46
11:28 AM	5.67	39.55	0.89	0.46
11:29 AM	5.75	38.81	0.90	0.46
11:30 AM	5.87	40.79	0.91	0.46
11:31 AM	5.54	39.47	0.93	0.46
11:32 AM	5.20	38.56	0.96	0.46
11:33 AM	5.62	38.45	0.97	0.46
11:34 AM	5.64	39.09	0.99	0.46
11:35 AM	5.15	38.93	0.95	0.46
11:36 AM	5.31	38.18	0.97	0.46
11:37 AM	5.32	38.30	1.01	0.46
11:38 AM	5.07	38.57	0.99	0.46
11:39 AM	5.22	38.32	0.97	0.46
11:40 AM	5.49	38.33	0.96	0.46
11:41 AM	5.43	38.59	0.96	0.46
11:42 AM	5.37	38.14	0.94	0.46
Average	5.55	39.06	0.94	0.46

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)_224010_Cert-Stk/DHDS
Branch 6 (Refinery) **SAMPLING DATE :** 12/12/2024
SAMPLING BY : SECOT Co., Ltd. **ANALYTICAL DATE :** 16/12/2024
RECEIVED DATE : 13/12/2024 **SAMPLE CONDITION :** Normal
REPORT DATE : 26/12/2024 **OPERATOR :** Mr. Song Hanghchwankun
STACK LOCATION : DHDS Stack **SOURCE DESCRIPTION :** Combustion
FUEL TYPE : Fuel gas

STACK DESCRIPTION

Height : 80.0 m **Gas Velocity :** 4.1 m/s
Diameter : 1.2 m **Flow rate ^{1/} :** 158 Ncu.m/min
Temperature : 174 °C **Excess Oxygen :** 5.2 %

PARAMETER	UNIT	ND	RESULTS		STANDARD	REFERENCE METHODS
		Non-detectable	5.2%O ₂	7%O ₂		
TVOC	ppm	-	1.97	1.75	-	US. EPA Method 25A

Sudaporn S.
(Miss Sudaporn Soonthorn)

Analyst

Narisa Poowanapetch
(Miss Narisa Poowanapetch)

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.



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STACK EMISSION ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Co., Ltd. REF. NO. : PTTGC6 (Refinery)_224010_Cert-Stk/DHDS
Branch 6 (Refinery) SAMPLING DATE : 12/12/2024
SAMPLING BY : SECOT Co., Ltd. ANALYTICAL DATE : 13-20/12/2024
RECEIVED DATE : 13/12/2024 SAMPLE CONDITION : Normal
REPORT DATE : 26/12/2024 OPERATOR : Mr. Song Hanghchwankun
STACK LOCATION : DHDS Stack SOURCE DESCRIPTION : Combustion
FUEL TYPE : Fuel gas

STACK DESCRIPTION

Height : 80.0 m Gas Velocity : 4.1 m/s
Diameter : 1.2 m Flow rate^{1/} : 158 Ncu.m/min
Temperature : 174 °C Excess Oxygen : 5.2 %

PARAMETER	UNIT	ND	RESULTS		STANDARD	REFERENCE
		Non-detectable	4.4%O ₂	7%O ₂		
Lead	mg/m ³	<0.02	0.18	0.16	-	US. EPA Method 29
Mercury	mg/m ³	<0.0003	ND	ND	-	US. EPA Method 29



(Miss Krisana Chanthoom)

Analyst

REG.NO. 7-239-จ-0017



(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO. 7-239-ท-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.

The Monitoring Result of Emission Concentration
DHDS Stack
PTT Global Chemical Public Company Limited
December 12, 2024

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	5.29	5.24	24.87	24.85	22.06
2	5.28	5.23	24.07	24.05	21.33
3	5.26	5.21	23.71	23.69	20.99
Average	5.28	5.23	24.22	24.20	21.46

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	5.29	5.24	0.65	0.61	0.54
2	5.28	5.23	0.80	0.76	0.67
3	5.26	5.21	0.81	0.77	0.68
Average	5.28	5.23	0.75	0.71	0.63

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	5.29	5.24	0.36	0.31	0.28
2	5.28	5.23	0.31	0.26	0.23
3	5.26	5.21	0.28	0.23	0.20
Average	5.28	5.23	0.31	0.27	0.24

PTT Global Chemical Public Company Limited
EMISSION TEST RESULT

Date: December 12, 2024
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: THERMO 48 C
Fuel Type : Fuel Gas

Run # : 1
Location : DHDS Stack
Finish time : 11:10 AM
Serial No.: 121121-10
Serial No.: 433
Serial No.: 060
Serial No.: 365
Test Operator : Kittipong T.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
10:50 AM	5.39	24.79	0.51	0.39
10:51 AM	5.33	24.68	0.53	0.39
10:52 AM	5.34	24.60	0.57	0.39
10:53 AM	5.35	24.55	0.55	0.37
10:54 AM	5.37	24.56	0.53	0.37
10:55 AM	5.32	24.41	0.55	0.36
10:56 AM	5.29	24.11	0.55	0.36
10:57 AM	5.27	23.94	0.59	0.37
10:58 AM	5.20	23.95	0.66	0.38
10:59 AM	5.21	24.41	0.64	0.37
11:00 AM	5.24	24.91	0.61	0.36
11:01 AM	5.30	25.12	0.67	0.35
11:02 AM	5.24	25.26	0.71	0.35
11:03 AM	5.19	25.22	0.65	0.34
11:04 AM	5.26	25.26	0.67	0.34
11:05 AM	5.26	25.34	0.73	0.34
11:06 AM	5.28	25.42	0.79	0.34
11:07 AM	5.34	25.57	0.81	0.33
11:08 AM	5.31	25.70	0.83	0.33
11:09 AM	5.26	25.51	0.75	0.33
11:10 AM	5.26	25.04	0.71	0.33
Average	5.29	24.87	0.65	0.36

Signature

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

PTT Global Chemical Public Company Limited
EMISSION TEST RESULT

Date: December 12, 2024
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: THERMO 48 C
Fuel Type : Fuel Gas

Run # : 2
Location : DHDS Stack
Finish time : 11:31 AM
Serial No.: 121121-10
Serial No.: 433
Serial No.: 060
Serial No.: 365
Test Operator : Kittipong T.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
11:11 AM	5.27	24.75	0.72	0.32
11:12 AM	5.26	24.63	0.74	0.32
11:13 AM	5.26	24.66	0.81	0.32
11:14 AM	5.31	24.83	0.82	0.31
11:15 AM	5.38	24.99	0.82	0.31
11:16 AM	5.34	24.93	0.84	0.32
11:17 AM	5.30	24.70	0.85	0.32
11:18 AM	5.28	24.26	0.89	0.31
11:19 AM	5.25	23.62	0.85	0.31
11:20 AM	5.20	23.41	0.88	0.31
11:21 AM	5.28	23.77	0.79	0.31
11:22 AM	5.29	24.12	0.78	0.31
11:23 AM	5.23	23.94	0.75	0.30
11:24 AM	5.19	23.59	0.75	0.30
11:25 AM	5.25	23.42	0.75	0.30
11:26 AM	5.26	23.25	0.74	0.30
11:27 AM	5.27	23.34	0.74	0.30
11:28 AM	5.29	23.58	0.79	0.29
11:29 AM	5.34	23.77	0.83	0.29
11:30 AM	5.34	23.97	0.79	0.29
11:31 AM	5.32	23.99	0.77	0.29
Average	5.28	24.07	0.80	0.31

Signature

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

PTT Global Chemical Public Company Limited

EMISSION TEST RESULT

Date: December 12, 2024
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 : Fuel Gas

Run # : 3
Location : DHDS Stack
Finish time : 11:52 AM
Serial No.: 121121-10
Serial No.: 433
Serial No.: 060
Serial No.: 365
Test Operator : Kittipong T.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
11:32 AM	5.25	23.91	0.74	0.29
11:33 AM	5.30	23.78	0.73	0.29
11:34 AM	5.34	23.83	0.73	0.28
11:35 AM	5.34	23.98	0.74	0.28
11:36 AM	5.29	23.95	0.74	0.28
11:37 AM	5.25	23.62	0.77	0.28
11:38 AM	5.23	23.30	0.77	0.28
11:39 AM	5.23	23.35	0.75	0.28
11:40 AM	5.28	23.57	0.78	0.28
11:41 AM	5.33	23.93	0.82	0.28
11:42 AM	5.33	24.00	0.84	0.28
11:43 AM	5.24	23.83	0.83	0.28
11:44 AM	5.20	23.64	0.84	0.27
11:45 AM	5.26	23.44	0.85	0.28
11:46 AM	5.19	23.45	0.86	0.27
11:47 AM	5.19	23.55	0.84	0.27
11:48 AM	5.16	23.60	0.85	0.27
11:49 AM	5.23	23.61	0.88	0.27
11:50 AM	5.27	23.63	0.88	0.27
11:51 AM	5.27	23.87	0.83	0.26
11:52 AM	5.23	23.98	0.84	0.25
Average	5.26	23.71	0.81	0.28

Signature

(Miss Katesarin Vorradetwittaya)

Environmental Scientist



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SECOT CO., LTD.

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STACK EMISSION ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical Public Co., Ltd. **REF. NO. :** PTTGC6 (Refinery)_224010_Cert-Stk/GT1
Branch 6 (Refinery) **SAMPLING DATE :** 10/12/2024
SAMPLING BY : SECOT Co., Ltd. **ANALYTICAL DATE :** 13-14/12/2024
RECEIVED DATE : 13/12/2024 **SAMPLE CONDITION :** Normal
REPORT DATE : 23/12/2024 **OPERATOR :** Mr. Song Hangchhankun
STACK LOCATION : Gas Turbine 1 **SOURCE DESCRIPTION :** Combustion
FUEL TYPE : Natural Gas

STACK DESCRIPTION

Height : 60.0 m **Gas Velocity :** 18.4 m/s
Diameter : 2.5 m **Flow rate ^{1/} :** 3,108 Ncu.m/min
Temperature : 194 °C **Excess Oxygen :** 13.1 %

PARAMETER	UNIT	RESULTS		STANDARD ^{2/}	REFERENCE METHODS
		13.1%O ₂	7%O ₂		
Particulate Matter	mg/Ncu.m	1.95	3.47	60.0	US, EPA Method 5

(Miss Pornnapa Budthum)

Analyst

REG.NO. 3-239-ก-0018

(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO. 3-239-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.

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 10, 2024**

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	13.17	13.05	11.30	11.27	19.96
2	13.21	13.08	11.93	11.90	21.15
3	13.20	13.07	12.03	11.99	21.28
Average	13.20	13.07	11.76	11.72	20.80

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	13.17	13.05	0.26	0.20	0.35
2	13.21	13.08	0.24	0.19	0.34
3	13.20	13.07	0.28	0.24	0.43
Average	13.20	13.07	0.26	0.21	0.37

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	13.17	13.05	244.14	244.35	432.67
2	13.21	13.08	243.30	243.54	432.89
3	13.20	13.07	248.31	248.59	441.30
Average	13.20	13.07	245.25	245.49	435.62

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

Date: December 10, 2024
 Start time: 10:40 AM
 O₂ instrument Model: AMI 70
 NO_x instrument Model: TELEDYNE 200 EM
 SO₂ instrument Model: TELEDYNE 100 EH
 CO instrument Model: API 300 A
 Fuel Type : Natural Gas

Run # : 1
 Location : GAS Turbine 1
 Finish time : 11:00 AM
 Serial No.: 071023-47
 Serial No.: 435
 Serial No.: 186
 Serial No.: 1070
 Test Operator : Song H.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
10:40 AM	13.30	11.45	0.24	265.30
10:41 AM	13.27	11.72	0.24	264.85
10:42 AM	13.23	11.33	0.24	247.45
10:43 AM	13.25	11.41	0.24	250.12
10:44 AM	13.26	11.32	0.24	253.41
10:45 AM	13.24	11.24	0.24	256.17
10:46 AM	13.19	11.93	0.24	256.96
10:47 AM	13.16	11.62	0.24	255.24
10:48 AM	13.17	11.31	0.24	252.73
10:49 AM	13.16	11.11	0.24	249.79
10:50 AM	13.20	10.98	0.24	247.77
10:51 AM	13.16	11.02	0.24	246.36
10:52 AM	13.18	11.22	0.24	243.60
10:53 AM	13.13	11.39	0.25	240.51
10:54 AM	13.10	11.59	0.26	235.84
10:55 AM	13.07	11.68	0.26	230.60
10:56 AM	13.08	11.48	0.28	226.53
10:57 AM	13.08	11.16	0.30	224.43
10:58 AM	13.11	10.93	0.31	224.70
10:59 AM	13.13	10.73	0.33	226.45
11:00 AM	13.12	10.66	0.33	228.23
Average	13.17	11.30	0.26	244.14

Signature

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

PTT Global Chemical Public Company Limited
EMISSION TEST RESULT

Date: December 10, 2024
Start time: 11:01 AM
O₂ instrument Model: AMI 70
NO_x instrument Model: TELEDYNE 200 EM
SO₂ instrument Model: TELEDYNE 100 EH
CO instrument Model: API 300 A
Fuel Type : Natural Gas

Run # : 2
Location : GAS Turbine 1
Finish time : 11:21 AM
Serial No.: 071023-47
Serial No.: 435
Serial No.: 186
Serial No.: 1070
Test Operator : Song H.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
11:01 AM	13.10	10.79	0.33	229.53
11:02 AM	13.09	11.05	0.33	229.24
11:03 AM	13.10	11.47	0.33	228.35
11:04 AM	13.12	11.96	0.31	227.40
11:05 AM	13.19	12.17	0.30	228.45
11:06 AM	13.23	11.95	0.30	232.15
11:07 AM	13.26	11.59	0.29	236.88
11:08 AM	13.25	11.18	0.27	241.18
11:09 AM	13.27	10.91	0.27	244.73
11:10 AM	13.25	10.89	0.24	247.00
11:11 AM	13.24	11.16	0.23	248.52
11:12 AM	13.21	12.24	0.21	248.79
11:13 AM	13.25	13.14	0.19	247.91
11:14 AM	13.27	13.59	0.18	247.24
11:15 AM	13.24	13.85	0.18	248.59
11:16 AM	13.27	12.90	0.14	251.65
11:17 AM	13.23	12.15	0.13	254.49
11:18 AM	13.21	11.94	0.13	255.59
11:19 AM	13.22	11.61	0.29	254.93
11:20 AM	13.23	11.52	0.23	253.70
11:21 AM	13.23	12.52	0.21	252.97
Average	13.21	11.93	0.24	243.30

Signature



(Miss Katesarin Vorradetwittaya)

Environmental Scientist

PTT Global Chemical Public Company Limited
EMISSION TEST RESULT

Date: December 10, 2024
Start time: 11:22 AM
O₂ instrument Model: AMI 70
NO_x instrument Model: TELEDYNE 200 EM
SO₂ instrument Model: TELEDYNE 100 EH
CO instrument Model: API 300 A
Fuel Type : Natural Gas

Run # : 3
Location : GAS Turbine 1
Finish time : 11:42 AM
Serial No.: 071023-47
Serial No.: 435
Serial No.: 186
Serial No.: 1070
Test Operator : Song H.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
11:22 AM	13.25	13.71	0.19	253.34
11:23 AM	13.25	15.24	0.16	254.04
11:24 AM	13.24	16.61	0.14	254.22
11:25 AM	13.22	15.38	0.31	254.49
11:26 AM	13.22	14.13	0.31	254.24
11:27 AM	13.19	13.54	0.31	253.21
11:28 AM	13.17	12.36	0.31	250.91
11:29 AM	13.18	12.01	0.31	247.99
11:30 AM	13.19	11.90	0.31	245.84
11:31 AM	13.18	11.71	0.31	244.98
11:32 AM	13.18	11.52	0.31	245.25
11:33 AM	13.19	11.33	0.31	245.54
11:34 AM	13.21	11.11	0.31	245.84
11:35 AM	13.19	10.80	0.31	246.20
11:36 AM	13.18	10.55	0.31	246.45
11:37 AM	13.17	10.31	0.31	245.83
11:38 AM	13.18	10.14	0.31	244.56
11:39 AM	13.19	10.00	0.21	243.95
11:40 AM	13.21	9.91	0.23	243.83
11:41 AM	13.24	10.07	0.24	245.88
11:42 AM	13.21	10.38	0.31	247.86
Average	13.20	12.03	0.28	248.31

Signature



(Miss Katesarin Vorradetwittaya)

Environmental Scientist



บริษัท ซีคอต จำกัด
SECOT CO., LTD.

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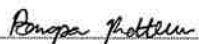
STACK EMISSION ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical Public Co., Ltd.	REF. NO.	: PTTGC6 (Refinery)_224010_Cert-Stk/GT2
	Branch 6 (Refinery)	SAMPLING DATE	: 11/12/2024
SAMPLING BY	: SECOT Co., Ltd.	ANALYTICAL DATE	: 13-14/12/2024
RECEIVED DATE	: 13/12/2024	SAMPLE CONDITION	: Normal
REPORT DATE	: 23/12/2024	OPERATOR	: Mr. Song Hanghchwankun
STACK LOCATION	: Gas Turbine 2	SOURCE DESCRIPTION	: Combustion
FUEL TYPE	: Natural Gas		

STACK DESCRIPTION

Height	: 60.0 m	Gas Velocity	: 18.4 m/s
Diameter	: 2.5 m	Flow rate ^{1/}	: 2,982 Ncu.m/min
Temperature	: 210 °C	Excess Oxygen	: 13.1 %

PARAMETER	UNIT	RESULTS		STANDARD ^{2/}	REFERENCE METHODS
		13.1%O ₂	7%O ₂		
Particulate Matter	mg/Ncu.m	2.06	3.66	60.0	US. EPA Method 5


(Miss Pornnapa Budthum)

Analyst

REG.NO.7-239-P-0018


(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO.7-239-P-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 11, 2024

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	13.23	13.12	11.81	11.79	21.06
2	13.24	13.10	12.52	12.49	22.26
3	13.19	13.02	12.64	12.61	22.24
Average	13.22	13.08	12.32	12.30	21.86

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	13.23	13.12	0.42	0.40	0.71
2	13.24	13.10	0.42	0.39	0.70
3	13.19	13.02	0.42	0.39	0.69
Average	13.22	13.08	0.42	0.39	0.70

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	13.23	13.12	199.60	199.70	356.79
2	13.24	13.10	200.41	200.56	357.41
3	13.19	13.02	191.41	191.6	337.97
Average	13.22	13.08	197.14	197.29	350.68

PTT Global Chemical Public Company Limited EMISSION TEST RESULT

Date: December 11, 2024
Start time: 10:30 AM
O₂ instrument Model: AMI 70
NO_x instrument Model: TELEDYNE 200 EM
SO₂ instrument Model: TELEDYNE 100 EH
CO instrument Model: API 300 A
Fuel Type : Natural Gas

Run # : 1
Location : GAS Turbine 2
Finish time : 10:50 AM
Serial No.: 071023-47
Serial No.: 435
Serial No.: 186
Serial No.: 1070
Test Operator : Song H.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
10:30 AM	13.18	11.48	0.42	192.73
10:31 AM	13.20	11.58	0.42	189.84
10:32 AM	13.20	11.57	0.42	188.89
10:33 AM	13.18	11.48	0.42	189.89
10:34 AM	13.15	11.44	0.42	191.56
10:35 AM	13.18	11.33	0.42	193.00
10:36 AM	13.18	11.14	0.42	194.37
10:37 AM	13.22	11.71	0.42	195.52
10:38 AM	13.24	11.53	0.42	197.32
10:39 AM	13.30	14.37	0.42	200.38
10:40 AM	13.28	10.89	0.42	203.74
10:41 AM	13.29	11.90	0.42	206.72
10:42 AM	13.26	12.02	0.43	208.85
10:43 AM	13.26	12.12	0.43	208.78
10:44 AM	13.25	12.12	0.43	207.82
10:45 AM	13.21	12.02	0.42	206.06
10:46 AM	13.24	11.93	0.43	204.14
10:47 AM	13.24	11.84	0.42	203.19
10:48 AM	13.24	11.77	0.42	202.63
10:49 AM	13.23	11.82	0.42	202.92
10:50 AM	13.25	11.94	0.43	203.17
Average	13.23	11.81	0.42	199.60

Signature



(Miss Katesarin Vorradetwittaya)

Environmental Scientist

PTT Global Chemical Public Company Limited EMISSION TEST RESULT

Date: December 11, 2024
Start time: 10:51 AM
O₂ instrument Model: AMI 70
NO_x instrument Model: TELEDYNE 200 EM
SO₂ instrument Model: TELEDYNE 100 EH
CO instrument Model: API 300 A
Fuel Type : Natural Gas

Run # : 2
Location : GAS Turbine 2
Finish time : 11:11 AM
Serial No.: 071023-47
Serial No.: 435
Serial No.: 186
Serial No.: 1070
Test Operator : Song H.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
10:51 AM	13.27	12.11	0.42	203.75
10:52 AM	13.25	12.31	0.42	204.34
10:53 AM	13.25	12.58	0.42	203.97
10:54 AM	13.25	12.63	0.42	203.27
10:55 AM	13.22	12.46	0.42	201.23
10:56 AM	13.18	12.30	0.42	199.45
10:57 AM	13.20	12.18	0.42	197.93
10:58 AM	13.21	12.07	0.42	196.40
10:59 AM	13.25	12.09	0.42	196.50
11:00 AM	13.27	12.26	0.42	198.03
11:01 AM	13.26	12.49	0.42	200.45
11:02 AM	13.23	12.87	0.42	202.48
11:03 AM	13.22	13.23	0.42	202.55
11:04 AM	13.22	13.26	0.42	200.91
11:05 AM	13.20	12.96	0.42	199.00
11:06 AM	13.21	12.68	0.42	197.40
11:07 AM	13.25	12.43	0.42	197.55
11:08 AM	13.25	12.30	0.42	198.33
11:09 AM	13.26	12.31	0.42	199.71
11:10 AM	13.26	12.51	0.42	201.93
11:11 AM	13.28	12.95	0.42	203.50
Average	13.24	12.52	0.42	200.41

Signature



(Miss Katesarin Vorradetwittaya)

Environmental Scientist

PTT Global Chemical Public Company Limited

EMISSION TEST RESULT

Date: December 11, 2024
Start time: 11:12 AM
O₂ instrument Model: AMI 70
NO_x instrument Model: TELEDYNE 200 EM
SO₂ instrument Model: TELEDYNE 100 EH
CO instrument Model: API 300 A
Fuel Type : Natural Gas

Run # : 3
Location : GAS Turbine 2
Finish time : 11:32 AM
Serial No.: 071023-47
Serial No.: 435
Serial No.: 186
Serial No.: 1070
Test Operator : Song H.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
11:12 AM	13.28	13.42	0.42	204.92
11:13 AM	13.23	13.92	0.41	204.82
11:14 AM	13.20	13.97	0.42	202.86
11:15 AM	13.19	13.54	0.42	200.07
11:16 AM	13.17	13.12	0.42	196.66
11:17 AM	13.21	12.86	0.42	194.65
11:18 AM	13.20	12.65	0.42	193.85
11:19 AM	13.22	12.56	0.41	194.06
11:20 AM	13.24	12.43	0.42	194.90
11:21 AM	13.23	12.29	0.42	195.68
11:22 AM	13.21	12.30	0.42	195.78
11:23 AM	13.14	12.38	0.41	193.45
11:24 AM	13.17	12.37	0.41	190.07
11:25 AM	13.15	12.34	0.41	186.70
11:26 AM	13.16	12.31	0.41	184.28
11:27 AM	13.18	12.23	0.41	183.74
11:28 AM	13.19	12.14	0.42	183.52
11:29 AM	13.14	12.12	0.42	182.61
11:30 AM	13.14	12.15	0.42	181.07
11:31 AM	13.13	12.17	0.42	179.26
11:32 AM	13.15	12.14	0.42	176.66
Average	13.19	12.64	0.42	191.41

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)_224010_Cert-Stk/GT3
Branch 6 (Refinery) **SAMPLING DATE :** 12/12/2024
SAMPLING BY : SECOT Co., Ltd. **ANALYTICAL DATE :** 13-14/12/2024
RECEIVED DATE : 13/12/2024 **SAMPLE CONDITION :** Normal
REPORT DATE : 23/12/2024 **OPERATOR :** Mr. Song Hanghchwankun
STACK LOCATION : Gas Turbine 3 **SOURCE DESCRIPTION :** Combustion
FUEL TYPE : Natural Gas

STACK DESCRIPTION

Height : 60.0 m **Gas Velocity :** 18.6 m/s
Diameter : 2.5 m **Flow rate ^{1/} :** 3,088 Ncu.m/min
Temperature : 198 °C **Excess Oxygen :** 12.9 %

PARAMETER	UNIT	RESULTS		STANDARD ^{2/}	REFERENCE METHODS
		12.9%O ₂	7%O ₂		
Particulate Matter	mg/Ncu.m	2.42	4.22	60.0	US. EPA Method 5

Rongpa Pottelun

(Miss Pornnapa Budthum)

Analyst

REG.NO. 7-239-ก-0018

Narisa Poowasanpetk

(Miss Narisa Poowasanpetk)

Technical Management Team

REG.NO. 7-239-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.

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 12, 2024**

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	13.05	12.84	12.68	12.64	21.80
2	13.05	12.91	13.59	13.55	23.57
3	13.11	13.05	12.69	12.65	22.40
Average	13.07	12.93	12.98	12.95	22.59

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	13.05	12.84	0.12	0.06	0.10
2	13.05	12.91	0.12	0.07	0.12
3	13.11	13.05	0.12	0.07	0.12
Average	13.07	12.93	0.12	0.07	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	13.05	12.84	254.23	254.43	438.78
2	13.05	12.91	250.49	250.69	436.12
3	13.11	13.05	256.22	256.42	454.04
Average	13.07	12.93	253.65	253.85	442.90

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

Date: December 12, 2024
 Start time: 10:40 AM
 O₂ instrument Model: AMI 70
 NO_x instrument Model: TELEDYNE 200 EM
 SO₂ instrument Model: TELEDYNE 100 BH
 CO instrument Model: API 300 A
 Fuel Type : Natural Gas

Run # : 1
 Location : GAS Turbine 3
 Finish time : 11:00 AM
 Serial No.: 071023-47
 Serial No.: 435
 Serial No.: 186
 Serial No.: 1070
 Test Operator : Song H.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
10:40 AM	13.05	12.52	0.12	254.33
10:41 AM	13.05	12.82	0.12	254.50
10:42 AM	13.04	12.91	0.12	254.52
10:43 AM	13.06	12.75	0.12	255.85
10:44 AM	13.05	12.52	0.12	256.31
10:45 AM	13.02	12.31	0.12	254.80
10:46 AM	13.05	12.12	0.12	253.17
10:47 AM	13.05	12.09	0.12	252.17
10:48 AM	13.08	12.24	0.12	252.71
10:49 AM	13.06	12.51	0.12	254.84
10:50 AM	13.05	12.88	0.12	256.06
10:51 AM	13.05	13.17	0.12	256.14
10:52 AM	13.07	13.25	0.12	255.30
10:53 AM	13.05	13.06	0.12	255.25
10:54 AM	13.05	12.81	0.12	254.69
10:55 AM	13.05	12.61	0.12	253.85
10:56 AM	13.08	12.45	0.12	253.63
10:57 AM	13.05	12.43	0.12	253.87
10:58 AM	13.04	12.63	0.12	253.41
10:59 AM	13.02	12.95	0.12	252.57
11:00 AM	13.04	13.26	0.12	250.96
Average	13.05	12.68	0.12	254.23

Signature 
 (Miss Katesarin Vorradetwittaya)

Environmental Scientist

PTT Global Chemical Public Company Limited
EMISSION TEST RESULT

Run # : 2
Date: December 12, 2024
Start time: 11:01 AM
O₂ instrument Model: AMI 70
NO_x instrument Model: TELEDYNE 200 EM
SO₂ instrument Model: TELEDYNE 100 EH
CO instrument Model: API 300 A
Fuel Type : Natural Gas

Location : GAS Turbine 3
Finish time : 11:21 AM
Serial No.: 071023-47
Serial No.: 435
Serial No.: 186
Serial No.: 1070
Test Operator : Song H.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
11:01 AM	13.05	13.67	0.12	251.30
11:02 AM	13.08	13.80	0.12	252.80
11:03 AM	13.05	13.60	0.12	253.85
11:04 AM	13.05	13.31	0.12	253.73
11:05 AM	13.02	13.03	0.12	251.74
11:06 AM	13.02	12.79	0.12	248.22
11:07 AM	13.05	12.77	0.12	246.65
11:08 AM	13.07	13.02	0.12	247.49
11:09 AM	13.06	13.33	0.12	249.66
11:10 AM	13.06	13.83	0.12	252.56
11:11 AM	13.05	14.31	0.12	253.42
11:12 AM	13.03	14.49	0.12	251.55
11:13 AM	13.02	14.24	0.12	248.96
11:14 AM	13.06	13.87	0.12	247.29
11:15 AM	13.07	13.51	0.12	247.79
11:16 AM	13.05	13.24	0.12	249.23
11:17 AM	13.04	13.16	0.12	250.77
11:18 AM	13.03	13.38	0.12	250.36
11:19 AM	13.05	13.73	0.12	249.04
11:20 AM	13.11	13.96	0.12	250.51
11:21 AM	13.11	14.26	0.12	253.45
Average	13.05	13.59	0.12	250.49

Signature

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

PTT Global Chemical Public Company Limited
EMISSION TEST RESULT

Run # : 3
Date: December 12, 2024
Start time: 11:22 AM
O₂ instrument Model: AMI 70
NO_x instrument Model: TELEDYNE 200 EM
SO₂ instrument Model: TELEDYNE 100 EH
CO instrument Model: API 300 A
Fuel Type : Natural Gas

Location : GAS Turbine 3
Finish time : 11:42 AM
Serial No.: 071023-47
Serial No.: 435
Serial No.: 186
Serial No.: 1070
Test Operator : Song H.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
11:22 AM	13.08	14.37	0.12	256.27
11:23 AM	13.07	14.10	0.12	257.30
11:24 AM	13.10	13.73	0.12	255.87
11:25 AM	13.10	13.39	0.12	254.54
11:26 AM	13.12	13.07	0.12	254.71
11:27 AM	13.09	12.85	0.12	255.18
11:28 AM	13.13	12.62	0.12	254.81
11:29 AM	13.14	12.48	0.12	255.72
11:30 AM	13.14	12.35	0.12	256.77
11:31 AM	13.13	12.21	0.12	258.77
11:32 AM	13.15	12.08	0.12	260.61
11:33 AM	13.12	11.94	0.12	261.10
11:34 AM	13.09	11.85	0.12	259.96
11:35 AM	13.11	11.85	0.12	258.32
11:36 AM	13.09	11.98	0.12	255.67
11:37 AM	13.10	12.23	0.12	253.04
11:38 AM	13.09	12.47	0.12	251.69
11:39 AM	13.14	12.76	0.12	251.95
11:40 AM	13.13	12.86	0.12	253.62
11:41 AM	13.15	12.74	0.12	256.49
11:42 AM	13.11	12.51	0.12	258.23
Average	13.11	12.69	0.12	256.22

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)_224010_Cert-Stk/Scrubber
Branch 6 (Refinery) SAMPLING DATE : 13/12/2024
SAMPLING BY : SECOT Co., Ltd. ANALYTICAL DATE : 17/12/2024
RECEIVED DATE : 13/12/2024 SAMPLE CONDITION : Normal
REPORT DATE : 26/12/2024 OPERATOR : Mr. Song Hangchhwanun
STACK LOCATION : Inlet Sulfur Scrubber SOURCE DESCRIPTION : Process

STACK DESCRIPTION

Height : 5.0 m Gas Velocity : 8.8 m/s
Diameter : 0.5 m Flow rate^{1/} : 80.7 Ncu.m/min
Temperature : 79.3 °C Excess Oxygen : 20.8 %

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 Poowasanpet

(Miss Narisa Poowasanpet)

Technical Management Team

The Monitoring Result of Emission Concentration Sulfur scrubber (Inlet) PTT Global Chemical Public Company Limited December 13, 2024

Run Number	Oxygen content (%)		Sulfur dioxide (ppm)	
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O2
1	20.90	20.78	13.19	13.15
2	20.97	20.84	14.17	14.13
3	20.93	20.79	14.38	14.34
Average	20.93	20.80	13.91	13.87

PTT Global Chemical Public Company Limited
EMISSION TEST RESULT

Date: December 13, 2024
Start time: 12:00 PM
O₂ instrument Model: AMI 70
SO₂ instrument Model: API 100 AH
Fuel Type : -

Run # : 1
Location : Sulfur scrubber (Inlet)
Finish time : 12:20 PM
Serial No.: 121121-10
Serial No.: 060
Test Operator : Kittipong T.

Time, min	O ₂ (%)	SO ₂ (ppm)
12:00 PM	20.88	11.34
12:01 PM	20.85	12.03
12:02 PM	20.83	12.37
12:03 PM	20.81	12.51
12:04 PM	20.80	12.68
12:05 PM	20.80	12.83
12:06 PM	20.80	12.88
12:07 PM	20.82	12.98
12:08 PM	20.89	13.11
12:09 PM	20.92	13.30
12:10 PM	20.92	13.46
12:11 PM	20.93	13.53
12:12 PM	20.94	13.50
12:13 PM	20.95	13.64
12:14 PM	20.95	13.66
12:15 PM	20.96	13.70
12:16 PM	20.96	13.74
12:17 PM	20.97	13.89
12:18 PM	20.97	13.84
12:19 PM	20.97	13.99
12:20 PM	20.97	13.96
Average	20.90	13.19

Signature

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

PTT Global Chemical Public Company Limited
EMISSION TEST RESULT

Date: December 13, 2024
Start time: 12:21 PM
O₂ instrument Model: AMI 70
SO₂ instrument Model: API 100 AH
Fuel Type : -

Run # : 2
Location : Sulfur scrubber (Inlet)
Finish time : 12:41 PM
Serial No.: 121121-10
Serial No.: 060
Test Operator : Kittipong T.

Time, min	O ₂ (%)	SO ₂ (ppm)
12:21 PM	20.97	14.05
12:22 PM	20.97	14.00
12:23 PM	20.97	13.97
12:24 PM	20.97	14.02
12:25 PM	20.97	14.12
12:26 PM	20.97	14.20
12:27 PM	20.97	14.20
12:28 PM	20.97	14.15
12:29 PM	20.97	14.11
12:30 PM	20.97	14.24
12:31 PM	20.97	14.09
12:32 PM	20.97	14.20
12:33 PM	20.97	14.17
12:34 PM	20.97	14.25
12:35 PM	20.96	14.22
12:36 PM	20.97	14.31
12:37 PM	20.97	14.27
12:38 PM	20.96	14.22
12:39 PM	20.96	14.14
12:40 PM	20.96	14.20
12:41 PM	20.96	14.35
Average	20.97	14.17

Signature

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

PTT Global Chemical Public Company Limited

EMISSION TEST RESULT

Date: December 13, 2024
Start time: 12:42 PM
O₂ instrument Model: AMI 70
SO₂ instrument Model: API 100 AH
Fuel Type : -

Run # : 3
Location : Sulfur scrubber (Inlet)
Finish time : 1:02 PM
Serial No.: 121121-10
Serial No.: 060
Test Operator : Kittipong T.

Time, min	O ₂ (%)	SO ₂ (ppm)
12:42 PM	20.96	14.35
12:43 PM	20.96	14.32
12:44 PM	20.95	14.28
12:45 PM	20.95	14.32
12:46 PM	20.95	14.33
12:47 PM	20.95	14.28
12:48 PM	20.95	14.23
12:49 PM	20.95	14.25
12:50 PM	20.94	14.28
12:51 PM	20.94	14.22
12:52 PM	20.93	14.39
12:53 PM	20.93	14.45
12:54 PM	20.92	14.34
12:55 PM	20.92	14.39
12:56 PM	20.92	14.35
12:57 PM	20.92	14.30
12:58 PM	20.92	14.42
12:59 PM	20.92	14.41
1:00 PM	20.91	14.50
1:01 PM	20.85	14.93
1:02 PM	20.85	14.55
Average	20.93	14.38

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)_224010_Cert-Stk/Scrubber
Branch 6 (Refinery) **SAMPLING DATE :** 13/12/2024
SAMPLING BY : SECOT Co., Ltd. **ANALYTICAL DATE :** 17/12/2024
RECEIVED DATE : 13/12/2024 **SAMPLE CONDITION :** Normal
REPORT DATE : 26/12/2024 **OPERATOR :** Mr. Song Hanghchwankun
STACK LOCATION : Out Sulfur Scrubber **SOURCE DESCRIPTION :** Process

STACK DESCRIPTION

Height : 5.0 m **Gas Velocity :** 2.3 m/s
Diameter : 0.5 m **Flow rate ^{1/} :** 25.2 Ncu.m/min
Temperature : 36.0 °C **Excess Oxygen :** 20.6 %

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

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

Narisa Poowasanpetchi

(Miss Narisa Poowasanpetchi)

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
December 13, 2024**

Run Number	Oxygen content (%)		Sulfur dioxide (ppm)	
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O2
1	20.77	20.64	0.94	0.89
2	20.76	20.64	0.77	0.71
3	20.76	20.64	0.76	0.69
Average	20.76	20.64	0.82	0.76

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

Date: December 13, 2024
Start time: 12:00 PM
O₂ instrument Model: AMI 70
SO₂ instrument Model: API 100 AH
Fuel Type : -

Ru # : 1
Location : Sulfur scrubber (Outlet)
Finish time : 12:20 PM
Serial No.: 121121-10
Serial No.: 058
Test Operator : Kittipong T.

Time, min	O ₂ (%)	SO ₂ (ppm)
12:00 PM	20.78	1.05
12:01 PM	20.78	1.05
12:02 PM	20.78	1.04
12:03 PM	20.78	1.04
12:04 PM	20.78	1.04
12:05 PM	20.78	1.03
12:06 PM	20.78	1.03
12:07 PM	20.78	1.03
12:08 PM	20.77	1.03
12:09 PM	20.77	1.02
12:10 PM	20.77	1.00
12:11 PM	20.77	1.00
12:12 PM	20.77	0.97
12:13 PM	20.77	0.86
12:14 PM	20.77	0.87
12:15 PM	20.77	0.83
12:16 PM	20.77	0.80
12:17 PM	20.77	0.78
12:18 PM	20.77	0.78
12:19 PM	20.77	0.78
12:20 PM	20.77	0.77
Average	20.77	0.94

Signature

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

PTT Global Chemical Public Company Limited
EMISSION TEST RESULT

Date: December 13, 2024
Start time: 12:21 PM
O₂ instrument Model: AMI 70
SO₂ instrument Model: API 100 AH
Fuel Type : -

Run # : 2
Location : Sulfur scrubber (Outlet)
Finish time : 12:41 PM
Serial No.: 121121-10
Serial No.: 058
Test Operator : Kittipong T.

Time, min	O ₂ (%)	SO ₂ (ppm)
12:21 PM	20.76	0.78
12:22 PM	20.76	0.77
12:23 PM	20.76	0.77
12:24 PM	20.76	0.77
12:25 PM	20.76	0.77
12:26 PM	20.76	0.77
12:27 PM	20.76	0.76
12:28 PM	20.76	0.77
12:29 PM	20.76	0.77
12:30 PM	20.76	0.76
12:31 PM	20.76	0.77
12:32 PM	20.76	0.76
12:33 PM	20.76	0.76
12:34 PM	20.76	0.76
12:35 PM	20.76	0.77
12:36 PM	20.76	0.76
12:37 PM	20.76	0.76
12:38 PM	20.76	0.76
12:39 PM	20.76	0.76
12:40 PM	20.76	0.76
12:41 PM	20.76	0.76
Average	20.76	0.77

Signature 
 (Miss Katesarin Vorradetwittaya)
 Environmental Scientist

PTT Global Chemical Public Company Limited
EMISSION TEST RESULT

Date: December 13, 2024
Start time: 12:42 PM
O₂ instrument Model: AMI 70
SO₂ instrument Model: API 100 AH
Fuel Type : -

Run # : 3
Location : Sulfur scrubber (Outlet)
Finish time : 1:02 PM
Serial No.: 121121-10
Serial No.: 058
Test Operator : Kittipong T.

Time, min	O ₂ (%)	SO ₂ (ppm)
12:42 PM	20.76	0.78
12:43 PM	20.76	0.76
12:44 PM	20.76	0.76
12:45 PM	20.76	0.76
12:46 PM	20.76	0.76
12:47 PM	20.76	0.79
12:48 PM	20.76	0.76
12:49 PM	20.76	0.75
12:50 PM	20.76	0.76
12:51 PM	20.76	0.77
12:52 PM	20.76	0.76
12:53 PM	20.76	0.75
12:54 PM	20.76	0.75
12:55 PM	20.76	0.75
12:56 PM	20.76	0.75
12:57 PM	20.75	0.75
12:58 PM	20.75	0.76
12:59 PM	20.76	0.76
1:00 PM	20.74	0.79
1:01 PM	20.75	0.80
1:02 PM	20.74	0.77
Average	20.76	0.76

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)_224010_Cert-Stk/VRU RTF
Branch 6 (Refinery) SAMPLING DATE : 10/12/2024
SAMPLING BY : SECOT Co., Ltd. ANALYTICAL DATE : 13/12/2024
RECEIVED DATE : 11/12/2024 SAMPLE CONDITION : Normal
REPORT DATE : 24/12/2024 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	-	125,042	46,098	63,981	-	US. EPA Method
	mg/l	-	226	83.15	115.40	-	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. * 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)_224010_Cert-Stk/VRU RTF
Branch 6 (Refinery) SAMPLING DATE : 10/12/2024
SAMPLING BY : SECOT Co., Ltd. ANALYTICAL DATE : 11/12/2024
RECEIVED DATE : 11/12/2024 SAMPLE CONDITION : Normal
REPORT DATE : 24/12/2024 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	2,735	2.95	1.49	-	US. EPA Method 18
	mg/l	<0.0002	8.74	0.009	0.005	-	

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)_224010_Cert-Stk/VRU RTL
Branch 6 (Refinery) SAMPLING DATE : 09/12/2024
SAMPLING BY : SECOT Co., Ltd. ANALYTICAL DATE : 11/12/2024
RECEIVED DATE : 10/12/2024 SAMPLE CONDITION : Normal
REPORT DATE : 24/12/2024 OPERATOR : Mr. Song Hangchhwan
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	-	124,317	90.50	-	-	US. EPA Method
	mg/l	-	224.23	0.16	15.0	17.0	25A

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

Maing Poowanapetch

(Miss Narisa Poowanapetch)

Technical Management Team

- Remark :**
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 3. * At standard pressure of 760 mmHg and temperature of 25 °C, dry basis.
 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)_224010_Cert-Stk/VRU RTL
Branch 6 (Refinery) SAMPLING DATE : 09/12/2024
SAMPLING BY : SECOT Co., Ltd. ANALYTICAL DATE : 11/12/2024
RECEIVED DATE : 10/12/2024 SAMPLE CONDITION : Normal
REPORT DATE : 24/12/2024 OPERATOR : Mr. Song Hangchhwan
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	<0.06	862	ND	-	-	US. EPA Method
	mg/l	<0.0002	2.75	ND	0.21	-	18

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

Maing Poowanapetch

(Miss Narisa Poowanapetch)

Technical Management Team

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

ระดับเสียง



Noise Monitoring Result : Community Noise MTR-PTTGC6-Refinery

Location : Takuan-Ao Pradu Community-1
SLM Model : Cirrus CR161B
Site Operator : Mr. Siwanon Kulawong

Monitor Period : 06-13 Dec 2024
Serial No : G302630

Calibrator Model : Cirrus CR:515
Calibration Ref dB(A) : 94.0
SLM Reading / Adjust dB(A) : 93.7/0.0
Cal Sheet No.: CR-515-2024-361

Serial No : 94296
Certified Date : 14 Feb 2024
Expire Date : 13 Feb 2025

Time	Equivalent Sound Pressure Level (dB(A))						
	06-07 Dec 2024	07-08 Dec 2024	08-09 Dec 2024	09-10 Dec 2024	10-11 Dec 2024	11-12 Dec 2024	12-13 Dec 2024
14:00 - 15:00	52.7	54.6	54.6	52.3	55.0	52.4	59.7
15:00 - 16:00	58.4	54.5	52.7	59.0	55.3	53.6	52.5
16:00 - 17:00	61.6	55.3	54.8	55.4	57.3	61.5	64.3
17:00 - 18:00	58.5	58.3	54.7	57.6	56.4	57.2	57.6
18:00 - 19:00	57.5	55.4	56.3	55.8	55.1	55.1	55.5
19:00 - 20:00	56.9	56.2	53.9	56.0	56.6	56.1	56.1
20:00 - 21:00	54.7	53.3	52.2	55.2	53.2	54.7	52.4
21:00 - 22:00	51.7	55.3	51.3	49.9	55.6	50.9	52.5
22:00 - 23:00	52.5	49.8	49.5	50.8	50.0	47.5	48.1
23:00 - 00:00	49.8	49.7	50.7	47.3	48.2	46.9	47.4
00:00 - 01:00	47.4	49.6	47.7	46.8	48.3	52.3	48.3
01:00 - 02:00	48.6	48.2	45.6	46.3	48.5	46.2	45.9
02:00 - 03:00	47.1	46.7	47.1	46.0	51.6	45.9	44.6
03:00 - 04:00	49.2	50.3	49.6	45.6	48.1	45.0	45.1
04:00 - 05:00	49.6	49.3	48.3	50.6	49.5	47.3	46.0
05:00 - 06:00	51.4	50.7	51.4	51.6	52.2	51.6	51.1
06:00 - 07:00	55.7	52.5	54.9	55.6	57.5	56.0	55.8
07:00 - 08:00	60.2	54.7	60.0	59.5	62.3	61.0	61.7
08:00 - 09:00	54.7	53.8	64.0	54.4	66.8	62.6	60.5
09:00 - 10:00	56.1	53.8	54.1	56.0	52.0	53.8	53.3
10:00 - 11:00	54.3	55.5	53.8	54.1	53.6	53.3	53.7
11:00 - 12:00	56.5	54.3	57.0	54.0	58.4	56.3	54.8
12:00 - 13:00	53.1	52.9	64.6	52.7	61.6	66.6	64.8
13:00 - 14:00	54.5	53.4	55.2	54.5	53.5	55.0	57.1
Leq(24)*	55.5	53.7	56.5	54.4	57.5	57.4	57.4
Ldn	58.9	57.5	59.1	58.0	60.3	59.7	59.4
Lmax **	85.6	83.3	82.6	85.7	88.3	92.2	82.5
Standard-24Hr	70 dB(A)						
Standard-Max	115 dB(A)						

Remark : * Average time between 14:00-14:00

** Maximum Sound Pressure Level between 14:00-14:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



Noise Monitoring Result : Background Noise MTR-PTTGC6-Refinery

Location : Takuan-Ao Pradu Community-1
SLM Model : Cirrus CR161B
Site Operator : Mr. Siwanon Kulawong

Monitor Period : 06-13 Dec 2024
Serial No : G302630

Calibrator Model : Cirrus CR:515
Calibration Ref dB(A) : 94.0
SLM Reading / Adjust dB(A) : 93.7/0.0
Cal Sheet No.: CR-515-2024-361

Serial No : 94296
Certified Date : 14 Feb 2024
Expire Date : 13 Feb 2025

Time	L90 (dB(A))						
	06-07 Dec 2024	07-08 Dec 2024	08-09 Dec 2024	09-10 Dec 2024	10-11 Dec 2024	11-12 Dec 2024	12-13 Dec 2024
14:00 - 15:00	45.7	42.8	42.8	45.2	42.8	41.8	43.9
15:00 - 16:00	46.9	43.2	43.9	44.9	46.2	42.7	44.1
16:00 - 17:00	47.5	45.6	45.1	46.2	46.5	44.3	46.6
17:00 - 18:00	48.6	48.4	45.4	46.3	46.6	47.2	47.6
18:00 - 19:00	48.8	49.4	47.1	46.9	48.6	47.0	48.6
19:00 - 20:00	49.6	50.3	47.7	46.9	47.5	47.5	47.4
20:00 - 21:00	50.0	48.2	47.2	46.8	45.8	46.6	46.6
21:00 - 22:00	48.8	47.6	45.4	46.4	46.3	44.9	46.0
22:00 - 23:00	49.0	47.3	45.3	46.2	47.0	43.7	45.6
23:00 - 00:00	44.5	47.8	45.2	45.7	46.8	44.2	45.3
00:00 - 01:00	44.2	47.2	44.5	44.9	46.8	45.5	44.7
01:00 - 02:00	44.5	44.4	44.5	44.9	46.9	45.3	44.4
02:00 - 03:00	44.7	44.6	44.7	44.8	46.9	44.1	42.4
03:00 - 04:00	47.2	46.7	44.8	44.3	46.9	43.2	43.5
04:00 - 05:00	46.4	45.5	44.5	44.3	47.2	43.4	43.8
05:00 - 06:00	46.4	45.2	44.7	46.2	47.7	43.9	44.8
06:00 - 07:00	47.8	46.0	47.5	48.6	49.1	46.8	47.2
07:00 - 08:00	50.1	45.8	50.7	49.9	52.4	50.7	50.6
08:00 - 09:00	45.6	44.9	48.0	45.7	47.8	46.4	46.6
09:00 - 10:00	42.8	44.3	44.4	44.0	44.2	44.5	44.9
10:00 - 11:00	41.9	45.1	43.6	42.7	44.4	44.5	43.2
11:00 - 12:00	42.2	46.1	44.0	44.0	44.1	44.3	43.4
12:00 - 13:00	42.6	45.5	44.2	41.7	44.0	43.7	42.4
13:00 - 14:00	42.9	45.8	44.9	42.6	42.4	43.2	46.8
L90(avg)*	46.9	46.5	45.8	45.8	47.0	45.5	45.9

Remark : * Average time between 14:00-14:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



Noise Monitoring Result : Community Noise

MTR-PTTGC6-Refinery

Location : Takuan-Ao Pradu Community-2	Monitor Period : 06-13 Dec 2024
SLM Model : Cirrus CR161B	Serial No : G301331
Site Operator : Mr. Siwanon Kulawong	

Calibrator Model : Cirrus CR:515	Serial No : 94296
Calibration Ref dB(A) : 94.0	Certified Date : 14 Feb 2024
SLM Reading / Adjust dB(A) : 93.7/0.0	Expire Date : 13 Feb 2025
Cal Sheet No.: CR-515-2024-361	

Time	Equivalent Sound Pressure Level (dB(A))						
	06-07 Dec 2024	07-08 Dec 2024	08-09 Dec 2024	09-10 Dec 2024	10-11 Dec 2024	11-12 Dec 2024	12-13 Dec 2024
14:00 - 15:00	51.3	46.6	48.5	48.6	54.0	56.5	51.0
15:00 - 16:00	52.0	48.0	47.0	52.9	57.9	54.6	54.8
16:00 - 17:00	49.0	46.0	47.1	49.1	56.7	50.6	51.4
17:00 - 18:00	54.3	46.6	47.9	52.3	50.7	49.4	50.4
18:00 - 19:00	46.8	46.2	49.2	46.7	48.2	51.1	47.9
19:00 - 20:00	43.4	45.7	45.4	45.6	44.7	45.1	46.1
20:00 - 21:00	44.1	45.0	45.2	46.4	45.5	45.1	46.3
21:00 - 22:00	44.2	44.8	44.4	46.6	44.7	43.8	44.4
22:00 - 23:00	44.7	45.9	44.8	45.0	44.7	43.8	44.3
23:00 - 00:00	44.0	45.4	45.4	45.1	45.1	43.9	43.9
00:00 - 01:00	44.2	44.8	43.4	43.4	44.4	43.5	42.9
01:00 - 02:00	43.5	44.3	43.4	42.6	43.5	43.2	54.7
02:00 - 03:00	43.0	43.0	42.9	43.2	45.8	42.1	52.1
03:00 - 04:00	42.0	46.2	43.4	42.9	46.1	45.4	43.1
04:00 - 05:00	44.9	52.4	44.7	43.4	43.4	50.4	43.3
05:00 - 06:00	47.0	49.7	48.7	46.8	46.8	46.3	45.0
06:00 - 07:00	51.6	48.3	50.5	52.0	50.9	51.7	50.5
07:00 - 08:00	47.9	46.0	60.2	59.1	57.4	56.8	56.7
08:00 - 09:00	46.4	45.3	53.4	52.4	55.0	52.6	50.3
09:00 - 10:00	48.7	52.9	54.7	52.7	54.6	51.8	54.1
10:00 - 11:00	48.4	46.8	53.9	53.3	55.8	51.8	52.5
11:00 - 12:00	46.5	48.0	53.0	51.0	56.1	53.0	54.3
12:00 - 13:00	44.3	46.1	60.5	55.1	53.9	57.5	58.7
13:00 - 14:00	46.6	46.9	53.2	54.2	49.4	49.7	52.0

Leq(24)*	47.9	47.4	52.3	51.2	52.5	51.5	51.9
Ldn	53.0	54.0	54.9	54.3	55.1	54.9	56.3
Lmax **	80.0	77.4	87.0	85.9	96.7	88.7	91.2

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

Remark : * Average time between 14:00-14:00

** Maximum Sound Pressure Level between 14:00-14:00

(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-2	Monitor Period : 06-13 Dec 2024
SLM Model : Cirrus CR161B	Serial No : G301331
Site Operator : Mr. Siwanon Kulawong	

Calibrator Model : Cirrus CR:515	Serial No : 94296
Calibration Ref dB(A) : 94.0	Certified Date : 14 Feb 2024
SLM Reading / Adjust dB(A) : 93.7/0.0	Expire Date : 13 Feb 2025
Cal Sheet No.: CR-515-2024-361	

Time	L90 (dB(A))						
	06-07 Dec 2024	07-08 Dec 2024	08-09 Dec 2024	09-10 Dec 2024	10-11 Dec 2024	11-12 Dec 2024	12-13 Dec 2024
14:00 - 15:00	43.5	41.3	43.2	43.5	47.7	47.0	45.3
15:00 - 16:00	45.2	41.5	43.2	47.3	44.5	45.6	47.9
16:00 - 17:00	43.3	41.4	42.9	44.8	47.7	45.4	45.4
17:00 - 18:00	41.8	41.3	43.0	43.8	41.1	43.0	43.9
18:00 - 19:00	41.7	41.8	43.5	43.4	42.1	43.5	44.0
19:00 - 20:00	42.7	43.7	44.2	44.2	43.3	43.9	44.4
20:00 - 21:00	43.0	43.1	43.1	44.7	43.5	43.7	44.2
21:00 - 22:00	43.4	42.5	42.9	44.2	42.9	42.6	43.3
22:00 - 23:00	43.3	43.4	43.3	43.3	42.9	42.2	43.2
23:00 - 00:00	42.8	42.9	43.4	43.2	42.8	42.7	42.2
00:00 - 01:00	42.6	42.0	42.1	42.3	42.9	42.3	41.7
01:00 - 02:00	41.7	41.4	41.2	41.2	42.3	41.7	40.9
02:00 - 03:00	41.4	41.5	41.7	41.3	42.5	41.2	40.1
03:00 - 04:00	41.1	40.7	42.3	41.4	42.8	41.3	40.3
04:00 - 05:00	41.0	40.4	42.5	41.8	42.6	41.1	40.8
05:00 - 06:00	41.0	39.9	42.7	43.0	43.5	41.6	41.8
06:00 - 07:00	44.6	43.4	46.1	45.9	46.0	44.7	45.3
07:00 - 08:00	45.7	43.1	51.1	50.7	49.8	49.6	48.2
08:00 - 09:00	43.8	42.0	48.6	47.7	49.0	47.3	45.8
09:00 - 10:00	44.1	43.1	48.4	47.1	48.3	46.7	48.2
10:00 - 11:00	43.2	42.4	48.6	47.8	49.9	46.6	47.5
11:00 - 12:00	41.5	42.8	46.1	44.4	47.0	46.1	44.2
12:00 - 13:00	41.3	43.5	50.4	48.6	45.6	46.0	45.7
13:00 - 14:00	41.3	42.7	44.3	48.4	44.5	45.0	45.0

L90(avg)*	42.9	42.3	45.6	45.6	45.7	44.8	44.8
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Remark : * Average time between 14:00-14:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team



Noise Monitoring Result : Community Noise MTR-PTTGC6-Refinery

Location : North of Refinery Monitor Period : 06-13 Dec 2024
SLM Model : Cirrus CR161B Serial No : G303385
Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Cirrus CR:515 Serial No : 94296
Calibration Ref dB(A) : 94.0 Certified Date : 14 Feb 2024
SLM Reading / Adjust dB(A) : 93.7/0.0 Expire Date : 13 Feb 2025
Cal Sheet No.: CR-515-2024-361

Time	Equivalent Sound Pressure Level (dB(A))						
	06-07 Dec 2024	07-08 Dec 2024	08-09 Dec 2024	09-10 Dec 2024	10-11 Dec 2024	11-12 Dec 2024	12-13 Dec 2024
10:00 - 11:00	68.8	68.4	68.4	68.4	68.1	68.3	68.5
11:00 - 12:00	68.9	69.2	68.4	68.5	68.6	69.1	68.3
12:00 - 13:00	68.9	68.9	68.3	68.6	68.2	68.1	68.3
13:00 - 14:00	69.0	69.0	68.4	69.5	68.4	68.2	68.5
14:00 - 15:00	69.4	69.1	68.3	69.6	69.4	68.4	68.3
15:00 - 16:00	69.6	69.2	68.2	69.4	69.3	68.4	68.4
16:00 - 17:00	69.6	69.3	68.4	69.0	69.2	69.0	68.3
17:00 - 18:00	69.4	69.6	68.5	68.6	69.2	69.2	68.4
18:00 - 19:00	69.6	69.1	68.5	68.7	69.1	69.3	68.7
19:00 - 20:00	69.1	68.9	68.4	68.6	68.8	69.1	68.5
20:00 - 21:00	69.8	68.4	68.5	68.3	68.4	68.7	68.5
21:00 - 22:00	70.1	68.7	68.6	68.3	68.5	68.4	68.5
22:00 - 23:00	70.2	68.6	68.5	68.2	68.3	68.5	68.3
23:00 - 00:00	70.4	68.9	68.6	68.2	68.4	68.3	68.4
00:00 - 01:00	70.2	68.4	68.5	68.5	68.3	68.4	68.3
01:00 - 02:00	69.9	68.7	68.3	68.5	68.3	68.5	68.2
02:00 - 03:00	70.0	68.6	68.3	68.3	68.3	68.3	68.3
03:00 - 04:00	69.4	68.7	68.2	68.2	68.5	68.4	68.5
04:00 - 05:00	68.9	68.6	68.1	68.3	68.3	68.3	68.2
05:00 - 06:00	68.5	68.4	68.1	68.7	68.5	68.2	68.2
06:00 - 07:00	68.8	68.4	68.6	68.6	69.0	68.4	68.3
07:00 - 08:00	68.6	68.5	68.6	68.4	68.7	68.3	68.3
08:00 - 09:00	68.4	68.5	68.8	68.5	68.4	68.6	68.7
09:00 - 10:00	68.2	68.5	68.4	68.4	69.0	68.4	68.6
Leq(24)*	69.4	68.8	68.4	68.6	68.7	68.5	68.4
Ldn	76.0	75.0	74.8	74.9	74.9	74.8	74.7
Lmax **	93.7	91.6	90.1	88.4	95.9	98.7	90.8
Standard-24Hr	70 dB(A)						
Standard-Max	115 dB(A)						

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

** Maximum Sound Pressure Level between 10:00-10:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team



Noise Monitoring Result : Background Noise MTR-PTTGC6-Refinery

Location : North of Refinery Monitor Period : 06-13 Dec 2024
SLM Model : Cirrus CR161B Serial No : G303385
Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Cirrus CR:515 Serial No : 94296
Calibration Ref dB(A) : 94.0 Certified Date : 14 Feb 2024
SLM Reading / Adjust dB(A) : 93.7/0.0 Expire Date : 13 Feb 2025
Cal Sheet No.: CR-515-2024-361

Time	L90 (dB(A))						
	06-07 Dec 2024	07-08 Dec 2024	08-09 Dec 2024	09-10 Dec 2024	10-11 Dec 2024	11-12 Dec 2024	12-13 Dec 2024
10:00 - 11:00	67.6	67.5	67.8	67.5	67.3	67.3	67.4
11:00 - 12:00	67.7	68.3	67.7	67.4	67.4	67.3	67.6
12:00 - 13:00	68.4	68.3	67.7	67.5	67.3	67.3	67.6
13:00 - 14:00	68.4	68.4	67.6	68.7	67.5	67.3	67.5
14:00 - 15:00	68.5	68.5	67.7	69.1	67.8	67.3	67.5
15:00 - 16:00	68.9	68.7	67.7	68.8	68.8	67.5	67.7
16:00 - 17:00	68.9	68.8	67.9	68.4	68.6	68.4	67.6
17:00 - 18:00	68.8	69.0	68.1	68.2	68.5	68.6	67.7
18:00 - 19:00	68.8	68.6	68.1	68.2	68.5	68.4	67.8
19:00 - 20:00	68.4	68.5	68.1	68.1	68.1	68.4	67.8
20:00 - 21:00	68.7	68.0	68.2	67.7	68.1	68.1	68.0
21:00 - 22:00	68.7	68.4	68.3	67.7	68.1	68.1	68.0
22:00 - 23:00	69.6	68.3	68.2	67.8	68.0	68.2	67.9
23:00 - 00:00	69.5	68.5	68.3	67.9	68.0	68.1	68.0
00:00 - 01:00	69.5	68.1	68.2	68.2	68.0	68.1	67.9
01:00 - 02:00	69.4	68.3	68.0	68.1	67.9	68.1	67.9
02:00 - 03:00	68.4	68.3	68.0	68.0	67.9	68.0	67.9
03:00 - 04:00	68.4	68.4	67.8	67.9	68.0	68.0	68.0
04:00 - 05:00	68.3	68.2	67.7	67.9	68.0	67.9	67.7
05:00 - 06:00	68.2	68.0	67.7	68.1	68.2	67.8	67.7
06:00 - 07:00	68.2	67.9	67.8	68.0	68.4	67.8	67.7
07:00 - 08:00	68.0	68.1	67.9	67.8	68.0	67.7	67.7
08:00 - 09:00	67.8	68.0	68.0	67.6	67.5	67.6	67.7
09:00 - 10:00	67.3	68.0	67.6	67.2	67.6	67.6	67.5
L90(avg)*	68.6	68.3	67.9	68.0	68.0	67.9	67.7

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

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team

คุณภาพน้ำทิ้ง



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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

WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No. :	1370/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 04/07/2024	SAMPLING TIME	: 10:32
RECEIVED DATE	: 05/07/2024	ANALYTICAL DATE	: 05-12/07/2024
REPORT DATE	: 15/07/2024	SITE OPERATOR	: Miss Mareeyanee Hawae
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_WW_July

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD
				น้ำเสียก่อนผ่านเข้า	Neutralization Basin	
Flow Rate ¹	m ³ /hr			43		
Temperature	°C	2550 B	< 0.5	38.9		
pH		4500-H ⁺ B	< 0.10	6.49		
Total Dissolved Solids	mg/l	2540 C	< 50	782		
Total Suspended Solids	mg/l	2540 D	< 5	22		
Fat Oil & Grease	mg/l	5520 B	< 0.50	14.5		
Sulfide as H ₂ S	mg/l	4500-S ²⁻ F	< 0.20	2.1		
Phenols	mg/l	5530 B,D	< 0.10	2.4		
BOD ₅	mg/l	5210 B	< 1.0	366		
COD	mg/l	5220 C	< 15.00	498		
Ammonia Nitrogen	mg/l	4500-NH ₃ B,C	< 0.02	49.6		
Arsenic (As)	mg/l	3114 C	< 0.0001	3.77		
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	0.0043		

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

Araya Tipparuk

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 2-239-ก-0004

- 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. :	1370/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 04/07/2024	SAMPLING TIME	: 10:41
RECEIVED DATE	: 05/07/2024	ANALYTICAL DATE	: 05-12/07/2024
REPORT DATE	: 15/07/2024	SITE OPERATOR	: Miss Mareeyanee Hawae
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_WW_July

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD
				น้ำเสียก่อนผ่านเข้า	CPI	
Flow Rate ¹	m ³ /hr			63		
Temperature	°C	2550 B	< 0.5	39.1		
pH		4500-H ⁺ B	< 0.10	6.12		
Total Dissolved Solids	mg/l	2540 C	< 50	502		
Total Suspended Solids	mg/l	2540 D	< 5	18		
Fat Oil & Grease	mg/l	5520 B	< 0.50	8.2		
Sulfide as H ₂ S	mg/l	4500-S ²⁻ F	< 0.20	ND		
Phenols	mg/l	5530 B,D	< 0.10	2.1		
BOD ₅	mg/l	5210 B	< 1.0	258		
COD	mg/l	5220 C	< 15.00	473		
Ammonia Nitrogen	mg/l	4500-NH ₃ B,C	< 0.02	37.4		
Arsenic (As)	mg/l	3114 C	< 0.0001	4.38		
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	0.0041		

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

Araya Tipparuk

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 2-239-ก-0004

- 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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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.	: 1370/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 04/07/2024	SAMPLING TIME	: 10:22
RECEIVED DATE	: 05/07/2024	ANALYTICAL DATE	: 05-12/07/2024
REPORT DATE	: 15/07/2024	SITE OPERATOR	: Miss Mareeyanee Hawae
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_WW_July

PARAMETER	UNIT	ANALYSIS METHOD	ND (non-detectable)	STATION	STANDARD ^{1/}
				น้ำทิ้งหลังผ่านการบำบัดที่ Observation Basin	
Flow Rate ^{2/}	m ³ /hr	-	-	80	-
Temperature	°C	2550 B	< 0.5	33.3	≤ 40
pH	-	4500-H ⁺ B	< 0.10	7.71	5.5-9.0
Total Dissolved Solids	mg/l	2540 C	< 50	1,508	< 37,100 ^{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	43.04	≤ 120
Ammonia Nitrogen	mg/l	Method 350.2	< 0.02	0.05	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0710	≤ 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.

(Miss Khemchuda Insorn)

Analyst

REG. NO. 7-239-ก-0005

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-ก-0004

- 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 04, 2024 found to be 32,100 mg/l therefore the Standard of TDS found to be 37,100 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.	: 1370/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 04/07/2024	SAMPLING TIME	: 10:10
RECEIVED DATE	: 05/07/2024	ANALYTICAL DATE	: 05-12/07/2024
REPORT DATE	: 15/07/2024	SITE OPERATOR	: Miss Mareeyanee Hawae
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_WW_July

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD ^{1/}
				น้ำ LLOD-S	
Temperature	°C	2550 B	< 0.5	31.5	≤ 40
pH	-	4500-H ⁺ B	< 0.10	7.72	5.5-9.0
Total Dissolved Solids	mg/l	2540 C	< 50	1,554	≤ 37,100 ^{2/}
Total Suspended Solids	mg/l	2540 D	< 5	13	≤ 50
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	≤ 5
BOD ₅	mg/l	5210 B	< 1.0	2.1	≤ 20
COD	mg/l	5220 C	< 15.00	51.51	≤ 120

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

(Miss Khemchuda Insorn)

Analyst

REG. NO. 7-239-ก-0005

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-ก-0004

- 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/} 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 04, 2024 found to be 32,100 mg/l therefore the Standard of TDS found to be 37,100 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. :	1534/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 01/08/2024	SAMPLING TIME	: 09.46
RECEIVED DATE	: 02/08/2024	ANALYTICAL DATE	: 02-08/08/2024
REPORT DATE	: 09/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_WW_August

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	41.3	-
pH	-	4500-H ⁺ B	< 0.10	8.47	-
Total Dissolved Solids	mg/l	2540 C	< 50	1,008	-
Total Suspended Solids	mg/l	2540 D	< 5	31	-
Fat Oil & Grease	mg/l	5520 B	< 0.50	27.1	-
Sulfide as H ₂ S	mg/l	4500-S ²⁻ F	< 0.20	1.2	-
Phenols	mg/l	5530 B,D	< 0.10	1.7	-
BOD ₅	mg/l	5210 B	< 1.0	164	-
COD	mg/l	5220 C	< 15.00	527	-
Ammonia Nitrogen	mg/l	4500-NH ₃ B,C	< 0.02	71.2	-
Arsenic (As)	mg/l	3114 C	< 0.0001	3.88	-
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	0.0440	-

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

(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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 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. :	1534/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 01/08/2024	SAMPLING TIME	: 09:55
RECEIVED DATE	: 02/08/2024	ANALYTICAL DATE	: 02-08/08/2024
REPORT DATE	: 09/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_WW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD
				น้ำเสียก่อนผ่านเข้า CPI	
Flow Rate ^{1/}	m ³ /hr	-	-	48	-
Temperature	°C	2550 B	< 0.5	45.2	-
pH	-	4500-H ⁺ B	< 0.10	6.97	-
Total Dissolved Solids	mg/l	2540 C	< 50	968	-
Total Suspended Solids	mg/l	2540 D	< 5	16	-
Fat Oil & Grease	mg/l	5520 B	< 0.50	26.6	-
Sulfide as H ₂ S	mg/l	4500-S ²⁻ F	< 0.20	3.5	-
Phenols	mg/l	5530 B,D	< 0.10	1.9	-
BOD ₅	mg/l	5210 B	< 1.0	242	-
COD	mg/l	5220 C	< 15.00	548	-
Ammonia Nitrogen	mg/l	4500-NH ₃ B,C	< 0.02	35.1	-
Arsenic (As)	mg/l	3114 C	< 0.0001	2.64	-
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	0.0297	-

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

(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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 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.	: 1534/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 01/08/2024	SAMPLING TIME	: 09:35
RECEIVED DATE	: 02/08/2024	ANALYTICAL DATE	: 02-08/08/2024
REPORT DATE	: 09/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_WW_August

PARAMETER	UNIT	ANALYSIS METHOD	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	7.13	5.5-9.0
Total Dissolved Solids	mg/l	2540 C	< 50	1,444	≤ 40,320 ^{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,C	< 0.001	ND	≤ 1
BOD ₅	mg/l	5210 B	< 1.0	< 1.0	≤ 20
COD	mg/l	5220 C	< 15.00	44.55	≤ 120
Ammonia Nitrogen	mg/l	Method 350.2	< 0.02	5.3	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0558	≤ 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, 1st 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 August 01, 2024 found to be 35,320 mg/l therefore the Standard of TDS found to be 40,320 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.	: 1534/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 01/08/2024	SAMPLING TIME	: 09:30
RECEIVED DATE	: 02/08/2024	ANALYTICAL DATE	: 02-08/08/2024
REPORT DATE	: 09/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_WW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD ^{1/}
				น้ำ LOOD-S	
Temperature	°C	2550 B	< 0.5	31.2	≤ 40
pH	-	4500-H ⁺ B	< 0.10	7.42	5.5-9.0
Total Dissolved Solids	mg/l	2540 C	< 50	870	≤ 40,320 ^{3/}
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	< 1.0	≤ 20
COD	mg/l	5220 C	< 15.00	< 15.00	≤ 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

Araya Tipparuk

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-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 August 01, 2024 found to be 35,320 mg/l therefore the Standard of TDS found to be 40,320 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. :	1847/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 05/09/2024	SAMPLING TIME	: 10:07
RECEIVED DATE	: 06/09/2024	ANALYTICAL DATE	: 06-12/09/2024
REPORT DATE	: 16/09/2024	SITE OPERATOR	: Mr.Natthachai Chaiyakhot
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_WW_September

PARAMETER	UNIT	ANALYSIS	ND	STATION	STANDARD
		METHODS	(non-detectable)	น้ำเสียก่อนผ่านเข้า	
				Neutralization Basin	
Flow Rate ^{1/}	m ³ /hr	-	-	40	-
Temperature	° C	2550 B	< 0.5	39.8	-
pH	-	4500-H ⁺ B	< 0.10	6.71	-
Total Dissolved Solids	mg/l	2540 C	< 50	684	-
Total Suspended Solids	mg/l	2540 D	< 5	72	-
Fat Oil & Grease	mg/l	5520 B	< 0.50	9.1	-
Sulfide as H ₂ S	mg/l	4500-S ²⁻ F	< 0.20	2.2	-
Phenols	mg/l	5530 B,D	< 0.10	2.9	-
BOD ₅	mg/l	5210 B	< 1.0	182	-
COD	mg/l	5220 C	< 15.00	400	-
Ammonia Nitrogen	mg/l	4500-NH ₃ B,C	< 0.02	31.8	-
Arsenic (As)	mg/l	3114 C	< 0.0001	3.14	-
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	0.0165	-

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

(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. :	1847/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 05/09/2024	SAMPLING TIME	: 10:18
RECEIVED DATE	: 06/09/2024	ANALYTICAL DATE	: 06-12/09/2024
REPORT DATE	: 16/09/2024	SITE OPERATOR	: Mr.Natthachai Chaiyakhot
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_WW_September

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	
				น้ำเสียก่อนผ่านเข้า CPI	STANDARD
Flow Rate ^{1/}	m ³ /hr	-	-	56	-
Temperature	°C	2550 B	< 0.5	39.9	-
pH	-	4500-H ⁺ B	< 0.10	6.63	-
Total Dissolved Solids	mg/l	2540 C	< 50	706	-
Total Suspended Solids	mg/l	2540 D	< 5	18	-
Fat Oil & Grease	mg/l	5520 B	< 0.50	27.0	-
Sulfide as H ₂ S	mg/l	4500-S ²⁻ F	< 0.20	ND	-
Phenols	mg/l	5530 B,D	< 0.10	3.0	-
BOD ₅	mg/l	5210 B	< 1.0	153	-
COD	mg/l	5220 C	< 15.00	261	-
Ammonia Nitrogen	mg/l	4500-NH ₃ B,C	< 0.02	30.9	-
Arsenic (As)	mg/l	3114 C	< 0.0001	1.31	-
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	0.0027	-

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

(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.	: 1847/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 05/09/2024	SAMPLING TIME	: 09:57
RECEIVED DATE	: 06/09/2024	ANALYTICAL DATE	: 06-12/09/2024
REPORT DATE	: 16/09/2024	SITE OPERATOR	: Mr.Natthachai Chaiyakhot
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_WW_September

PARAMETER	UNIT	ANALYSIS METHOD	ND (non-detectable)	STATION	STANDARD ^u
				น้ำทิ้งหลังผ่านการบำบัดที่ Observation Basin	
Flow Rate ^w	m ³ /hr			80	
Temperature	°C	2550 B	< 0.5	33.5	≤ 40
pH	-	4500-H ⁺ B	< 0.10	7.89	5.5-9.0
Total Dissolved Solids	mg/l	2540 C	< 50	2,210	≤ 41,260 ^{2/}
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,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	0.14	
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. 1st ED., 2020.

(Miss Khemchuda Insom)

Analyst

REG. NO. 2-239-ก-0005

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 2-239-ก-0004

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3. ^u 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 05, 2024 found to be 36,260 mg/l therefore the Standard of TDS found to be 41,260 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.	: 1847/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 05/09/2024	SAMPLING TIME	: 09:49
RECEIVED DATE	: 06/09/2024	ANALYTICAL DATE	: 06-12/09/2024
REPORT DATE	: 16/09/2024	SITE OPERATOR	: Mr.Natthachai Chaiyakhot
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_WW_September

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD ^u
				น้ำ LLOD-S	
Temperature	°C	2550 B	< 0.5	31.5	≤ 40
pH	-	4500-H ⁺ B	< 0.10	7.51	5.5-9.0
Total Dissolved Solids	mg/l	2540 C	< 50	640	≤ 41,260 ^{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	1.6	≤ 20
COD	mg/l	5220 C	< 15.00	< 15.00	≤ 120

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

(Miss Khemchuda Insom)

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.

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

3. ^u 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 05, 2024 found to be 36,260 mg/l therefore the Standard of TDS found to be 41,260 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. :	2020/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 03/10/2024	SAMPLING TIME	: 10:35
RECEIVED DATE	: 04/10/2024	ANALYTICAL DATE	: 04-10/10/2024
REPORT DATE	: 11/10/2024	SITE OPERATOR	: Mr. Jeerawat Khotamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_WW_October

PARAMETER	UNIT	ANALYSIS	ND	STATION	STANDARD
		METHODS	(non-detectable)	น้ำเสียก่อนผ่านเข้า Neutralization Basin	
Flow Rate ^{1/}	m ³ /hr	-	-	34	-
Temperature	°C	2550 B	< 0.5	34.5	-
pH	-	4500-H ⁺ B	< 0.10	7.16	-
Total Dissolved Solids	mg/l	2540 C	< 50	612	-
Total Suspended Solids	mg/l	2540 D	< 5	20	-
Fat Oil & Grease	mg/l	5520 B	< 0.50	39.2	-
Sulfide as H ₂ S	mg/l	4500-S ²⁻ F	< 0.20	6.4	-
Phenols	mg/l	5530 B,D	< 0.10	2.6	-
BOD ₅	mg/l	5210 B	< 1.0	234	-
COD	mg/l	5220 C	< 15.00	565	-
Ammonia Nitrogen	mg/l	4500-NH ₃ B,C	< 0.02	53.6	-
Arsenic (As)	mg/l	3114 C	< 0.0001	3.19	-
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	0.0037	-

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

(Miss Khemchuda Insorn)

Analyst

REG. NO. 2-239-ก-0005

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 2-239-ก-0004

- Remark :**
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 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. :	2020/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 03/10/2024	SAMPLING TIME	: 10:20
RECEIVED DATE	: 04/10/2024	ANALYTICAL DATE	: 04-10/10/2024
REPORT DATE	: 11/10/2024	SITE OPERATOR	: Mr. Jeerawat Khotamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_WW_October

PARAMETER	UNIT	ANALYSIS	ND	STATION	STANDARD
		METHODS	(non-detectable)	น้ำเสียก่อนผ่านเข้า CPI	
Flow Rate ^{1/}	m ³ /hr	-	-	54	-
Temperature	°C	2550 B	< 0.5	46.0	-
pH	-	4500-H ⁺ B	< 0.10	7.54	-
Total Dissolved Solids	mg/l	2540 C	< 50	552	-
Total Suspended Solids	mg/l	2540 D	< 5	51	-
Fat Oil & Grease	mg/l	5520 B	< 0.50	21.6	-
Sulfide as H ₂ S	mg/l	4500-S ²⁻ F	< 0.20	7.1	-
Phenols	mg/l	5530 B,D	< 0.10	2.8	-
BOD ₅	mg/l	5210 B	< 1.0	244	-
COD	mg/l	5220 C	< 15.00	585	-
Ammonia Nitrogen	mg/l	4500-NH ₃ B,C	< 0.02	55.0	-
Arsenic (As)	mg/l	3114 C	< 0.0001	5.12	-
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	0.0006	-

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

(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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 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.	: 2020/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 03/10/2024	SAMPLING TIME	: 10:10
RECEIVED DATE	: 04/10/2024	ANALYTICAL DATE	: 04-10/10/2024
REPORT DATE	: 11/10/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_WW_October

PARAMETER	UNIT	ANALYSIS METHOD	ND (non-detectable)	STATION	STANDARD ¹⁾
				น้ำทิ้งหลังผ่านการบำบัดที่ Observation Basin	
Flow Rate ²⁾	m ³ /hr	-	-	80	-
Temperature	°C	2550 B	< 0.5	32.5	≤ 40
pH	-	4500-H ⁺ B	< 0.10	7.56	5.5-9.0
Total Dissolved Solids	mg/l	2540 C	< 50	1,712	≤ 10,280 ³⁾
Total Suspended Solids	mg/l	2540 D	< 5	9	≤ 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	28.25	≤ 120
Ammonia Nitrogen	mg/l	Method 350.2	< 0.02	0.09	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0751	≤ 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. 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 October 03, 2024 found to be 5,280 mg/l therefore the Standard of TDS found to be 10,280 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.	: 2020/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 03/10/2024	SAMPLING TIME	: 10:00
RECEIVED DATE	: 04/10/2024	ANALYTICAL DATE	: 04-10/10/2024
REPORT DATE	: 11/10/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_WW_October

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 ⁺ B	< 0.10	7.44	5.5-9.0
Total Dissolved Solids	mg/l	2540 C	< 50	1,056	≤ 10,280 ³⁾
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	1.6	≤ 20
COD	mg/l	5220 C	< 15.00	32.29	≤ 120

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

(Miss Khemchuda Insorn)

Analyst

REG. NO. 2-239-n-0005

(Mrs. Araya Tipparuk)

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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 October 03, 2024 found to be 5,280 mg/l therefore the Standard of TDS found to be 10,280 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. :	2279/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 07/11/2024	SAMPLING TIME	: 10:12
RECEIVED DATE	: 08/11/2024	ANALYTICAL DATE	: 08-16/11/2024
REPORT DATE	: 19/11/2024	SITE OPERATOR	: Mr.Tanachot Changlor
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_WW_November

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD
				น้ำเสียก่อนผ่านเข้า		
				Neutralization Basin		
Flow Rate ^{1/} *	m ³ /hr	-	-	47	-	-
Temperature	°C	2550 B	< 0.5	37.4	-	-
pH	-	4500-H ⁺ B	< 0.10	6.82	-	-
Total Dissolved Solids	mg/l	2540 C	< 50	729	-	-
Total Suspended Solids	mg/l	2540 D	< 5	30	-	-
Fat Oil & Grease	mg/l	5520 B	< 0.50	10.9	-	-
Sulfide as H ₂ S	mg/l	4500-S ²⁻ F	< 0.20	1.5	-	-
Phenols	mg/l	5530 B,D	< 0.10	2.8	-	-
BOD ₅	mg/l	5210 B	< 1.0	172	-	-
COD	mg/l	5220 C	< 15.00	469	-	-
Ammonia Nitrogen*	mg/l	4500-NH ₃ B,C	< 0.02	13.2	-	-
Arsenic (As)	mg/l	3114 C	< 0.0001	2.70	-	-
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	0.0050	-	-

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

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

4. * Not registered with the Department of Industrial Works.

5. - Not available.



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No. :	2279/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 07/11/2024	SAMPLING TIME	: 10:21
RECEIVED DATE	: 08/11/2024	ANALYTICAL DATE	: 08-16/11/2024
REPORT DATE	: 19/11/2024	SITE OPERATOR	: Mr.Tanachot Changlor
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_WW_November

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD
				น้ำเสียก่อนผ่านเข้า	CPI	
Flow Rate ^{1/} *	m ³ /hr	-	-	40	-	-
Temperature	°C	2550 B	< 0.5	45.1	-	-
pH	-	4500-H ⁺ B	< 0.10	6.48	-	-
Total Dissolved Solids	mg/l	2540 C	< 50	669	-	-
Total Suspended Solids	mg/l	2540 D	< 5	105	-	-
Fat Oil & Grease	mg/l	5520 B	< 0.50	26.8	-	-
Sulfide as H ₂ S	mg/l	4500-S ²⁻ F	< 0.20	0.66	-	-
Phenols	mg/l	5530 B,D	< 0.10	3.1	-	-
BOD ₅	mg/l	5210 B	< 1.0	263	-	-
COD	mg/l	5220 C	< 15.00	375	-	-
Ammonia Nitrogen*	mg/l	4500-NH ₃ B,C	< 0.02	8.5	-	-
Arsenic (As)	mg/l	3114 C	< 0.0001	4.05	-	-
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	0.0064	-	-

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

(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 registered with the Department of Industrial Works.

5. - Not available.



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 2279/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 07/11/2024	SAMPLING TIME	: 10:06
RECEIVED DATE	: 08/11/2024	ANALYTICAL DATE	: 08-16/11/2024
REPORT DATE	: 19/11/2024	SITE OPERATOR	: Mr.Tanachot Changlor
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_WW_November

PARAMETER	UNIT	ANALYSIS METHOD	ND (non-detectable)	STATION	STANDARD ^u
				น้ำทิ้งหลังผ่านการบำบัดที่ Observation Basin	
Flow Rate ^{u,*}	m ³ /hr	-	-	80	-
Temperature	°C	2550 B	< 0.5	31.5	≤ 40
pH	-	4500-H ⁺ B	< 0.10	8.26	5.5-9.0
Total Dissolved Solids	mg/l	2540 C	< 50	1,802	≤ 35,700 ^u
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	< 15.00	≤ 120
Ammonia Nitrogen*	mg/l	Method 350.2	< 0.02	0.11	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0829	≤ 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

(Miss Khemchuda Insom)

Analyst

REG. NO. 2-239-ก-0005

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 2-239-ก-0004

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

4. ^u Data from PTT Global Chemical Public Company Limited, Branch 6 (Refinery)

5. ^u 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 07, 2024 found to be 30,700 mg/l therefore the Standard of TDS found to be 35,700 mg/l).

6. * Not registered with the Department of Industrial Works.

7. - Not available.



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 2279/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 07/11/2024	SAMPLING TIME	: 09:58
RECEIVED DATE	: 08/11/2024	ANALYTICAL DATE	: 08-16/11/2024
REPORT DATE	: 19/11/2024	SITE OPERATOR	: Mr.Tanachot Changlor
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_WW_November

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD ^u
				บ่อบำบัดน้ำเสีย BOD-S	
Temperature	°C	2550 B	< 0.5	30.2	≤ 40
pH	-	4500-H ⁺ B	< 0.10	8.16	5.5-9.0
Total Dissolved Solids	mg/l	2540 C	< 50	857	≤ 35,700 ^u
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	< 1.0	≤ 20
COD	mg/l	5220 C	< 15.00	43.89	≤ 120

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

(Miss Khemchuda Insom)

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

4. ^u 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 07, 2024 found to be 30,700 mg/l therefore the Standard of TDS found to be 35,700 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. :	2542/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 04/12/2024	SAMPLING TIME	: 09:23
RECEIVED DATE	: 05/12/2024	ANALYTICAL DATE	: 05-12/12/2024
REPORT DATE	: 12/12/2024	SITE OPERATOR	: Mr. Aniwat Pimwanna
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_WW_December

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD
				น้ำเสียก่อนผ่านเข้า	Neutralization Basin	
Flow Rate ^{1/}	m ³ /hr	-	-	70	-	-
Temperature	°C	2550 B	< 0.5	34.6	-	-
pH	-	4500-H ⁺ B	< 0.10	6.38	-	-
Total Dissolved Solids	mg/l	2540 C	< 50	470	-	-
Total Suspended Solids	mg/l	2540 D	< 5	55	-	-
Fat Oil & Grease	mg/l	5520 B	< 0.50	11.3	-	-
Sulfide as H ₂ S	mg/l	4500-S ²⁻ F	< 0.20	1.8	-	-
Phenols	mg/l	5530 B,D	< 0.10	5.4	-	-
BOD ₅	mg/l	5210 B	< 1.0	188	-	-
COD	mg/l	5220 C	< 15.00	555	-	-
Ammonia Nitrogen*	mg/l	4500-NH ₃ B,C	< 0.02	17.5	-	-
Arsenic (As)	mg/l	3114 C	< 0.0001	3.56	-	-
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	0.0164	-	-

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 registered with the Department of Industrial Works.

5. - Not available.



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No. :	2542/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 04/12/2024	SAMPLING TIME	: 09:31
RECEIVED DATE	: 05/12/2024	ANALYTICAL DATE	: 05-12/12/2024
REPORT DATE	: 12/12/2024	SITE OPERATOR	: Mr. Aniwat Pimwanna
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_WW_December

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD
				น้ำเสียก่อนผ่านเข้า	CPI	
Flow Rate ^{1/}	m ³ /hr	-	-	70	-	-
Temperature	°C	2550 B	< 0.5	37.4	-	-
pH	-	4500-H ⁺ B	< 0.10	5.93	-	-
Total Dissolved Solids	mg/l	2540 C	< 50	456	-	-
Total Suspended Solids	mg/l	2540 D	< 5	93	-	-
Fat Oil & Grease	mg/l	5520 B	< 0.50	17.6	-	-
Sulfide as H ₂ S	mg/l	4500-S ²⁻ F	< 0.20	2.2	-	-
Phenols	mg/l	5530 B,D	< 0.10	7.1	-	-
BOD ₅	mg/l	5210 B	< 1.0	256	-	-
COD	mg/l	5220 C	< 15.00	583	-	-
Ammonia Nitrogen*	mg/l	4500-NH ₃ B,C	< 0.02	26.5	-	-
Arsenic (As)	mg/l	3114 C	< 0.0001	3.67	-	-
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	0.0052	-	-

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

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 registered with the Department of Industrial Works.

5. - Not available.



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 2542/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 04/12/2024	SAMPLING TIME	: 09:16
RECEIVED DATE	: 05/12/2024	ANALYTICAL DATE	: 05-12/12/2024
REPORT DATE	: 12/12/2024	SITE OPERATOR	: Mr. Aniwat Pimwanna
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_WW_December

PARAMETER	UNIT	ANALYSIS METHOD	ND (non-detectable)	STATION	STANDARD ^{1/}
				น้ำทิ้งหลังผ่านการบำบัดที่ Observation Basin	
Flow Rate ^{2/}	m ³ /hr	-	-	70	-
Temperature	°C	2550 B	< 0.5	32.7	≤ 40
pH	-	4500-H ⁺ B	< 0.10	7.98	5.5-9.0
Total Dissolved Solids	mg/l	2540 C	< 50	1,300	≤ 39,780 ^{2/}
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	32.72	≤ 120
Ammonia Nitrogen*	mg/l	Method 350.2	< 0.02	0.13	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0721	≤ 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	0.0009	≤ 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, 1st ED. 2020

(Miss Khemchuda Insorn)

Analyst

REG. NO. 7-239-ก-0005

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-ก-0004

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1. ^{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 04, 2024 found to be 34,780 mg/l therefore the Standard of TDS found to be 39,780 mg/l).

6. * Not registered with the Department of Industrial Works.

7. - Not available.



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 2542/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 04/12/2024	SAMPLING TIME	: 09:10
RECEIVED DATE	: 05/12/2024	ANALYTICAL DATE	: 05-12/12/2024
REPORT DATE	: 12/12/2024	SITE OPERATOR	: Mr. Aniwat Pimwanna
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_WW_December

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD ^{1/}
				น้ำ LLOD-S	
Temperature	°C	2550 B	< 0.5	30.7	≤ 40
pH	-	4500-H ⁺ B	< 0.10	7.96	5.5-9.0
Total Dissolved Solids	mg/l	2540 C	< 50	827	≤ 39,780 ^{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	1.7	≤ 20
COD	mg/l	5220 C	< 15.00	39.83	≤ 120

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

(Miss Khemchuda Insorn)

Analyst

REG. NO. 7-239-ก-0005

(Mrs. Araya Tipparuk)

Technical Management Team

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4. - Not available.

คุณภาพน้ำทะเล



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical Public Company Limited ,	REQUEST SERVICE No.	: 1369/67
	Branch 6 (Refinery)	SAMPLING METHOD	: Grab
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING TIME	: 11:34
SAMPLING DATE	: 04/07/2024	ANALYTICAL DATE	: 05-12/07/2024
RECEIVED DATE	: 05/07/2024	SITE OPERATOR	: Miss Mareeyance Hawae
REPORT DATE	: 15/07/2024	FILE CODE	: 224010_CW_July
SAMPLE CONDITION	: Normal		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non detectable)	STATION
				จุดปล่อยน้ำทิ้งที่ผ่านการบำบัด ทางด้านทิศใต้ของโรงกลั่นน้ำมัน
Temperature	°C	2550 B	< 0.5	30.0
pH		4500-H ⁺ B	< 0.10	8.06
Total Dissolved Solids	mg/l	2540 C	< 50	32,100
Total Suspended Solids	mg/l	2540 D	< 5	30
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND
Fat Oil & Grease	-	Visual Testing	-	NV
BOD ₅	mg/l	5210 B	< 1.0	2.5
COD	mg/l	5220 C	< 15.00	73.21

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

(Miss Khemchuda Insorn)

Analyst

(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.	: 1533/67
	Branch 6 (Refinery)	SAMPLING METHOD	: Grab
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING TIME	: 11:48
SAMPLING DATE	: 01/08/2024	ANALYTICAL DATE	: 02-08/08/2024
RECEIVED DATE	: 02/08/2024	SITE OPERATOR	: Mr. Jeerawat Khotamhan
REPORT DATE	: 09/08/2024	FILE CODE	: 224010_CW_August
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	7.97
Total Dissolved Solids	mg/l	2540 C	< 50	35,320
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	2.6
COD	mg/l	5220 C	< 15.00	108

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

(Miss Khemchuda Insorn)

Analyst

(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. : 1846/67
Branch 6 (Refinery)
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Grab
SAMPLING DATE : 05/09/2024 SAMPLING TIME : 11:13
ANALYTICAL DATE : 06-12/09/2024
RECEIVED DATE : 06/09/2024 SITE OPERATOR : Mr.Natthachai Chaiyakhrot
REPORT DATE : 16/09/2024 FILE CODE : 224010_CW_September
SAMPLE CONDITION : Normal

PARAMETER	UNIT	ANALYSIS METHODS	ND (non detectable)	STATION
				จุดปล่อยน้ำทิ้งที่ผ่านการบำบัด ทางด้านทิศใต้ของโรงกลั่นน้ำมัน
Temperature	°C	2550 B	< 0.5	32.1
pH	-	4500-H ⁺ B	< 0.10	8.04
Total Dissolved Solids	mg/l	2540 C	< 50	36,260
Total Suspended Solids	mg/l	2540 D	< 5	83
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND
Fat Oil & Grease	-	Visual Testing	-	NV
BOD ₅	mg/l	5210 B	< 1.0	3.4
COD	mg/l	5220 C	< 15.00	33.37

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

(Miss Khemchuda Insorn)
Analyst

(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. : 2021/67
Branch 6 (Refinery)
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Grab
SAMPLING DATE : 03/10/2024 SAMPLING TIME : 11:40
ANALYTICAL DATE : 04-10/10/2024
RECEIVED DATE : 04/10/2024 SITE OPERATOR : Mr. Jeerawat Khothamhan
REPORT DATE : 11/10/2024 FILE CODE : 224010_CW_October
SAMPLE CONDITION : Normal

PARAMETER	UNIT	ANALYSIS METHODS	ND (non detectable)	STATION
				จุดปล่อยน้ำทิ้งที่ผ่านการบำบัด ทางด้านทิศใต้ของโรงกลั่นน้ำมัน
Temperature	°C	2550 B	< 0.5	31.0
pH	-	4500-H ⁺ B	< 0.10	8.41
Total Dissolved Solids	mg/l	2540 C	< 50	5,280
Total Suspended Solids	mg/l	2540 D	< 5	127
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND
Fat Oil & Grease	-	Visual Testing	-	NV
BOD ₅	mg/l	5210 B	< 1.0	1.4
COD	mg/l	5220 C	< 15.00	44.40

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

(Miss Khemchuda Insorn)
Analyst

(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. : 2280/67
Branch 6 (Refinery) SAMPLING METHOD : Grab
SAMPLING BY : SECOT Co., Ltd. SAMPLING TIME : 11:48
SAMPLING DATE : 07/11/2024 ANALYTICAL DATE : 08-16/11/2024
RECEIVED DATE : 08/11/2024 SITE OPERATOR : Mr.Tanachot Changlor
REPORT DATE : 19/11/2024 FILE CODE : 224010_CW_November
SAMPLE CONDITION : Normal

PARAMETER	UNIT	ANALYSIS METHODS	ND (non detectable)	STATION
				จุดปล่อยน้ำทิ้งที่ผ่านการบำบัด ทางด้านทิศใต้ของโรงกลั่นน้ำมัน
Temperature	°C	2550 B	< 0.5	31.5
pH	-	4500-H ⁺ B	< 0.10	7.96
Total Dissolved Solids	mg/l	2540 C	< 50	30,700
Total Suspended Solids	mg/l	2540 D	< 5	20
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND
Fat Oil & Grease	-	Visual Testing	-	NV
BOD ₅	mg/l	5210 B	< 1.0	2.1
COD	mg/l	5220 C	< 15,000	106

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

(Miss Khemchuda Insorn)

Analyst

(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. : 2541/67
Branch 6 (Refinery) SAMPLING METHOD : Grab
SAMPLING BY : SECOT Co., Ltd. SAMPLING TIME : 11:30
SAMPLING DATE : 04/12/2024 ANALYTICAL DATE : 05-12/12/2024
RECEIVED DATE : 05/12/2024 SITE OPERATOR : Mr. Aniwat Pimwanna
REPORT DATE : 12/12/2024 FILE CODE : 224010_CW_December
SAMPLE CONDITION : Normal

PARAMETER	UNIT	ANALYSIS METHODS	ND (non detectable)	STATION
				จุดปล่อยน้ำทิ้งที่ผ่านการบำบัด ทางด้านทิศใต้ของโรงกลั่นน้ำมัน
Temperature	°C	2550 B	< 0.5	30.9
pH	-	4500-H ⁺ B	< 0.10	8.11
Total Dissolved Solids	mg/l	2540 C	< 50	34,780
Total Suspended Solids	mg/l	2540 D	< 5	23
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND
Fat Oil & Grease	-	Visual Testing	-	NV
BOD ₅	mg/l	5210 B	< 1.0	1.3
COD	mg/l	5220 C	< 15,000	104

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

(Miss Khemchuda Insorn)

Analyst

(Mrs. Araya Tipparuk)

Technical Management Team

Remark :

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1663/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 14/08/2024	SAMPLING TIME	: 11:00-11:15
RECEIVED DATE	: 15/08/2024	ANALYTICAL DATE	: 14, 15-20/08/2024
REPORT DATE	: 26/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-01	STANDARD "
pH		4500-H ⁺ B	< 0.10	6.97	"
Conductivity	µS/cm	2510 B	< 1.0	319	"
Salinity	ppt	2520 B	< 0.01	0.08	"
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0511	≤ 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. 7-239-R-0005

Araya Tipparuk

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-R-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.	: 1663/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 14/08/2024	SAMPLING TIME	: 11:00-11:15
RECEIVED DATE	: 15/08/2024	ANALYTICAL DATE	: 17, 21-22/08/2024
REPORT DATE	: 26/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-01	STANDARD "
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-R-0022

Araya Tipparuk

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-R-0004

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 1663/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 14/08/2024	SAMPLING TIME	: 11:00-11:15
RECEIVED DATE	: 15/08/2024	ANALYTICAL DATE	: 17-20/08/2024
REPORT DATE	: 26/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-01	STANDARD ¹⁾
Total Petroleum Hydrocarbons					
- TPH (C ₇ - C ₉)	mg/l	5030 C / 8260 D	< 0.003	ND	≤ 1.4
- Pentane					
- Benzene					
- Toluene					
- m,p-Xylene					
- o-Xylene					
- Ethylbenzene					
- TPH (C ₈ - C ₁₀)	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 ₂₇)	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

AR
(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	: 1663/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 14/08/2024	SAMPLING TIME	: 11:00-11:15
RECEIVED DATE	: 15/08/2024	ANALYTICAL DATE	: 16-19/08/2024
REPORT DATE	: 26/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-01	STANDARD ¹⁾
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. 2-239-0-0001

AR
(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.	: 1663/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 14/08/2024	SAMPLING TIME	: 10:17-10:33
RECEIVED DATE	: 15/08/2024	ANALYTICAL DATE	: 14, 15-20/08/2024
REPORT DATE	: 26/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS	ND	STATION	STANDARD ^u
		METHODS	(non-detectable)		
pH	-	4500-H ⁺ B	< 0.10	6.47	u
Conductivity	µS/cm	2510 B	< 1.0	460	-
Salinity	ppt	2520 B	< 0.01	0.16	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0780	≤ 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)

(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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GROUND WATER ANALYSIS REPORT

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SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 14/08/2024	SAMPLING TIME	: 10:17-10:33
RECEIVED DATE	: 15/08/2024	ANALYTICAL DATE	: 17, 21-22/08/2024
REPORT DATE	: 26/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS	ND	STATION	STANDARD ^u
		METHODS	(non-detectable)		
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)

(Miss Jutarat Jaemruen)

Analyst

REG. NO. 2-239-ก-0022

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 2-239-ก-0004

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GROUND WATER ANALYSIS REPORT

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SAMPLING DATE	: 14/08/2024	SAMPLING TIME	: 10:17-10:33
RECEIVED DATE	: 15/08/2024	ANALYTICAL DATE	: 17-20/08/2024
REPORT DATE	: 26/08/2024	SITE OPERATOR	: Mr. Jeerawat Khotamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-02	STANDARD ^{1/}
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 ₁₆ - C ₃₂)	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. 2-239-8-0001

MR

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REG. NO. 2-239-8-0004

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GROUND WATER ANALYSIS REPORT

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SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 14/08/2024	SAMPLING TIME	: 10:17-10:33
RECEIVED DATE	: 15/08/2024	ANALYTICAL DATE	: 16-19/08/2024
REPORT DATE	: 26/08/2024	SITE OPERATOR	: Mr. Jeerawat Khotamhan
SAMPLE CONDITION	: 26/08/2024	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-02	STANDARD ^{1/}
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. 2-239-8-0001

MR

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 2-239-8-0004

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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.	: 1663/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 13/08/2024	SAMPLING TIME	: 10:18-10:34
RECEIVED DATE	: 15/08/2024	ANALYTICAL DATE	: 13, 15-20/08/2024
REPORT DATE	: 26/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-03	STANDARD ^u
pH	-	4500-H ⁺ B	< 0.10	6.77	-
Conductivity	µS/cm	2510 B	< 1.0	562	-
Salinity	ppt	2520 B	< 0.01	0.21	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0519	≤ 0.1
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	≤ 2.0
Lead (Pb)	mg/l	3120 B	< 0.008	< 0.03	≤ 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)

(Miss Khemchuda Insorn)

Analyst

REG. NO: 2-239-ก-0005

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 2-239-ก-0004

- Remark :
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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.	: 1663/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 13/08/2024	SAMPLING TIME	: 10:18-10:34
RECEIVED DATE	: 15/08/2024	ANALYTICAL DATE	: 17, 21-22/08/2024
REPORT DATE	: 26/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-03	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)

(Miss Jutarat Jaemruen)

Analyst

REG. NO. 2-239-ก-0022

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 2-239-ก-0004

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GROUND WATER ANALYSIS REPORT

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SAMPLING DATE	: 13/08/2024	SAMPLING TIME	: 10:18-10:34
RECEIVED DATE	: 15/08/2024	ANALYTICAL DATE	: 17-20/08/2024
REPORT DATE	: 26/08/2024	SITE OPERATOR	: Mr. Jeerawat Khotamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-03	STANDARD ^{1/}
Total Petroleum Hydrocarbons					
- TPH (C ₃ - C ₉)	mg/l	5030 C / 8260 D	< 0.003	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	≤ 1.7
- n-Nonane					
- n-Decane					
- n-Dodecane					
- n-Tetradecane					
- n-Hexadecane					
- TPH (C ₁₆ - C ₁₉)	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 SOIL WASTE 3rd Ed. 2000

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 7-239-ก-0001

Araya T.

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-ก-0004

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GROUND WATER ANALYSIS REPORT

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REPORT DATE	: 26/08/2024	SITE OPERATOR	: Mr. Jeerawat Khotamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-03	STANDARD ^{1/}
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 21st ED. 2017 (AWWA APHA WEF)

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 7-239-ก-0001

Araya T.

(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. :	1663/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 13/08/2024	SAMPLING TIME	: 11:03-11:19
RECEIVED DATE	: 15/08/2024	ANALYTICAL DATE	: 13, 15-20/08/2024
REPORT DATE	: 26/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-04	STANDARD ^{1/}
pH	-	4500-H ⁺ B	< 0.10	7.29	11
Conductivity	µS/cm	2510 B	< 1.0	383	-
Salinity	ppt	2520 B	< 0.01	0.22	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0300	≤ 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)

(Miss Khemchuda Insorn)
Analyst
REG. NO. 7-239-ก-0005

(Mrs. Araya Tipparuk)
Technical Management Team
REG. NO. 7-239-ก-0004

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SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-04	STANDARD ^{1/}
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)

(Miss Jutarat Jaemruen)
Analyst
REG. NO. 7-239-ก-0022

(Mrs. Araya Tipparuk)
Technical Management Team
REG. NO. 7-239-ก-0004

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REPORT DATE	: 26/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-04	STANDARD ^{1/}
Total Petroleum Hydrocarbons					
- TPH (C ₇ - C ₉)	mg/l	5030 C / 8260 D	< 0.003	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	≤ 1.7
- n-Nonane					
- n-Decane					
- n-Dodecane					
- n-Tetradecane					
- n-Hexadecane					
- TPH (C ₁₆ - C ₂₁)	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. 7-239-0-0001

MR

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-0-0004

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SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-04	STANDARD ^{1/}
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	≤ 0.01
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	≤ 0.1
Endosulfan Sulfate	mg/l	6630 B	< 0.000003	ND	≤ 0.1
Endrin ketone	mg/l	6630 B	< 0.000003	ND	≤ 0.1

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

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 7-239-0-0001

MR

(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.	: 1663/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 13/08/2024	SAMPLING TIME	: 14:31-14:46
RECEIVED DATE	: 15/08/2024	ANALYTICAL DATE	: 13, 15-20/08/2024
REPORT DATE	: 26/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-05	STANDARD ¹⁾
pH		4500-H ⁺ B	< 0.10	7.54	1)
Conductivity	µS/cm	2510 B	< 1.0	643	
Salinity	ppt	2520 B	< 0.01	0.25	
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0739	≤ 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 24th ED. 2012 (AWWA APHA WEF)

(Miss Khemchuda Insorn)

Analyst

REG. NO. 7-239-ก-0005

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-ก-0004

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SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-05	STANDARD ¹⁾
Naphthalene	mg/l	6440 C	< 0.0005	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 24th ED. 2012 (AWWA APHA WEF)

(Miss Jutarat Jaemruen)

Analyst

REG. NO. 7-239-ก-0022

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-ก-0004

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SAMPLING DATE	: 13/08/2024	SAMPLING TIME	: 14:31-14:46
RECEIVED DATE	: 15/08/2024	ANALYTICAL DATE	: 17-20/08/2024
REPORT DATE	: 26/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-05	STANDARD ^{1/}
-----------	------	------------------	---------------------	---------------	------------------------

Total Petroleum Hydrocarbons

- TPH (C₈-C₁₀) mg/l 5030 C / 8260 D < 0.003 ND ≤ 1.4

- Pentane
- Benzene
- Toluene
- m,p-Xylene
- o-Xylene
- Ethylbenzene
- TPH (C₈-C₁₀) mg/l 3510 C / 8015 D < 0.025 ND ≤ 1.7

- n-Nonane
- n-Decane
- n-Dodecane
- n-Tetradecane
- n-Hexadecane
- TPH (C₁₆-C₂₂) 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
- 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. 2-239-0-0001

NR

(Mrs. Araya Tipparak)

Technical Management Team

REG. NO. 2-239-0-0004

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

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 1663/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 13/08/2024	SAMPLING TIME	: 14:31-14:46
RECEIVED DATE	: 15/08/2024	ANALYTICAL DATE	: 16-19/08/2024
REPORT DATE	: 26/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-05	STANDARD ^{1/}
-----------	------	------------------	---------------------	---------------	------------------------

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 21st ED. 2012 (AWWA, AHA, WEF)

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 2-239-0-0001

NR

(Mrs. Araya Tipparak)

Technical Management Team

REG. NO. 2-239-0-0004

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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.	: 1663/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 13/08/2024	SAMPLING TIME	: 15:14-15:30
RECEIVED DATE	: 15/08/2024	ANALYTICAL DATE	: 13, 15-20/08/2024
REPORT DATE	: 26/08/2024	SITE OPERATOR	: Mr. Jeerawat Khotiamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS	ND	STATION	STANDARD ^{1/}
		METHODS	(non-detectable)		
				MW-06	
pH	-	4500-H ⁺ B	< 0.10	6.59	M
Conductivity	µS/cm	2510 B	< 1.0	2,786	-
Salinity	ppt	2520 B	< 0.01	1.29	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0572	≤ 0.1
Cadmium (Cd)	mg/l	3120 B	< 0.001	< 0.01	≤ 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)

(Miss Khemchuda Inorn)

Analyst

REG. NO. 7-239-ก-0005

(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.	: 1663/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 13/08/2024	SAMPLING TIME	: 15:14-15:30
RECEIVED DATE	: 15/08/2024	ANALYTICAL DATE	: 17, 21-22/08/2024
REPORT DATE	: 26/08/2024	SITE OPERATOR	: Mr. Jeerawat Khotiamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS	ND	STATION	STANDARD ^{1/}
		METHODS	(non-detectable)		
				MW-06	
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)

(Miss Jutarat Jaemruen)

Analyst

REG. NO. 7-239-ก-0022

(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	: 1663/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 13/08/2024	SAMPLING TIME	: 15:14-15:30
RECEIVED DATE	: 15/08/2024	ANALYTICAL DATE	: 17-20/08/2024
REPORT DATE	: 26/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-06	STANDARD ^{1/}
Total Petroleum Hydrocarbons					
- TPH (C ₅ - C ₁₀)	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 ₁₆ - C ₃₃)	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. 7-239-9-0001

MR

(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	: 1663/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 13/08/2024	SAMPLING TIME	: 15:14-15:30
RECEIVED DATE	: 15/08/2024	ANALYTICAL DATE	: 16-19/08/2024
REPORT DATE	: 26/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-06	STANDARD ^{1/}
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 21st ED. 2017 (APWA 6210A_WEB)

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 7-239-9-0001

MR

(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.	: 1663/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 14/08/2024	SAMPLING TIME	: 14:28-14:45
RECEIVED DATE	: 15/08/2024	ANALYTICAL DATE	: 14, 15-20/08/2024
REPORT DATE	: 26/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamlian
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND	STATION	STANDARD ¹⁾
			(non-detectable)	MW-07	
pH	-	4500-H ⁺ B	< 0.10	6.86	1)
Conductivity	µS/cm	2510 B	< 1.0	1,509	-
Salinity	ppt	2520 B	< 0.01	0.69	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0680	≤ 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)

(Miss Khemchude Insorn)
Analyst

REG. NO. 7-239-ก-0005

(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.	: 1663/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 14/08/2024	SAMPLING TIME	: 14:28-14:45
RECEIVED DATE	: 15/08/2024	ANALYTICAL DATE	: 17, 21-22/08/2024
REPORT DATE	: 26/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamlian
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND	STATION	STANDARD ¹⁾
			(non-detectable)	MW-07	
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)

(Miss Jutarat Jaornruen)
Analyst

REG. NO. 7-239-ก-0022

(Mrs. Araya Tipparuk)
Technical Management Team

REG. NO. 7-239-ก-0004

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GROUND WATER ANALYSIS REPORT

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SAMPLING DATE	: 14/08/2024	SAMPLING TIME	: 14:28-14:45
RECEIVED DATE	: 15/08/2024	ANALYTICAL DATE	: 17-20/08/2024
REPORT DATE	: 26/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-07	STANDARD ^{1/}
-----------	------	------------------	---------------------	---------------	------------------------

Total Petroleum Hydrocarbons

- TPH (C₇ - C₉) mg/l 5030 C / 8260 D < 0.003 ND ≤ 1.4

- Pentane

- Benzene

- Toluene

- m,p-Xylene

- o-Xylene

- Ethylbenzene

- TPH (C₉ - C₁₆) mg/l 3510 C / 8015 D < 0.025 ND ≤ 1.7

- n-Nonane

- n-Decane

- n-Dodecane

- n-Tetradecane

- n-Hexadecane

- TPH (C₁₆ - C₃₅) 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

- 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. 7-239-9-0001

AR

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-R-0004

- Remark :
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GROUND WATER ANALYSIS REPORT

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REPORT DATE	: 26/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-07	STANDARD ^{1/}
-----------	------	------------------	---------------------	---------------	------------------------

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 11th ED. 2017 (APHA, AWWA, WEF)

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 7-239-9-0001

AR

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-R-0004

- Remark :
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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.	: 1623/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 08/08/2024	SAMPLING TIME	: 09:51-10:07
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 08, 10, 13-16/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS	ND	STATION	STANDARD ^u
		METHODS	(non-detectable)		
pH		4500-H ⁺ B	< 0.10	7.21	
Conductivity	µS/cm	2510 B	< 1.0	810	
Salinity	ppt	2520 B	< 0.01	0.34	
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0353	≤ 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)

(Miss Khemchuda Insorn)

Analyst

REG. NO. 7-239-R-0005

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-R-0004

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1623/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 08/08/2024	SAMPLING TIME	: 09:51-10:07
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 13/08/2024, 15-16/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS	ND	STATION	STANDARD ^u
		METHODS	(non-detectable)		
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)

(Miss Jutarat Jaemruen)

Analyst

REG. NO. 7-239-R-0022

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-R-0004

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 1623/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 08/08/2024	SAMPLING TIME	: 09:51-10:07
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 17-20/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-08	STANDARD ^{1/}
Total Petroleum Hydrocarbons					
- TPH (C ₇ - C ₉)	mg/l	5030 C / 8260 D	< 0.003	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	≤ 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	≤ 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. 2-239-9-0001

AR

(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	: 1623/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 08/08/2024	SAMPLING TIME	: 09:51-10:07
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 16-19/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-08	STANDARD ^{1/}
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 21st ED. 2017 (AWWA APHA WEF)

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 2-239-9-0001

AR

(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.	: 1585/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 05/08/2024	SAMPLING TIME	: 10:40-10:54
RECEIVED DATE	: 07/08/2024	ANALYTICAL DATE	: 05, 07-13/08/2024
REPORT DATE	: 19/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^U
				MW-09		
pH	-	4500-H ⁺ B	< 0.10	7.29		U
Conductivity	µS/cm	2510 B	< 1.0	1,974		-
Salinity	ppt	2520 B	< 0.01	0.91		-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0028		≤ 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)

(Miss Khemchuda Insorn)

Analyst

REG. NO. 7-239-P-0005

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-P-0004

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1585/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 05/08/2024	SAMPLING TIME	: 10:40-10:54
RECEIVED DATE	: 07/08/2024	ANALYTICAL DATE	: 13, 15-16/08/2024
REPORT DATE	: 19/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD ^{1/}
				MW-09	
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)

(Miss Jutarat Jaemruen)

Analyst

REG. NO. 7-239-P-0022

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-P-0004

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 1585/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 05/08/2024	SAMPLING TIME	: 10:40-10:54
RECEIVED DATE	: 07/08/2024	ANALYTICAL DATE	: 09-14/08/2024
REPORT DATE	: 19/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-09	STANDARD ^{1/}
Total Petroleum Hydrocarbons					
- TPH (C ₃ - 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 - 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 ₃₅)	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. 7-239-ก-0001

M.T.

(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	: 1585/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 05/08/2024	SAMPLING TIME	: 10:40-10:54
RECEIVED DATE	: 07/08/2024	ANALYTICAL DATE	: 08-09/08/2024
REPORT DATE	: 19/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-09	STANDARD ^{1/}
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 21st ED., 2017 (AWWA, APHA, WEF)

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 7-239-ก-0001

M.T.

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-ก-0004

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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.	: 1623/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 08/08/2024	SAMPLING TIME	: 10:42-10:58
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 08, 10, 13-16/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS	ND	STATION	STANDARD ^{1/}
		METHODS	(non-detectable)		
pH	-	4500-H ⁺ B	< 0.10	7.49	#
Conductivity	µS/cm	2510 B	< 1.0	1,285	-
Salinity	ppt	2520 B	< 0.01	0.58	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0032	≤ 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. 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.	: 1623/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 08/08/2024	SAMPLING TIME	: 10:42-10:58
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 13/08/2024, 15-16/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS	ND	STATION	STANDARD ^{1/}
		METHODS	(non-detectable)		
				MW-10	
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

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	: 1623/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 08/08/2024	SAMPLING TIME	: 10:42-10:58
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 17-20/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-10	STANDARD ¹⁾
Total Petroleum Hydrocarbons					
- TPH (C ₇ - C ₉)	mg/l	5030 C / 8260 D	< 0.003	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	≤ 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	≤ 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 4th ED. 2020.

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 7-239-0-0001

Mrs. Araya Tippiaruk

(Mrs. Araya Tippiaruk)

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	: 1623/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 08/08/2024	SAMPLING TIME	: 10:42-10:58
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 16-19/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: 23/08/2024	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-10	STANDARD ¹⁾
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 21st ED. 2017 (AWWA, APHA, WEF)

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 7-239-0-0001

Mrs. Araya Tippiaruk

(Mrs. Araya Tippiaruk)

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.	: 1585/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 05/08/2024	SAMPLING TIME	: 11:15-11:29
RECEIVED DATE	: 07/08/2024	ANALYTICAL DATE	: 05, 07-13/08/2024
REPORT DATE	: 19/08/2024	SITE OPERATOR	: Mr. Jeerawat Khotamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	
				MW-11	STANDARD ¹⁾
pH		4500-H ⁺ B	< 0.10	7.65	1)
Conductivity	µS/cm	2510 B	< 1.0	666	-
Salinity	ppt	2520 B	< 0.01	0.26	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0026	≤ 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 Insom

(Miss Khemchuda Insom)

Analyst

REG. NO. 7-239-n-0004

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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.	: 1585/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 05/08/2024	SAMPLING TIME	: 11:15-11:29
RECEIVED DATE	: 07/08/2024	ANALYTICAL DATE	: 13, 15-16/08/2024
REPORT DATE	: 19/08/2024	SITE OPERATOR	: Mr. Jeerawat Khotamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	
				MW-11	STANDARD ¹⁾
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-n-0022

Mrs. 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	: 1585/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 05/08/2024	SAMPLING TIME	: 11:15-11:29
RECEIVED DATE	: 07/08/2024	ANALYTICAL DATE	: 09-14/08/2024
REPORT DATE	: 19/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-11	STANDARD ^{1/}
Total Petroleum Hydrocarbons					
- TPH (C ₃ - C ₁₆)	mg/l	5030 C / 8260 D	< 0.003	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	≤ 1.7
- n-Nonane					
- n-Decane					
- n-Dodecane					
- n-Tetradecane					
- n-Hexadecane					
- TPH (C ₉ - C ₁₃)	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					
- n-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

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	: 1585/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 05/08/2024	SAMPLING TIME	: 11:15-11:29
RECEIVED DATE	: 07/08/2024	ANALYTICAL DATE	: 08-09/08/2024
REPORT DATE	: 19/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: 19/08/2024	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-11	STANDARD ^{1/}
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 21st ED. 2017 (AWWA, APHA, WEF)

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 7-239-9-0001

Araya Tipparuk

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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. :	1623/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 08/08/2024	SAMPLING TIME	: 15:56-16:17
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 08, 10, 13-16/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	
				MW-12	STANDARD ^{1/}
pH		4500-H ⁺ B	< 0.10	7.77	1/
Conductivity	µS/cm	2510 B	< 1.0	2,967	-
Salinity	ppt	2520 B	< 0.01	1.44	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0063	≤ 0.1
Cadmium (Cd)	mg/l	3120 B	< 0.001	ND	≤ 2.0
Lead (Pb)	mg/l	3120 B	< 0.008	ND	≤ 4.0 ^{1/}
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)

(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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GROUND WATER ANALYSIS REPORT

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SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 08/08/2024	SAMPLING TIME	: 15:56-16:17
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 13/08/2024, 15-16/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	
				MW-12	STANDARD ^{1/}
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)

(Miss Jutarat Jaemruen)

Analyst

REG. NO. 2-239-ก-0022

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 2-239-ก-0004

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 1623/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 08/08/2024	SAMPLING TIME	: 15:56-16:17
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 17-20/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-12	STANDARD ^{1/}
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 ₈ - C ₁₀)	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 ₃₂)	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	: 1623/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 08/08/2024	SAMPLING TIME	: 15:56-16:17
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 16-19/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-12	STANDARD ^{1/}
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 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.	: 1585/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 05/08/2024	SAMPLING TIME	: 14:25-14:39
RECEIVED DATE	: 07/08/2024	ANALYTICAL DATE	: 05, 07-13/08/2024
REPORT DATE	: 19/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-13	STANDARD ¹⁾
pH	-	4500-H ⁺ B	< 0.10	7.71	U
Conductivity	µS/cm	2510 B	< 1.0	315	-
Salinity	ppt	2520 B	< 0.01	0.08	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0055	≤ 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)

(Miss Khemchuda Insom)

Analyst

REG. NO. 7-239-R-0005

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-R-0004

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1585/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 05/08/2024	SAMPLING TIME	: 14:25-14:39
RECEIVED DATE	: 07/08/2024	ANALYTICAL DATE	: 13, 15-16/08/2024
REPORT DATE	: 19/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-13	STANDARD ¹⁾
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)

(Miss Jutarat Jaemruen)

Analyst

REG. NO. 7-239-R-0022

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-R-0004

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 1585/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 05/08/2024	SAMPLING TIME	: 14:25-14:39
RECEIVED DATE	: 07/08/2024	ANALYTICAL DATE	: 09-14/08/2024
REPORT DATE	: 19/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-13	STANDARD ^{1/}
Total Petroleum Hydrocarbons					
- TPH (C ₃ - C ₉)	mg/l	5030 C / 8260 D	< 0.003	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	≤ 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	≤ 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	: 1585/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 05/08/2024	SAMPLING TIME	: 14:25-14:39
RECEIVED DATE	: 07/08/2024	ANALYTICAL DATE	: 08-09/08/2024
REPORT DATE	: 19/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-13	STANDARD ^{1/}
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 21st 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

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1623/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 08/08/2024	SAMPLING TIME	: 15:12-15:29
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 08, 10, 13-16/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND	STATION	STANDARD ^{1/}
			(non-detectable)	MW-14	
pH	-	4500-H ⁺ B	< 0.10	8.03	1/
Conductivity	µS/cm	2510 B	< 1.0	1,566	-
Salinity	ppt	2520 B	< 0.01	0.72	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0044	≤ 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)

(Miss Khemchuda Insorn)

Analyst

REG. NO. 7-239-ก-0005

(Mrs. Araya Tipparuk)

Technical Management Team

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GROUND WATER ANALYSIS REPORT

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SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 08/08/2024	SAMPLING TIME	: 15:12-15:29
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 13/08/2024, 15-16/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND	STATION	STANDARD ^{1/}
			(non-detectable)	MW-14	
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)

(Miss Jutarat Jaemruen)

Analyst

REG. NO. 7-239-ก-0022

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-ก-0004

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GROUND WATER ANALYSIS REPORT

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SAMPLING DATE	: 08/08/2024	SAMPLING TIME	: 15:12-15:29
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 17-20/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-14	STANDARD ^{1/}
Total Petroleum Hydrocarbons					
- TPH (C ₇ - C ₉)	mg/l	5030 C / 8260 D	< 0.003	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	≤ 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	≤ 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. 7-239-0-0001

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	: 1623/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 08/08/2024	SAMPLING TIME	: 15:12-15:29
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 16-19/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-14	STANDARD ^{1/}
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	≤ 0.01
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	≤ 0.01
Endosulfan Sulfate	mg/l	6630 B	< 0.000003	ND	≤ 0.01
Endrin ketone	mg/l	6630 B	< 0.000003	ND	≤ 0.01

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

Mrs. Araya Tipparuk

(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.



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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1585/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 05/08/2024	SAMPLING TIME	: 15:01-15:15
RECEIVED DATE	: 07/08/2024	ANALYTICAL DATE	: 05, 07-13/08/2024
REPORT DATE	: 19/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-15	STANDARD ¹⁾
pH	-	4500-B ²⁾	< 0.10	7.72	1)
Conductivity	µS/cm	2510 B	< 1.0	899	-
Salinity	ppt	2520 B	< 0.01	0.38	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0025	≤ 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)

(Miss Khemchuda Insorn)

Analyst

REG. NO. 2-239-R-0005

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 2-239-R-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.	: 1585/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 05/08/2024	SAMPLING TIME	: 15:01-15:15
RECEIVED DATE	: 07/08/2024	ANALYTICAL DATE	: 13, 15-16/08/2024
REPORT DATE	: 19/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-15	STANDARD ¹⁾
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)

(Miss Jutarat Jaemruen)

Analyst

REG. NO. 2-239-R-0022

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 2-239-R-0004

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 1585/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 05/08/2024	SAMPLING TIME	: 15:01-15:15
RECEIVED DATE	: 07/08/2024	ANALYTICAL DATE	: 09-14/08/2024
REPORT DATE	: 19/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-15	STANDARD ^u
Total Petroleum Hydrocarbons					
- TPH (C ₃ - C ₈)	mg/l	5030 C / 8260 D	< 0.003	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	≤ 1.7
- n-Nonane					
- n-Decane					
- n-Dodecane					
- n-Tetradecane					
- n-Hexadecane					
- TPH (C ₁₇ - C ₃₃)	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					
- n-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

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 1585/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 05/08/2024	SAMPLING TIME	: 15:01-15:15
RECEIVED DATE	: 07/08/2024	ANALYTICAL DATE	: 08-09/08/2024
REPORT DATE	: 19/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-15	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 21st ED., 2017 (AWWA, 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.	: 1623/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 09/08/2024	SAMPLING TIME	: 14:24-14:40
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 09, 10, 13-16/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	
				MW-16	STANDARD ¹⁾
pH		4500-H ⁺ B	< 0.10	7.77	u
Conductivity	µS/cm	2510 B	< 1.0	460	*
Salinity	ppt	2520 B	< 0.01	0.15	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0028	≤ 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. 2-239-n-0004

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(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.	: 1623/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 09/08/2024	SAMPLING TIME	: 14:24-14:40
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 13/08/2024, 15-16/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	
				MW-16	STANDARD ¹⁾
Naphthalene	mg/l	6440 C	< 0.0005	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

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(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	: 1623/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 09/08/2024	SAMPLING TIME	: 14:24-14:40
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 17-20/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khotamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-16	STANDARD ^{1/}
Total Petroleum Hydrocarbons					
- TPH (C ₃ - C ₁₆)	mg/l	5030 C / 8260 D	< 0.003	ND	≤ 1.4
- Pentane					
- Benzene					
- Toluene					
- m,p-Xylene					
- o-Xylene					
- Ethylbenzene					
- TPH (C ₇ - 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 ₃₃)	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. 7-239-9-0001

M. Araya Tipparuk

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 1623/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 09/08/2024	SAMPLING TIME	: 14:24-14:40
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 16-19/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khotamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-16	STANDARD ^{1/}
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 21st ED. 2017 (WWW.APHA.WEB)

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 7-239-9-0001

M. Araya Tipparuk

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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.	: 1585/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 05/08/2024	SAMPLING TIME	: 15:26-15:42
RECEIVED DATE	: 07/08/2024	ANALYTICAL DATE	: 05, 07-13/08/2024
REPORT DATE	: 19/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS	ND	STATION	STANDARD ^{1/}
		METHODS	(non-detectable)	MW-17	
pH	-	4500-H ⁺ B	< 0.10	7.54	#
Conductivity	µS/cm	2510 B	< 1.0	310	-
Salinity	ppt	2520 B	< 0.01	0.08	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0049	≤ 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 22nd ED. 2017 (AWWA-APHA-WEF)

(Miss Khemchude Insorn)

Analyst

REG. NO. 7-239-n-0005

(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.	: 1585/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 05/08/2024	SAMPLING TIME	: 15:26-15:42
RECEIVED DATE	: 07/08/2024	ANALYTICAL DATE	: 13, 15-16/08/2024
REPORT DATE	: 19/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS	ND	STATION	STANDARD ^{1/}
		METHODS	(non-detectable)	MW-17	
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 22nd ED. 2017 (AWWA-APHA-WEF)

(Miss Jutarat Jaemruen)

Analyst

REG. NO. 7-239-n-0022

(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	: 1585/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 05/08/2024	SAMPLING TIME	: 15:26-15:42
RECEIVED DATE	: 07/08/2024	ANALYTICAL DATE	: 09-14/08/2024
REPORT DATE	: 19/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-17	STANDARD ^u
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Total Petroleum Hydrocarbons

- TPH (C ₅ - C ₉)	mg/l	5030 C / 8260 D	< 0.003	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	≤ 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	≤ 0.1
- n-Octadecane					
- n-Eicosane					
- n-Docosane					
- n-Tetracosane					
- n-Hexacosane					
- n-Octacosane					
- n-Triscontane					
- n-Dotriscontane					
- n-Tetracontane					
- Pentatriscontane					

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 Tipparak)
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	: 1585/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 05/08/2024	SAMPLING TIME	: 15:26-15:42
RECEIVED DATE	: 07/08/2024	ANALYTICAL DATE	: 08-09/08/2024
REPORT DATE	: 19/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-17	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. 7-239-9-0001

(Mrs. Araya Tipparak)

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.	: 1623/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 09/08/2024	SAMPLING TIME	: 10:27-10:44
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 09, 10, 13-16/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-18	STANDARD ¹⁾
pH	-	4500-H B	< 0.10	7.63	1)
Conductivity	µS/cm	2510 B	< 1.0	583	-
Salinity	ppt	2520 B	< 0.01	0.22	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0052	≤ 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 22nd ED. 2017 (AWWA APHA WEF)

(Miss Khemchuda Insom)

Analyst

REG. NO. 7-239-ก-0005

(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.	: 1623/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 09/08/2024	SAMPLING TIME	: 10:27-10:44
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 13/08/2024, 15-16/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-18	STANDARD ¹⁾
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 22nd ED. 2017 (AWWA APHA WEF)

(Miss Jutarat Jaemruen)

Analyst

REG. NO. 7-239-ก-0022

(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	: 1623/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 09/08/2024	SAMPLING TIME	: 10:27-10:44
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 17-20/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khotamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-18	STANDARD ^{1/}
Total Petroleum Hydrocarbons					
- TPH (C ₃ - C ₁₆)	mg/l	5030 C / 8260 D	< 0.003	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	≤ 1.7
- n-Nonane					
- n-Decane					
- n-Dodecane					
- n-Tetradecane					
- n-Hexadecane					
- TPH (C ₉ - 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					
- 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. 7-239-0-0001

NR

(Mrs. Araya Tipparak)

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	: 1623/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 09/08/2024	SAMPLING TIME	: 10:27-10:44
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 16-19/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khotamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-18	STANDARD ^{1/}
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. 2011 (AWWA APHA WEF)

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 7-239-0-0001

NR

(Mrs. Araya Tipparak)

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.	: 1585/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 06/08/2024	SAMPLING TIME	: 09:54-10:10
RECEIVED DATE	: 07/08/2024	ANALYTICAL DATE	: 06, 07-13/08/2024
REPORT DATE	: 19/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND	STATION	STANDARD ^u
			(non-detectable)	MW-19	
pH		4500-H ⁺ B	< 0.10	7.65	u
Conductivity	µS/cm	2510 B	< 1.0	466	-
Salinity	ppt	2520 B	< 0.01	0.15	-
Arsenic (As)	mg/l	3114 C	< 0.0001	< 0.0005	≤ 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)

Khemsuda Insorn

(Miss Khemsuda 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.	: 1585/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 06/08/2024	SAMPLING TIME	: 09:54-10:10
RECEIVED DATE	: 07/08/2024	ANALYTICAL DATE	: 13, 15-16/08/2024
REPORT DATE	: 19/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND	STATION	STANDARD ^u
			(non-detectable)	MW-19	
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 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	: 1585/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 06/08/2024	SAMPLING TIME	: 09:54-10:10
RECEIVED DATE	: 07/08/2024	ANALYTICAL DATE	: 09-14/08/2024
REPORT DATE	: 19/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-19	STANDARD ^{1/}
Total Petroleum Hydrocarbons					
- TPH (C ₃ - C ₉)	mg/l	5030 C / 8260 D	< 0.003	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	≤ 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	≤ 0.1
- 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 S.

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 2-239-8-0001

Mrs. Araya Tipparuk

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 2-239-8-0004

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 1585/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 06/08/2024	SAMPLING TIME	: 09:54-10:10
RECEIVED DATE	: 07/08/2024	ANALYTICAL DATE	: 08-09/08/2024
REPORT DATE	: 19/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-19	STANDARD ^{1/}
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 21st ED. 2017 / AWWA APHA WED

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 2-239-8-0001

Mrs. Araya Tipparuk

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 2-239-8-0004

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1623/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 09/08/2024	SAMPLING TIME	: 11:08-11:24
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 09, 10, 13-16/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS	ND	STATION	STANDARD ^{1/}
		METHODS	(non-detectable)	MW-20	
pH	-	4500-H ⁺ B	< 0.10	7.60	1/
Conductivity	µS/cm	2510 B	< 1.0	728	-
Salinity	ppt	2520 B	< 0.01	0.29	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0030	≤ 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 23rd ED. 2017 (AWWA APHA WEF)

(Miss Khemchuda Insorn)

Analyst

REG. NO. 7-239-ก-0005

(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.	: 1623/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 09/08/2024	SAMPLING TIME	: 11:08-11:24
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 13/08/2024, 15-16/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS	ND	STATION	STANDARD ^{1/}
		METHODS	(non-detectable)	MW-20	
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 23rd ED. 2017 (AWWA APHA WEF)

(Miss Jutarat Jaernruen)

Analyst

REG. NO. 7-239-ก-0022

(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	: 1623/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 09/08/2024	SAMPLING TIME	: 11:08-11:24
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 17-20/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-20	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 - C ₁₀)	mg/l	3510 C / 8015 D	< 0.025	ND	≤ 1.7
- n-Nonane					
- n-Decane					
- n-Dodecane					
- n-Tetradecane					
- n-Hexadecane					
- TPH (C ₁₁ - C ₂₁)	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. 7-239-9-0001

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(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	: 1623/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 09/08/2024	SAMPLING TIME	: 11:08-11:24
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 16-19/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-20	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 21st ED. 2017 (AWWA APHA WEF)

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 7-239-9-0001

M R

(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.	: 1585/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 06/08/2024	SAMPLING TIME	: 10:33-10:47
RECEIVED DATE	: 07/08/2024	ANALYTICAL DATE	: 06, 07-13/08/2024
REPORT DATE	: 19/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS	ND	STATION	STANDARD ¹⁾
		METHODS	(non-detectable)		
pH		4500-H B	< 0.10	7.50	
Conductivity	µS/cm	2510 B	< 1.0	364	
Salinity	ppt	2520 B	< 0.01 ²⁾	0.10	
Arsenic (As)	mg/l	3114 C	< 0.0001	< 0.0005	≤ 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. 7-239-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.	: 1585/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 06/08/2024	SAMPLING TIME	: 10:33-10:47
RECEIVED DATE	: 07/08/2024	ANALYTICAL DATE	: 13, 15-16/08/2024
REPORT DATE	: 19/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS	ND	STATION	STANDARD ¹⁾
		METHODS	(non-detectable)		
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 Jaermuen

(Miss Jutarat Jaermuen)

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	1585/67
SAMPLING BY	SECOT Co., Ltd.	SAMPLING METHOD	Pneumatic Bladder Pump
SAMPLING DATE	06/08/2024	SAMPLING TIME	10:33-10:47
RECEIVED DATE	07/08/2024	ANALYTICAL DATE	09-14/08/2024
REPORT DATE	19/08/2024	SITE OPERATOR	Mr. Jeerawat Khothamhan
SAMPLE CONDITION	Normal	FILE CODE	224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-21	STANDARD ^{1/}
Total Petroleum Hydrocarbons					
- TPH (C ₇ - C ₉)	mg/l	5030 C / 8260 D	< 0.003	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	0.044	≤ 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	≤ 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

REG. NO. 7-239-9-0004

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

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	1585/67
SAMPLING BY	SECOT Co., Ltd.	SAMPLING METHOD	Pneumatic Bladder Pump
SAMPLING DATE	06/08/2024	SAMPLING TIME	10:33-10:47
RECEIVED DATE	07/08/2024	ANALYTICAL DATE	08-09/08/2024
REPORT DATE	19/08/2024	SITE OPERATOR	Mr. Jeerawat Khothamhan
SAMPLE CONDITION	Normal	FILE CODE	224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-21	STANDARD ^{1/}
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 21st ED. 2011 (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

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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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1623/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 09/08/2024	SAMPLING TIME	: 11:48-11:02
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 09, 10, 13-16/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND	STATION	STANDARD ¹⁾
			(non-detectable)	MW-22	
pH	-	4500-H ⁺ B	< 0.10	7.65	1)
Conductivity	µS/cm	2510 B	< 1.0	686	-
Salinity	ppt	2520 B	< 0.01	0.27	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0036	≤ 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)

(Miss Khemchuda Insom)

Analyst

REG. NO. 7-239-P-0005

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-P-0004

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

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1623/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 09/08/2024	SAMPLING TIME	: 11:48-11:02
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 13/08/2024, 15-16/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND	STATION	STANDARD ¹⁾
			(non-detectable)	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)

(Miss Jutarat Jaemruen)

Analyst

REG. NO. 7-239-P-0022

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-P-0004

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

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 1623/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 09/08/2024	SAMPLING TIME	: 11:48-11:02
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 17-20/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-22	STANDARD ^U
Total Petroleum Hydrocarbons					
- TPH (C ₂ - C ₈)	mg/l	5030 C / 8260 D	< 0.003	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	≤ 1.7
- n-Nonane					
- n-Decane					
- n-Dodecane					
- n-Tetradecane					
- n-Hexadecane					
- TPH (C ₁₇ - C ₃₂)	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. 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	: 1623/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 09/08/2024	SAMPLING TIME	: 11:48-11:02
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 16-19/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_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 WEB)

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.	: 1585/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 06/08/2024	SAMPLING TIME	: 11:12-11:28
RECEIVED DATE	: 07/08/2024	ANALYTICAL DATE	: 06, 07-13/08/2024
REPORT DATE	: 19/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS	ND	STATION	STANDARD ¹⁾
		METHODS	(non-detectable)	MW-23	
pH	-	4500-H ⁺ B	< 0.10	7.76	U
Conductivity	µS/cm	2510 B	< 1.0	436	-
Salinity	ppt	2520 B	< 0.01	0.14	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0030	≤ 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)

(Miss Khemchuda Insorn)

. Analyst

REG. NO. 7-239-P-0005

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-P-0004

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1585/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 06/08/2024	SAMPLING TIME	: 11:12-11:28
RECEIVED DATE	: 07/08/2024	ANALYTICAL DATE	: 13, 15-16/08/2024
REPORT DATE	: 19/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS	ND	STATION	STANDARD ¹⁾
		METHODS	(non-detectable)	MW-23	
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)

(Miss Jutarat Jaemruen)

Analyst

REG. NO. 7-239-P-0022

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-P-0004

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

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 1585/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 06/08/2024	SAMPLING TIME	: 11:12-11:28
RECEIVED DATE	: 07/08/2024	ANALYTICAL DATE	: 09-14/08/2024
REPORT DATE	: 19/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-23	STANDARD ^{1/}
Total Petroleum Hydrocarbons					
- TPH (C ₇ - C ₉)	mg/l	5030 C / 8260 D	< 0.003	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	≤ 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					
- 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. 7-239-8-0001

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-8-0004

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

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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	: 1585/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 06/08/2024	SAMPLING TIME	: 11:12-11:28
RECEIVED DATE	: 07/08/2024	ANALYTICAL DATE	: 08-09/08/2024
REPORT DATE	: 19/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-23	STANDARD ^{1/}
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 21st ED. 2017 (AWWA-Q171A-WEB)

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 7-239-8-0001

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-8-0004

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.	: 1623/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 09/08/2024	SAMPLING TIME	: 15:48-16:04
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 09, 10, 13-16/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-24	STANDARD ¹⁾
pH	-	4500-H ⁺ B	< 0.10	7.76	1)
Conductivity	μS/cm	2510 B	< 1.0	12,700	-
Salinity	ppt	2520 B	< 0.01	6.39	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0124	≤ 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 23rd ED. 2017 (AWWA, APHA, WEF)

(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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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1623/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 09/08/2024	SAMPLING TIME	: 15:48-16:04
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 13/08/2024, 15-16/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-24	STANDARD ¹⁾
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 23rd ED. 2017 (AWWA, APHA, WEF)

(Miss Jutarat Jaemruen)

Analyst

REG. NO. 2-239-n-0022

(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	1623/67
SAMPLING BY	SECOT Co., Ltd.	SAMPLING METHOD	Pneumatic Bladder Pump
SAMPLING DATE	09/08/2024	SAMPLING TIME	15:48-16:04
RECEIVED DATE	10/08/2024	ANALYTICAL DATE	17-20/08/2024
REPORT DATE	23/08/2024	SITE OPERATOR	Mr. Jeerawat Khothamhan
SAMPLE CONDITION	Normal	FILE CODE	224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-24	STANDARD ^u
Total Petroleum Hydrocarbons					
- TPH (C ₅ - C ₉)	mg/l	5030 C / 8260 D	< 0.003	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	≤ 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, 3rd ED. 2020.

Sudaporn S.
(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 7-239-8-0001

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-R-0004

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	1623/67
SAMPLING BY	SECOT Co., Ltd.	SAMPLING METHOD	Pneumatic Bladder Pump
SAMPLING DATE	09/08/2024	SAMPLING TIME	15:48-16:04
RECEIVED DATE	10/08/2024	ANALYTICAL DATE	16-19/08/2024
REPORT DATE	23/08/2024	SITE OPERATOR	Mr. Jeerawat Khothamhan
SAMPLE CONDITION	Normal	FILE CODE	224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-24	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 21st ED. 2017 (AWWA/PHI/WWF)

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 7-239-8-0001

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-R-0004

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1623/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 09/08/2024	SAMPLING TIME	: 15:06-15:20
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 09, 10, 13-16/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-25	STANDARD ^u
pH	-	4500-H ⁺ B	< 0.10	7.43	u
Conductivity	µS/cm	2510 B	< 1.0	426	-
Salinity	ppt	2520 B	< 0.01	0.14	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0276	≤ 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)

(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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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1623/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 09/08/2024	SAMPLING TIME	: 15:06-15:20
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 13/08/2024, 15-16/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-25	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)

(Miss Jutarat Jaemruen)

Analyst

REG. NO. 7-239-n-0022

(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	: 1623/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 09/08/2024	SAMPLING TIME	: 15:06-15:20
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 17-20/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khotamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-25	STANDARD ¹⁾
Total Petroleum Hydrocarbons					
- TPH (C ₇ - C ₉)	mg/l	5030 C / 8260 D	< 0.003	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	≤ 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	≤ 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. 2016

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	: 1623/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 09/08/2024	SAMPLING TIME	: 15:06-15:20
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 16-19/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khotamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-25	STANDARD ¹⁾
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 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. :	1623/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 09/08/2024	SAMPLING TIME	: 14:30-14:36
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 09, 10, 13-16/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS	ND	STATION	STANDARD ¹⁾
		METHODS	(non-detectable)		
pH	-	4500-H ⁺ B	< 0.10	6.97	1)
Conductivity	μS/cm	2510 B	< 1.0	942	-
Salinity	ppt	2520 B	< 0.01	0.39	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0059	≤ 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 Insom

(Miss Khemchuda Insom)

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⁾ 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 :	1623/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 09/08/2024	SAMPLING TIME	: 14:30-14:36
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 13/08/2024, 15-16/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS	ND	STATION	STANDARD ¹⁾
		METHODS	(non-detectable)		
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

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	: 1623/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 09/08/2024	SAMPLING TIME	: 14:30-14:36
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 12-13, 17-20/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-26	STANDARD ^{1/}
Total Petroleum Hydrocarbons					
- TPH (C ₇ - C ₉)	mg/l	5030 C / 8260 D	< 0.003	ND	≤ 1.4
- Penlane					
- 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 ₁₆ - C ₃₃)	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. 7-239-9-0001

(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	: 1623/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 09/08/2024	SAMPLING TIME	: 14:30-14:36
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 14,16-19/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-26	STANDARD ^{1/}
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 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-n-0004

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GROUND WATER ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical PCL, Branch 6 (Refinery) REQUEST SERVICE No. : 1585/67
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Pneumatic Bladder Pump
SAMPLING DATE : 06/08/2024 SAMPLING TIME : 14:54-15:09
RECEIVED DATE : 07/08/2024 ANALYTICAL DATE : 06, 07-13/08/2024
REPORT DATE : 19/08/2024 SITE OPERATOR : Mr. Jeerawat Khothamhan
SAMPLE CONDITION : Normal FILE CODE : 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-27	STANDARD ¹⁾
pH	-	4500-H ⁺ B	< 0.10	7.89	11
Conductivity	µS/cm	2510 B	< 1.0	397	1
Salinity	ppt	2520 B	< 0.01	0.11	1
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0035	≤ 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)

(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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GROUND WATER ANALYSIS REPORT

CLIENT NAME : PTT Global Chemical PCL, Branch 6 (Refinery) REQUEST SERVICE No. : 1585/67
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Pneumatic Bladder Pump
SAMPLING DATE : 06/08/2024 SAMPLING TIME : 14:54-15:09
RECEIVED DATE : 07/08/2024 ANALYTICAL DATE : 13, 15-16/08/2024
REPORT DATE : 19/08/2024 SITE OPERATOR : Mr. Jeerawat Khothamhan
SAMPLE CONDITION : Normal FILE CODE : 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-27	STANDARD ¹⁾
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)

(Miss Jutarat Jaemruen)

Analyst

REG. NO. 2-239-n-0022

(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	: 1585/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 06/08/2024	SAMPLING TIME	: 14:54-15:09
RECEIVED DATE	: 07/08/2024	ANALYTICAL DATE	: 09-14/08/2024
REPORT DATE	: 19/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-27	STANDARD ^U
Total Petroleum Hydrocarbons					
- TPH (C ₇ - C ₉)	mg/l	5030 C / 8260 D	< 0.003	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	≤ 1.7
- n-Nonane					
- n-Decane					
- n-Dodecane					
- n-Tetradecane					
- n-Hexadecane					
- TPH (C ₁₆ - C ₂₃)	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 : USEPA 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

M

(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	: 1585/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 06/08/2024	SAMPLING TIME	: 14:54-15:09
RECEIVED DATE	: 07/08/2024	ANALYTICAL DATE	: 08-09/08/2024
REPORT DATE	: 19/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-27	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 21st ED. 2012 (AWWA APHA WEF)

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 7-239-9-0001

M

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-n-0004

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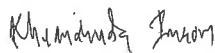
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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1623/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 07/08/2024	SAMPLING TIME	: 15:49-16:06
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 07, 10, 13-16/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-28	STANDARD ¹⁾
pH	-	4500-H ⁺ B	< 0.10	7.93	U
Conductivity	µS/cm	2510 B	< 1.0	270	-
Salinity	ppt	2520 B	< 0.01	0.05	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0034	≤ 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)



(Miss Khemchuda Insom)

Analyst

REG. NO. 2-239-ก-0005



(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 2-239-ก-0004

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GROUND WATER ANALYSIS REPORT

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SAMPLING DATE	: 07/08/2024	SAMPLING TIME	: 15:49-16:06
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 13/08/2024, 15-16/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-28	STANDARD ¹⁾
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)



(Miss Jutarat Jaermuen)

Analyst

REG. NO. 2-239-ก-0022



(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 2-239-ก-0004

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 1623/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 07/08/2024	SAMPLING TIME	: 15:49-16:06
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 12-13, 17-20/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-28	STANDARD ¹⁾
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 ₉ - C ₁₀)	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 ₂₂)	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. 7-239-9-0001

M. Araya

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-9-0004

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).



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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 1623/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 07/08/2024	SAMPLING TIME	: 15:49-16:06
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 14,16-19/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: 23/08/2024	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-28	STANDARD ¹⁾
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, 1st ED. 2017 (AWWA, APHA, WEF)

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 7-239-9-0001

M. Araya

(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. : 1585/67
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Pneumatic Bladder Pump
SAMPLING DATE : 06/08/2024 SAMPLING TIME : 14:11-14:26
RECEIVED DATE : 07/08/2024 ANALYTICAL DATE : 06, 07-13/08/2024
REPORT DATE : 19/08/2024 SITE OPERATOR : Mr. Jeerawat Khothamhan
SAMPLE CONDITION : Normal FILE CODE : 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD ^U
				MW-29	
pH	-	4500-H ⁺ B	< 0.10	7.23	U
Conductivity	µS/cm	2510 B	< 1.0	833	-
Salinity	ppt	2520 B	< 0.01	0.34	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0005	≤ 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)

(Miss Khemchuda Insom)

Analyst

REG. NO. 7-239-ก-0005

(Mrs. Anya 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. : 1585/67
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Pneumatic Bladder Pump
SAMPLING DATE : 06/08/2024 SAMPLING TIME : 14:11-14:26
RECEIVED DATE : 07/08/2024 ANALYTICAL DATE : 13, 15-16/08/2024
REPORT DATE : 19/08/2024 SITE OPERATOR : Mr. Jeerawat Khothamhan
SAMPLE CONDITION : Normal FILE CODE : 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD ^U
				MW-29	
Naphthalene	mg/l	6440 C	< 0.00005	ND	≤ 48
Benzene	mg/l	6200 B	< 0.0002	0.0007	≤ 0.2
Ethylbenzene	mg/l	6200 B	< 0.0002	0.0010	≤ 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	0.0002	≤ 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)

(Miss Jutarat Jaemruen)

Analyst

REG. NO. 7-239-ก-0022

(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	: 1585/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 06/08/2024	SAMPLING TIME	: 14:11-14:26
RECEIVED DATE	: 07/08/2024	ANALYTICAL DATE	: 09-14/08/2024
REPORT DATE	: 19/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-29	STANDARD ^{1/}
Total Petroleum Hydrocarbons					
- TPH (C ₇ - C ₁₉)	mg/l	5030 C / 8260 D	< 0.003	0.066	≤ 1.4
- Penlane					
- Benzene					
- Toluene					
- m,p-Xylene					
- o-Xylene					
- Ethylbenzene					
- TPH (C ₈ - C ₁₈)	mg/l	3510 C / 8015 D	< 0.025	ND	≤ 1.7
- n-Nonane					
- n-Decane					
- n-Dodecane					
- n-Tetradecane					
- n-Hexadecane					
- TPH (C ₁₀ - 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. 2-239-0-0001

Araya T.

(Mrs. Araya Tipparak)

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	: 1585/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 06/08/2024	SAMPLING TIME	: 14:11-14:26
RECEIVED DATE	: 07/08/2024	ANALYTICAL DATE	: 08-09/08/2024
REPORT DATE	: 19/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-29	STANDARD ^{1/}
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 21st ED. 2017 (AWWA, APHA, WEF)

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 2-239-0-0001

Araya T.

(Mrs. Araya Tipparak)

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.	: 1623/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 07/08/2024	SAMPLING TIME	: 15:13-15:29
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 07, 10, 13-16/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	
				MW-30	STANDARD ¹⁾
pH	-	4500-H B	< 0.10	7.63	1)
Conductivity	µS/cm	2510 B	< 1.0	496	-
Salinity	ppt	2520 B	< 0.01	0.16	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0127	≤ 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)

(Miss Khemchuda Insorn)

Analyst

REG. NO. 7-239-ก-0005

(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	: 1623/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 07/08/2024	SAMPLING TIME	: 15:13-15:29
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 13/08/2024, 15-16/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	
				MW-30	STANDARD ¹⁾
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)

(Miss Jutarat Jaemruen)

Analyst

REG. NO. 7-239-ก-0022

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-ก-0004

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GROUND WATER ANALYSIS REPORT

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SAMPLING DATE	: 07/08/2024	SAMPLING TIME	: 15:13-15:29
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 12-13, 17-20/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-30	STANDARD ^u
Total Petroleum Hydrocarbons					
- TPH (C ₇ - C ₉)	mg/l	5030 C / 8260 D	< 0.003	ND	≤ 1.4
- Pentane					
- Benzene					
- Toluene					
- m,p-Xylene					
- o-Xylene					
- Ethylbenzene					
- TPH (C ₉ - C ₁₀)	mg/l	3510 C / 8015 D	< 0.025	ND	≤ 1.7
- n-Nonane					
- n-Decane					
- n-Dodecane					
- n-Tetradecane					
- n-Hexadecane					
- TPH (C ₉ - 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 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

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SAMPLING DATE	: 07/08/2024	SAMPLING TIME	: 15:13-15:29
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 14, 16-19/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-30	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 21st 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. ^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.	: 1585/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 06/08/2024	SAMPLING TIME	: 15:35-15:53
RECEIVED DATE	: 07/08/2024	ANALYTICAL DATE	: 06, 07-13/08/2024
REPORT DATE	: 19/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-31	STANDARD ¹⁾
pH	-	4500-H B	< 0.10	7.10	-
Conductivity	µS/cm	2510 B	< 1.0	1,095	-
Salinity	ppt	2520 B	< 0.01	0.54	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0016	≤ 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)

(Miss Khemchuda Insorn)

Analyst

REG. NO. 7-239-R-0005

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-R-0004

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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.	: 1585/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 06/08/2024	SAMPLING TIME	: 15:35-15:53
RECEIVED DATE	: 07/08/2024	ANALYTICAL DATE	: 13, 15-16/08/2024
REPORT DATE	: 19/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-31	STANDARD ¹⁾
Naphthalene	mg/l	6440 C	< 0.00005	ND	≤ 48
Benzene	mg/l	6200 B	< 0.0002	0.0008	≤ 0.2
Ethylbenzene	mg/l	6200 B	< 0.0002	0.0468	≤ 2.0
Toluene	mg/l	6200 B	< 0.0002	ND	≤ 5.0
m-Xylene	mg/l	6200 B	< 0.0002	0.0238	≤ 24
o-Xylene	mg/l	6200 B	< 0.0002	0.0032	≤ 24
p-Xylene	mg/l	6200 B	< 0.0002	0.0181	≤ 24
Total Xylenes	mg/l	6200 B	< 0.0006	0.0451	≤ 24

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

(Miss Jutarat Jaemruen)

Analyst

REG. NO. 7-239-R-0022

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-R-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	: 1585/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 06/08/2024	SAMPLING TIME	: 15:35-15:53
RECEIVED DATE	: 07/08/2024	ANALYTICAL DATE	: 09-14/08/2024
REPORT DATE	: 19/08/2024	SITE OPERATOR	: Mr. Jeerawat Khotamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-31	STANDARD ^u
Total Petroleum Hydrocarbons					
- TPH (C ₇ - C ₉)	mg/l	5030 C / 8260 D	< 0.003	0.179	≤ 1.4
- Pentane					
- Benzene					
- Toluene					
- m,p-Xylene					
- o-Xylene					
- Ethylbenzene					
- TPH (C ₉ - C ₁₆)	mg/l	3510 C / 8015 D	< 0.025	0.032	≤ 1.7
- n-Nonane					
- n-Decane					
- n-Dodecane					
- n-Tetradecane					
- n-Hexadecane					
- TPH (C ₁₆ - C ₂₁)	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					
- n-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

MR

(Mrs. Araya Tippanuk)

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	: 1585/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 06/08/2024	SAMPLING TIME	: 15:35-15:53
RECEIVED DATE	: 07/08/2024	ANALYTICAL DATE	: 08-09/08/2024
REPORT DATE	: 19/08/2024	SITE OPERATOR	: Mr. Jeerawat Khotamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-31	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. 7-239-0-0001

MR

(Mrs. Araya Tippanuk)

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.	: 1623/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 07/08/2024	SAMPLING TIME	: 14:20-14:45
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 07, 10, 13-16/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	
				MW-32	STANDARD ^{1/}
pH	-	4500-H ⁺ B	< 0.10	7.90	-
Conductivity	µS/cm	2510 B	< 1.0	712	-
Salinity	ppt	2520 B	< 0.01	0.28	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0078	≤ 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. 2011 (AWWA, APHA, WEF)

(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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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1623/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 07/08/2024	SAMPLING TIME	: 14:20-14:45
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 13/08/2024, 15-16/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	
				MW-32	STANDARD ^{1/}
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. 2011 (AWWA, APHA, WEF)

(Miss Jutarat Jaermuen)
Analyst
REG. NO. 2-239-ก-0022

(Mrs. Araya Tipparuk)
Technical Management Team
REG. NO. 2-239-ก-0004

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 1623/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 07/08/2024	SAMPLING TIME	: 14:20-14:45
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 12-13, 17-20/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-32	STANDARD ¹⁾
Total Petroleum Hydrocarbons					
- TPH (C ₂ - C ₆)	mg/l	5030 C / 8260 D	< 0.003	ND	≤ 1.4
- Pentane					
- Benzene					
- Toluene					
- m,p-Xylene					
- o-Xylene					
- Ethylbenzene					
- TPH (C ₇₋₈ - C ₁₀)	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 ₃₂)	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. 7-239-0-0001

(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	: 1623/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 07/08/2024	SAMPLING TIME	: 14:20-14:45
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 14, 16-19/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-32	STANDARD ¹⁾
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 21st 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

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1623/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 07/08/2024	SAMPLING TIME	: 10:58-11:15
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 07, 10, 13-16/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-33	STANDARD ¹⁾
pH		4500-H ⁺ B	< 0.10	7.81	1)
Conductivity	µS/cm	2510 B	< 1.0	509	-
Salinity	ppt	2520 B	< 0.01	0.18	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0050	≤ 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)

(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. 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.	: 1623/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 07/08/2024	SAMPLING TIME	: 10:58-11:15
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 13/08/2024, 15-16/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-33	STANDARD ¹⁾
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)

(Miss Jutarat Jaemruen)

Analyst

REG. NO. 7-239-n-0022

(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	: 1623/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 07/08/2024	SAMPLING TIME	: 10:58-11:15
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 12-13, 17-20/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-33	STANDARD ^{1/}
Total Petroleum Hydrocarbons					
- TPH (C ₇ - C ₁₆)	mg/l	5030 C / 8260 D	< 0.003	ND	≤ 1.4
- Pentane					
- Benzene					
- Toluene					
- m,p-Xylene					
- o-Xylene					
- Ethylbenzene					
- TPH (C ₇ - 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 ₇ - 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. 7-239-0-0001

Mrs. Araya Tipparuk

(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	: 1623/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 07/08/2024	SAMPLING TIME	: 10:58-11:15
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 14, 16-19/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-33	STANDARD ^{1/}
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'-DDT	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 21st ED. 2017 (AWWA 211A.WED)

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 7-239-0-0001

Mrs. Araya Tipparuk

(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.	: 1623/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 07/08/2024	SAMPLING TIME	: 10:18-10:34
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 07, 10, 13-16/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS	ND	STATION		STANDARD ¹⁾
		METHODS	(non-detectable)	MW-34		
pH	-	4500-H ⁺ B	< 0.10	7.50		M
Conductivity	µS/cm	2510 B	< 1.0	533		-
Salinity	ppt	2520 B	< 0.01	0.19		-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0034		≤ 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)

(Miss Khemchuda Insom)

Analyst

REG. NO. 7-239-ก-0005

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-ก-0004

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SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 07/08/2024	SAMPLING TIME	: 10:18-10:34
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 13/08/2024, 15-16/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS	ND	STATION	STANDARD ^{1/}
		METHODS	(non-detectable)	MW-34	
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)

(Miss Jutarat Jaemruen)

Analyst

REG. NO. 7-239-ก-0022

(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	: 1623/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 07/08/2024	SAMPLING TIME	: 10:18-10:34
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 12-13, 17-20/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-34	STANDARD ^{1/}
Total Petroleum Hydrocarbons					
- TPH (C ₃ - C ₁₀)	mg/l	5030 C / 8260 D	< 0.003	ND	≤ 1.4
- Pentane					
- Benzene					
- Toluene					
- m,p-Xylene					
- o-Xylene					
- Ethylbenzene					
- TPH (C ₈ - C ₁₀)	mg/l	3510 C / 8015 D	< 0.025	ND	≤ 1.7
- n-Nonane					
- n-Decane					
- n-Dodecane					
- n-Tetradecane					
- n-Hexadecane					
- TPH (C ₁₀ - C ₁₉)	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-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. 7-239-9-0001

Mrs. Araya Tipparuk

(Mrs. Araya Tipparuk)

Technical Management Team

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GROUND WATER ANALYSIS REPORT

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SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 07/08/2024	SAMPLING TIME	: 10:18-10:34
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 14, 16-19/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-34	STANDARD ^{1/}
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 21st ED. 2017 (AWWA APHA WEF)

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. 7-239-9-0001

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.	: 1623/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 07/08/2027	SAMPLING TIME	: 09:36-09:52
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 07, 10, 13-16/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-35	STANDARD ¹⁾
pH	-	4500-H ⁺ B	< 0.10	7.80	7
Conductivity	µS/cm	2510 B	< 1.0	270	2
Salinity	ppt	2520 B	< 0.01	0.05	2
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0071	≤ 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. 7-239-n-0005

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(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-n-0004

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SAMPLING DATE	: 07/08/2027	SAMPLING TIME	: 09:36-09:52
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 13/08/2024, 15-16/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-35	STANDARD ¹⁾
Naphthalene	mg/l	6440 C	< 0.0005	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-n-0022

NT

(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.2559 (2016).



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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 1623/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 07/08/2027	SAMPLING TIME	: 09:36-09:52
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 12-13, 17-20/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-35	STANDARD ^{1/}
Total Petroleum Hydrocarbons					
- TPH (C ₅ -C ₁₁)	mg/l	5030 C / 8260 D	< 0.003	ND	≤ 1.4
- Pentane					
- Benzene					
- Toluene					
- m,p-Xylene					
- o-Xylene					
- Ethylbenzene					
- TPH (C ₉ -C ₁₀)	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 3rd ED., 2020.

Sudaporn S.
(Miss Sudaporn Soonthorn)
Analyst
REG. NO. 7-239-9-0001

AR
(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	: 1623/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 07/08/2027	SAMPLING TIME	: 09:36-09:52
RECEIVED DATE	: 10/08/2024	ANALYTICAL DATE	: 14, 16-19/08/2024
REPORT DATE	: 23/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-35	STANDARD ^{1/}
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 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.	: 1677/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 15/08/2024	SAMPLING TIME	: 10:56-11:12
RECEIVED DATE	: 16/08/2024	ANALYTICAL DATE	: 15, 16-20/08/2024
REPORT DATE	: 26/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-36	STANDARD ^u
pH	-	4500-H ⁺ B	< 0.10	6.72	^u
Conductivity	µS/cm	2510 B	< 1.0	2,132	-
Salinity	ppt	2520 B	< 0.01	0.99	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0534	≤ 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)

(Miss Khemchuda Insorn)

Analyst

REG. NO. 7-239-ก-0005

(Mrs. Araya Tippiaruk)

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.	: 1677/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 15/08/2024	SAMPLING TIME	: 10:56-11:12
RECEIVED DATE	: 16/08/2024	ANALYTICAL DATE	: 17, 21-22/08/2024
REPORT DATE	: 26/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-36	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)

(Miss Jutarat Jaemruen)

Analyst

REG. NO. 7-239-ก-0022

(Mrs. Araya Tippiaruk)

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	: 1677/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 15/08/2024	SAMPLING TIME	: 10:56-11:12
RECEIVED DATE	: 16/08/2024	ANALYTICAL DATE	: 17-20/08/2024
REPORT DATE	: 26/08/2024	SITE OPERATOR	: Mr. Jecrawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-36	STANDARD ¹⁾
Total Petroleum Hydrocarbons					
- TPH (C ₁ - C ₈)	mg/l	5030 C / 8260 D	< 0.003	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	≤ 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	≤ 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. 7-239-9-0001

(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	: 1677/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 15/08/2024	SAMPLING TIME	: 10:56-11:12
RECEIVED DATE	: 16/08/2024	ANALYTICAL DATE	: 16-19/08/2024
REPORT DATE	: 26/08/2024	SITE OPERATOR	: Mr. Jecrawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-36	STANDARD ¹⁾
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 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.	: 1677/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 15/08/2024	SAMPLING TIME	: 11:21-11:50
RECEIVED DATE	: 16/08/2024	ANALYTICAL DATE	: 15, 16-20/08/2024
REPORT DATE	: 26/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS	ND	STATION	STANDARD ^u
		METHODS	(non-detectable)		
pH	-	4500-H ⁺ B	< 0.10	6.85	u
Conductivity	µS/cm	2510 B	< 1.0	2,413	-
Salinity	ppt	2520 B	< 0.01	1.14	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0703	≤ 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)

(Miss Khemchuda Insorn)

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REG. NO. 2-239-ก-0005

(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.	: 1677/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 15/08/2024	SAMPLING TIME	: 11:21-11:50
RECEIVED DATE	: 16/08/2024	ANALYTICAL DATE	: 17, 21-22/08/2024
REPORT DATE	: 26/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS	ND	STATION	STANDARD ^u
		METHODS	(non-detectable)		
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)

(Miss Jutarat Jaemruen)

Analyst

REG. NO. 2-239-ก-0022

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 2-239-ก-0004

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 1677/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 15/08/2024	SAMPLING TIME	: 11:21-11:50
RECEIVED DATE	: 16/08/2024	ANALYTICAL DATE	: 17-20/08/2024
REPORT DATE	: 26/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-37	STANDARD ^{1/}
Total Petroleum Hydrocarbons					
- TPH (C ₇ - 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	0.056	≤ 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	≤ 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)

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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	: 1677/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 15/08/2024	SAMPLING TIME	: 11:21-11:50
RECEIVED DATE	: 16/08/2024	ANALYTICAL DATE	: 16-19/08/2024
REPORT DATE	: 26/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: 26/08/2024	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-37	STANDARD ^{1/}
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 21st 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.



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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1677/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 15/08/2024	SAMPLING TIME	: 10:12-10:28
RECEIVED DATE	: 16/08/2024	ANALYTICAL DATE	: 15, 16-20/08/2024
REPORT DATE	: 26/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-38	STANDARD ¹⁾
pH	-	4500-H ⁺ B	< 0.10	6.44	1)
Conductivity	µS/cm	2510 B	< 1.0	2,581	-
Salinity	ppt	2520 B	< 0.01	1.35	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0970	≤ 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)

(Miss Khemchuda Insom)

Analyst

REG. NO. 7-239-ก-0005

(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.	: 1677/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 15/08/2024	SAMPLING TIME	: 10:12-10:28
RECEIVED DATE	: 16/08/2024	ANALYTICAL DATE	: 17, 21-22/08/2024
REPORT DATE	: 26/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-38	STANDARD ¹⁾
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)

(Miss Jutarat Jaemruen)

Analyst

REG. NO. 7-239-ก-0022

(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	: 1677/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 15/08/2024	SAMPLING TIME	: 10:12-10:28
RECEIVED DATE	: 16/08/2024	ANALYTICAL DATE	: 17-20/08/2024
REPORT DATE	: 26/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-38	STANDARD ^U
Total Petroleum Hydrocarbons					
- TPH (C ₇ - C ₆)	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 ₁₆ - C ₃₂)	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 Soonthom)

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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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 1677/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 15/08/2024	SAMPLING TIME	: 10:12-10:28
RECEIVED DATE	: 16/08/2024	ANALYTICAL DATE	: 16-19/08/2024
REPORT DATE	: 26/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-38	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 Soonthom)

Analyst

REG. NO. 7-239-0-0001

Araya T

(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).

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No. :	1677/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 15/08/2024	SAMPLING TIME	: 14:27-14:44
RECEIVED DATE	: 16/08/2024	ANALYTICAL DATE	: 15, 16-20/08/2024
REPORT DATE	: 26/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND	STATION MW-39	STANDARD ^{1/}
			(non-detectable)		
pH		4500-H ⁺ B	< 0.10	6.85	1/
Conductivity	µS/cm	2510 B	< 1.0	3,535	-
Salinity	ppt	2520 B	< 0.01	1.66	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0165	≤ 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)

(Miss Khemchuda Insom)

Analyst

REG. NO. 2-239-ก-0005

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 2-239-ก-0004

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No. :	1677/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 15/08/2024	SAMPLING TIME	: 14:27-14:44
RECEIVED DATE	: 16/08/2024	ANALYTICAL DATE	: 17, 21-22/08/2024
REPORT DATE	: 26/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND	STATION MW-39	STANDARD ^{1/}
			(non-detectable)		
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)

(Miss Jutarat Jaemruen)

Analyst

REG. NO. 2-239-ก-0022

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 2-239-ก-0004

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GROUND WATER ANALYSIS REPORT

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SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 15/08/2024	SAMPLING TIME	: 14:27-14:44
RECEIVED DATE	: 16/08/2024	ANALYTICAL DATE	: 17-20/08/2024
REPORT DATE	: 26/08/2024	SITE OPERATOR	: Mr. Jeerawat Khotamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-39	STANDARD ¹⁾
Total Petroleum Hydrocarbons					
- TPH (C ₇ - C ₉)	mg/l	5030 C / 8260 D	< 0.003	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	≤ 1.7
- n-Nonane					
- n-Decane					
- n-Dodecane					
- n-Tetradecane					
- n-Hexadecane					
- TPH (C ₁₆ - C ₃₁)	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

MR

(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	: 1677/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 15/08/2024	SAMPLING TIME	: 14:27-14:44
RECEIVED DATE	: 16/08/2024	ANALYTICAL DATE	: 16-19/08/2024
REPORT DATE	: 26/08/2024	SITE OPERATOR	: Mr. Jeerawat Khotamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-39	STANDARD ¹⁾
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

MR

(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.	: 1677/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 15/08/2024	SAMPLING TIME	: 15:12-15:28
RECEIVED DATE	: 16/08/2024	ANALYTICAL DATE	: 15, 16-20/08/2024
REPORT DATE	: 26/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	
				MW-40	STANDARD ^{1/}
pH		4500-H ⁺ B	<0.10	7.05	
Conductivity	µS/cm	2510 B	< 1.0	1,517	
Salinity	ppt	2520 B	< 0.01	0.76	
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0305	≤ 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)

(Miss Khemchuda Insorn)

Analyst

REG. NO. 7-239-R-0005

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-R-0004

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1677/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 15/08/2024	SAMPLING TIME	: 15:12-15:28
RECEIVED DATE	: 16/08/2024	ANALYTICAL DATE	: 17, 21-22/08/2024
REPORT DATE	: 26/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	
				MW-40	STANDARD ^{1/}
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)

(Miss Jutarat Jaemruen)

Analyst

REG. NO. 7-239-R-0022

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-R-0004

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 1677/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 15/08/2024	SAMPLING TIME	: 15:12-15:28
RECEIVED DATE	: 16/08/2024	ANALYTICAL DATE	: 17-20/08/2024
REPORT DATE	: 26/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-40	STANDARD ^{1/}
Total Petroleum Hydrocarbons					
- TPH (C ₅ - C ₉)	mg/l	5030 C / 8260 D	< 0.003	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	≤ 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	≤ 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

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 1677/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 15/08/2024	SAMPLING TIME	: 15:12-15:28
RECEIVED DATE	: 16/08/2024	ANALYTICAL DATE	: 16-19/08/2024
REPORT DATE	: 26/08/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-40	STANDARD ^{1/}
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 21st ED. 2017 (AWWA-APHA-WEF)

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	: FIT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No.	: 1748/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 24/08/2024	SAMPLING TIME	: 11:36-12:28
RECEIVED DATE	: 25/08/2024	ANALYTICAL DATE	: 24, 25-30/08/2024
REPORT DATE	: 05/09/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	
				MW-41	STANDARD ¹⁾
pH	-	4500-H ² B	< 0.10	6.97	1)
Conductivity	µS/cm	2510 B	< 1.0	8,422	-
Salinity	ppt	2520 B	< 0.01	4.07	-
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0169	≤ 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-0004

(Mrs. 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.	: 1748/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 24/08/2024	SAMPLING TIME	: 11:36-12:28
RECEIVED DATE	: 25/08/2024	ANALYTICAL DATE	: 26-27/08/2024
REPORT DATE	: 05/09/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	
				MW-41	STANDARD ¹⁾
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

(Mrs. 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	: 1748/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 24/08/2024	SAMPLING TIME	: 11:36-12:28
RECEIVED DATE	: 25/08/2024	ANALYTICAL DATE	: 26/08/2024, 02-03/09/2024
REPORT DATE	: 05/09/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-41	STANDARD"
Total Petroleum Hydrocarbons					
- TPH (C ₃ - C ₉)	mg/l	5030 C / 8260 D	< 0.003	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	≤ 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	≤ 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-n-0001

Mrs. Araya Tippiaruk

(Mrs. Araya Tippiaruk)

Technical Management Team

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 1748/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 24/08/2024	SAMPLING TIME	: 11:36-12:28
RECEIVED DATE	: 25/08/2024	ANALYTICAL DATE	: 29/08/2024, 02-03/09/2024
REPORT DATE	: 05/09/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-41	STANDARD"
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-n-0001

Mrs. Araya Tippiaruk

(Mrs. Araya Tippiaruk)

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.	: 1748/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 24/08/2024	SAMPLING TIME	: 10:51-11:14
RECEIVED DATE	: 25/08/2024	ANALYTICAL DATE	: 24, 25-30/08/2024
REPORT DATE	: 05/09/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS	ND	STATION		STANDARD ¹⁾
		METHODS	(non-detectable)		MW-42	
pH		4500-H ⁺ B	< 0.10	7.30		
Conductivity	μS/cm	2510 B	< 1.0	39,760		
Salinity	ppt	2520 B	< 0.01	21.99		
Arsenic (As)	mg/l	3114 C	< 0.0001	0.0151		≤ 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. 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.	: 1748/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 24/08/2024	SAMPLING TIME	: 10:51-11:14
RECEIVED DATE	: 25/08/2024	ANALYTICAL DATE	: 26-27/08/2024
REPORT DATE	: 05/09/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS	ND	STATION	STANDARD ¹⁾
		METHODS	(non-detectable)	MW-42	
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

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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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Global Chemical PCL, Branch 6 (Refinery)	REQUEST SERVICE No	: 1748/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 24/08/2024	SAMPLING TIME	: 10:51-11:14
RECEIVED DATE	: 25/08/2024	ANALYTICAL DATE	: 26/08/2024, 02-03/09/2024
REPORT DATE	: 05/09/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-42	STANDARD ^{1/}
Total Petroleum Hydrocarbons					
- TPH (C ₇ - C ₉)	mg/l	5030 C / 8260 D	< 0.003	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	≤ 1.7
- n-Nonane					
- n-Decane					
- n-Dodecane					
- n-Tetradecane					
- n-Hexadecane					
- TPH (C ₁₆ - C ₂₁)	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-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-n-0001

Mrs. 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	: 1748/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 24/08/2024	SAMPLING TIME	: 10:51-11:14
RECEIVED DATE	: 25/08/2024	ANALYTICAL DATE	: 29/08/2024, 02-03/09/2024
REPORT DATE	: 05/09/2024	SITE OPERATOR	: Mr. Jeerawat Khothamhan
SAMPLE CONDITION	: Normal	FILE CODE	: 224010_GW_August

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-42	STANDARD ^{1/}
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. 7-239-n-0001

Mrs. 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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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 MW 1	STANDARD 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

(Miss Khemchuda Insorn)

Analyst

REG. NO. 7-239-ก-5976

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-ก-5863

- Remark :**
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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.	: 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 MW 1	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

(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	: 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 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-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. 7-239-9-0001

MR

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-9-5863

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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	: 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

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-9-5863

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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	: 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

(Miss Khemchuda Insorn)

Analyst

REG. NO. 7-239-ก-5976

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-ก-5863

- Remark :
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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.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

(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	: 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 ₅ - C ₆)	mg/kg	5035 A / 8260 D	< 0.003	ND	≤ 25
- Pentane					
- Benzene					
- Toluene					
- m,p-Xylene					
- o-Xylene					
- Ethylbenzene					
- TPH (C ₈ - 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	6.56	≤ 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)

Technical Management Team

REG. NO. 2-239-9-5363

- Remark :**
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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

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Technical Management Team

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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.	: 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 ^{1/}
				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

Khemchuda Insorn

(Miss Khemchuda Insorn)

Analyst

REG. NO. 7-239-ก-5976

Mrs. Araya Tipparuk

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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.	: 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 ^{1/}
				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

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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 ₆)	mg/kg	5035 A / 8260 D	< 0.003	ND	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	0.69	≤ 25
- n-Nonane						
- n-Decane						
- n-Dodecane						
- n-Tetradecane						
- n-Hexadecane						
- TPH (C ₁₇ - C ₃₃)	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						
- 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)

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 ^{1/}
				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

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(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 2-239-9-5863

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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.	: 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 MW-14	STANDARD ^{1/}
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

(Miss Khemchuda Insorn)

Analyst

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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.	: 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 MW-14	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

(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.:	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 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 ₇ - C ₂₅)	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-Tetraatriacontane					
- Pentaatriacontane					

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

Sudaporn Soonthorn

(Miss Sudaporn Soonthorn)
Analyst

REG. NO. 7-239-0-0001

MR

(Mrs. Araya Tipparuk)
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	: 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, 3rd ED., 2020

Sudaporn Soonthorn

(Miss Sudaporn Soonthorn)
Analyst

REG. NO. 7-239-0-0001

MR

(Mrs. Araya Tipparuk)
Technical Management Team

REG. NO. 7-239-0-5863

- 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.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.	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 ^{1/}
				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

Khanchuda Insom

(Miss Khemchuda Insom)

Analyst

REG. NO. 7-239-ก-5976

Araya Tipparuk

(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.	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 ^{1/}
				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

Araya Tipparuk

(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. :	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 ₇ - C ₉)	mg/kg	5035 A / 8260 D	< 0.003	ND	ND	≤ 25
- Pentane						
- Benzene						
- Toluene						
- m,p-Xylene						
- o-Xylene						
- Ethylbenzene						
- TPH (C ₈ - C ₁₀)	mg/kg	3540 C / 8015 D	< 0.25	ND	0.90	≤ 25
- n-Nonane						
- n-Decane						
- n-Dodecane						
- n-Tetradecane						
- n-Hexadecane						
- TPH (C ₁₆ - 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

REG. NO. 2-239-ก-0001

(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. :	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-ก-0001

(Mrs. Araya Tipparuk)

(Mrs. Araya Tipparuk)
Technical Management Team

REG. NO. 2-239-ก-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.	: 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 ¹⁾
				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

(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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 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.	: 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 ¹⁾
				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

(Miss Jutarat Jaemruen)

Analyst

REG. NO. 2-239-ก-5827

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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	: 05, 09-11/05/2023
REPORT DATE	: Normal	SITE OPERATOR	: Mr. Aniwat Pimwanna
SAMPLE CONDITION	: Normal	FILE CODE	: 223010_Soil_April

PARAMETER	UNIT	ANALYSIS	ND	STATION		STANDARD ^{1/}
		METHODS	(non-detectable)	MW 34	MW 35	
Total Petroleum Hydrocarbon						
- TPH (C ₅ - C ₆)	mg/kg	5035 A / 8260 D	< 0.003	ND	ND	≤ 25
- Pentane						
- Benzene						
- Toluene						
- m,p-Xylene						
- o-Xylene						
- Ethylbenzene						
- TPH (C _{> 8} - 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-Tetatriacontane						
- 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. 7-239-9-0001

(Mrs. Araya Tipparuk)
(Mrs. Araya Tipparuk)
Technical Management Team
REG. NO. 7-239-9-5863

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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	: 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. 7-239-9-0001

(Mrs. Araya Tipparuk)
(Mrs. Araya Tipparuk)
Technical Management Team
REG. NO. 7-239-9-5863

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.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.	: 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 ^{1/}
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

(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.	: 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 ^{1/}
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

(Miss Jutarat Jaemruen)

Analyst

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(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.	: 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⁾
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Total Petroleum Hydrocarbon
- TPH (C₃ - C₈) mg/kg 5035 A / 8260 D < 0.003 ND ≤ 25

- Pentane
- Benzene
- Toluene
- m,p-Xylene
- o-Xylene
- Ethylbenzene

- TPH (C₈ - C₁₆) mg/kg 3540 C / 8015 D < 0.25 ND ≤ 25

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

- n-Decane
- n-Dodecane
- n-Tetradecane
- n-Hexadecane
- TPH (C₁₆ - C₃₅) 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, 1st ED., 2020

Sudaporn Soonthorn

(Miss Sudaporn Soonthorn)

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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⁾
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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. 7-239-9-0001

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-n-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 ^u
				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, 3rd ED., 2020

(Miss Khemchuda Insorn)

Analyst

REG. NO. 2-239-ก-5976

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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.	: 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 ^u
				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, 3rd ED., 2020

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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 ₈)	mg/kg	5035 A / 8260 D	< 0.003	ND	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	1.73	≤ 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-Tetatriacontane						
- Pentatriacontane						

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

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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. 2-239-0-0001

Araya Tipparuk

(Mrs. Araya Tipparuk)

Technical Management Team

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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 : Dec 17, 2024
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 : 14 Feb 2024
SLM Reading / Adjust dB(A) : 93.8/0.0	Expire Date : 13 Feb 2025
Cal Sheet No.: CR-515-2024-362	

Time	Equivalent Sound Pressure Level (dB(A))	
	Dec 17, 2024	
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	83.8	
11:00 - 12:00	83.6	
12:00 - 13:00	83.6	
13:00 - 14:00	83.8	
14:00 - 15:00	83.7	
15:00 - 16:00	83.6	
16:00 - 17:00	83.5	
17:00 - 18:00	83.5	
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)*	83.6	
Lmax **	86.0	
Standard-8Hr	90 dB(A)	
Standard-Max	140 dB(A)	

Remark : * Average time between 10:00-18:00

** Maximum Sound Pressure Level between 10:00-18:00

(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 : Dec 17, 2024
SLM Model : SCARLET ST-21D	Serial No : 820725
Site Operator : Miss Wiraya Patchimboon	
Calibrator Model : Cirrus CR:515	Serial No : 94296
Calibration Ref dB(A) : 94.0	Certified Date : 14 Feb 2024
SLM Reading / Adjust dB(A) : 93.8/0.0	Expire Date : 13 Feb 2025
Cal Sheet No.: CR-515-2024-362	

Time	Equivalent Sound Pressure Level (dB(A))	
	Dec 17, 2024	
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	80.2	
11:00 - 12:00	80.9	
12:00 - 13:00	80.9	
13:00 - 14:00	81.0	
14:00 - 15:00	81.2	
15:00 - 16:00	81.2	
16:00 - 17:00	81.1	
17:00 - 18:00	81.1	
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)*	81.0	
Lmax **	82.9	
Standard-8Hr	90 dB(A)	
Standard-Max	140 dB(A)	

Remark : * Average time between 10:00-18:00

** Maximum Sound Pressure Level between 10:00-18:00

(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 : Dec 17, 2024	
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 : 14 Feb 2024	
SLM Reading / Adjust dB(A) : 93.8/0.0		Expire Date : 13 Feb 2025	
Cal Sheet No.: CR-515-2024-362			
Time	Equivalent Sound Pressure Level (dB(A))		
	Dec 17, 2024		
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)*	81.1		
Lmax **	95.0		
Standard-8Hr	90 dB(A)		
Standard-Max	140 dB(A)		

Remark : * Average time between 10:00-18:00

** Maximum Sound Pressure Level between 10:00-18:00

(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 : Dec 17, 2024	
SLM Model : SCARLET ST-21D		Serial No : 820726	
Site Operator : Miss Wiraya Patchimboon			
Calibrator Model : Cirrus CR:515		Serial No : 94296	
Calibration Ref dB(A) : 94.0		Certified Date : 14 Feb 2024	
SLM Reading / Adjust dB(A) : 93.8/0.0		Expire Date : 13 Feb 2025	
Cal Sheet No.: CR-515-2024-362			
Time	Equivalent Sound Pressure Level (dB(A))		
	Dec 17, 2024		
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	78.9		
10:00 - 11:00	78.9		
11:00 - 12:00	79.0		
12:00 - 13:00	79.0		
13:00 - 14:00	79.0		
14:00 - 15:00	79.1		
15:00 - 16:00	78.9		
16:00 - 17:00	78.9		
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)*	79.0		
Lmax **	84.6		
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

Location : Steam Turbine (Steam Generators) (Panel 4)
SLM Model : SCARLET ST-21D
Site Operator : Miss Wiraya Patchimboon

Serial No : 94296

Certified Date : 14 Feb 2024

Expire Date : 13 Feb 2025

Cal Sheet No.: CR-515-2024-362

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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239 RIMKLONGPRAPA ROAD, BANGSUE, BANGKOK 10800, THAILAND

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

CLIENT NAME	: PTT Global Chemical Public Co., Ltd.	REFERENCE NO.	: PTTGC6 (Refinery)_224010_Cert-NSD/TWA12_Dec24
	: Branch 6 (Refinery)	INSTRUMENT	: Noise Dosimeter
MEASUREMENT BY	: SECOT Co., Ltd.	CALIBRATOR TYPE	: PULSAR/22R
MEASUREMENT DATE	: 17/12/2024	SERIAL NO.	: 79781
MEASUREMENT LOCATION	: Process area	CALIBRATOR REF.	: 114 dB @1,000 Hz
SITE OPERATOR	: Miss Wiraya Patchimboon		


(Miss Katesarin Vorradetwittaya)
Environmental Scientist


(Miss Sununta Sirawuttinan)
Technical Management Team

- Remark :**
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 4. TWA means Time Weighted Average.



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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : PTT Global Chemical Public Co., Ltd. REFERENCE NO. : PTTGC6 (Refinery)_224010_Cert-NsD/TWA12_Dec24
Branch 6 (Refinery) INSTRUMENT : Noise Dosimeter
MEASUREMENT BY : SECOT Co., Ltd. CALIBRATOR TYPE : PULSAR/22R
MEASUREMENT DATE : 17/12/2024 SERIAL NO. : 79781
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 26002245	Operator Panel 2	07.43-20.00	25.4	77.3	83.0


(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)_224010_Cert-NsD/TWA12_Dec24
Branch 6 (Refinery) INSTRUMENT : Noise Dosimeter
MEASUREMENT BY : SECOT Co., Ltd. CALIBRATOR TYPE : PULSAR/22R
MEASUREMENT DATE : 17/12/2024 SERIAL NO. : 79781
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 26006585	Operator Panel 3	07.48-20.00	93.9	83.0	83.0


(Miss Katesarin Vorradetwittaya)
Environmental Scientist


(Miss Sununta Sirawuttinanon)
Technical Management Team

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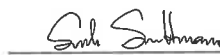
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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : PTT Global Chemical Public Co., Ltd. REFERENCE NO. : PTTGC6 (Refinery)_224010_Cert-NsD/TWA12_Dec24
Branch 6 (Refinery) INSTRUMENT : Noise Dosimeter
MEASUREMENT BY : SECOT Co., Ltd. CALIBRATOR TYPE : PULSAR/22R
MEASUREMENT DATE : 17/12/2024 SERIAL NO. : 79781
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	07.44-20.00	60.2	81.0	83.0


(Miss Katesarin Vorradetwittaya)
Environmental Scientist


(Miss Sununta Sirawuttinanon)
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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : PTT Global Chemical Public Co., Ltd. REFERENCE NO. : PTTGC6 (Refinery)_224010_Cert-NsD/TWA12_Dec24
Branch 6 (Refinery) INSTRUMENT : Noise Dosimeter
MEASUREMENT BY : SECOT Co., Ltd. CALIBRATOR TYPE : PULSAR/22R
MEASUREMENT DATE : 17/12/2024 SERIAL NO. : 79781
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 26009115	Operator Panel 5	07.07-20.00	55.5	80.7	83.0


(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)_224010_Cert-NsD/TWA8_Dec24
Branch 6 (Refinery) INSTRUMENT : Noise Dosimeter
MEASUREMENT BY : SECOT Co., Ltd. CALIBRATOR TYPE : PULSAR/22R
MEASUREMENT DATE : 18/12/2024 SERIAL NO. : 79781
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 98010469	Operator Maintenance	08.24-17.00	49.1	81.9	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.	: 1709/67
For	: PTT Global Chemical Public Co., Ltd, Branch 6 (Refinery GC6)	Sampling Date	: 19, 20, 23, 26/08/2024
Address	: No.8, I-8 Road, Map Ta Phut Industrial Estate, Map Ta Phut, Mueang Rayong , Rayong Province 21150	Received Date	: 21, 22, 26, 29/08/2024
Tel/Fax	: 0-3897-1000 / -	Test Date	: 04. 05, 12, 20/09/2024
		Report Date	: 20/09/2024

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	RESULT	STANDARD
				ppm	ppm	ppm
Panel 1	19/08/2024 10:00-14:00	Hydrogen sulfide	NIOSH 6013/IC	< 0.03	ND	20
Panel 2	20/08/2024 09:03-13:03	Hydrogen sulfide	NIOSH 6013/IC	< 0.03	ND	20
Panel 3	26/08/2024 13:48-17:48	Hydrogen sulfide	NIOSH 6013/IC	< 0.03	ND	20
Panel 5	23/08/2024 09:35-13:35	Hydrogen sulfide	NIOSH 6013/IC	< 0.03	ND	20

Analyst By : Bongpan Jittlum
(Miss Pornnapa Budthum)

Approved By : Maini Poowasanpetch
(Miss Narisa Poowasanpetch)
Technical Management Team

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

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3. Notification of the Department of Labour Protection and Welfare, B.E.2560 (2017).

The maximum concentration limit during any working time.

4. ND = non-detectable.



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ANALYSIS/TEST REPORT

Customer	: EED/SECOT Co., Ltd.	Request Service No.	: 1709/67
For	: PTT Global Chemical Public Co., Ltd, Branch 6 (Refinery GC6)	Sampling Date	: 19-21, 23, 27/08/2024
Address	: No.8, I-8 Road, Map Ta Phut Industrial Estate, Map Ta Phut, Mueang Rayong , Rayong Province 21150	Received Date	: 21, 22, 24, 26, 29/08/2024
Tel/Fax	: 0-3897-1000 / -	Test Date	: 21, 24, 26, 27/08/2024, 04/09/2024
		Report Date	: 20/09/2024

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 1	19/08/2024 10:30-10:45	Total Hydrocarbon	THC Analyzer / FID	< 0.10	4.38	-
Panel 2	20/08/2024 09:35-09:50	Total Hydrocarbon	THC Analyzer / FID	< 0.10	7.24	-
Panel 4	21/08/2024 09:53-10:08	Total Hydrocarbon	THC Analyzer / FID	< 0.10	11.80	-
Panel 5	23/08/2024 09:55-10:10	Total Hydrocarbon	THC Analyzer / FID	< 0.10	9.92	-
Panel 6	27/08/2024 08:55-09:10	Total Hydrocarbon	THC Analyzer / FID	< 0.10	9.71	-

Analyst By : Sudaporn S.
(Miss Sudaporn Soonthorn)

Approved By : Maini Poowasanpetch
(Miss Narisa Poowasanpetch)
Technical Management Team

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

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3. ND = non-detectable.

4. - No Standard.



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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.	: 1709/67
For	: PTT Global Chemical Public Co., Ltd, Branch 6 (Refinery GC6)	Sampling Date	: 19, 20, 23, 26, 27/08/2024
Address	: No.8, I-8 Road, Map Ta Phut Industrial Estate, Map Ta Phut, Mueang Rayong , Rayong Province 21150	Received Date	: 21, 22, 26, 29/08/2024
Tel/Fax	: 0-3897-1000 / -	Test Date	: 23, 27/08/2024, 05/09/2024
		Report Date	: 20/09/2024

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 1	19/08/2024 10:08-14:08	Benzene	OSHA 1005/ GC FID	< 0.04	ND	1
Panel 2	20/08/2024 09:42-09:57	Benzene	OSHA 1005/ GC FID	< 0.04	ND	1
Panel 3	26/08/2024 13:48-17:48	Benzene	OSHA 1005/ GC FID	< 0.04	ND	1
Panel 5	23/08/2024 09:35-13:35	Benzene	OSHA 1005/ GC FID	< 0.04	ND	1
Panel 6	27/08/2024 08:55-12:25	Benzene	OSHA 1005/ GC FID	< 0.04	ND	1
สถานีขนถ่ายน้ำมันรกรรทุก	27/08/2024 09:52-13:52	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

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

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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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ANALYSIS/TEST REPORT

Customer	: EED/SECOT Co., Ltd.	Request Service No.	: 1771/67
For	: PTT Global Chemical Public Co., Ltd, Branch 6 (Refinery GC6)	Sampling Date	: 26/08/2024
Address	: No.8, I-8 Road, Map Ta Phut Industrial Estate, Map Ta Phut, Mueang Rayong , Rayong Province 21150	Received Date	: 29/08/2024
Tel/Fax	: 0-3897-1000 / -	Test Date	: 04/09/2024
		Report Date	: 20/09/2024

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	26/08/2024 13:57-14:12	NMHC	THC Analyzer/FID	< 0.05	1.35	-

Analyst By : Sudaporn S.
(Miss Sudaporn Soonthorn)

Approved By : Narisa Poowasanpetch
(Miss Narisa Poowasanpetch)
Technical Management Team

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3. ND = non-detectable.

4. - No Standard.



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SECOT CO., LTD.

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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.	: 2661/67
For	: PTT Global Chemical Public Co., Ltd. Branch 6 (Refinery GC6)	Sampling Date	: 17-19/12/2024
Address	: No.8, I-8 Road, Map Ta Phut Industrial Estate, Map Ta Phut, Mueang Rayong , Rayong Province 21150	Received Date	: 21/12/2024
		Test Date	: 25/12/2024
Tel/Fax	: 0-3897-1000 / -	Report Date	: 27/12/2024

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	17/12/2024 10:54-14:54	Hydrogen sulfide	NIOSH 6013/IC	< 0.03	ND	20
Panel 2	18/12/2024 10:00-14:00	Hydrogen sulfide	NIOSH 6013/IC	< 0.03	ND	20
Panel 3	17/12/2024 10:47-14:47	Hydrogen sulfide	NIOSH 6013/IC	< 0.03	ND	20
Panel 5	18/12/2024 10:25-14:25	Hydrogen sulfide	NIOSH 6013/IC	< 0.03	ND	20

Analyst By :

Bongpa Pothlum
(Miss Pornnapa Budthum)

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.	: 2661/67
For	: PTT Global Chemical Public Co., Ltd. Branch 6 (Refinery GC6)	Sampling Date	: 17-19/12/2024
Address	: No.8, I-8 Road, Map Ta Phut Industrial Estate, Map Ta Phut, Mueang Rayong , Rayong Province 21150	Received Date	: 21/12/2024
		Test Date	: 23/12/2024
Tel/Fax	: 0-3897-1000 / -	Report Date	: 27/12/2024

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	17/12/2024 10:54-11:09	Total Hydrocarbon	THC Analyzer / FID	< 0.10	6.81	*
Panel 2	18/12/2024 10:05-10:20	Total Hydrocarbon	THC Analyzer / FID	< 0.10	7.32	*
Panel 4	17/12/2024 09:38-09:53	Total Hydrocarbon	THC Analyzer / FID	< 0.10	6.97	*
Panel 5	18/12/2024 10:25-10:40	Total Hydrocarbon	THC Analyzer / FID	< 0.10	6.36	*
Panel 6	19/12/2024 10:24-10:39	Total Hydrocarbon	THC Analyzer / FID	< 0.10	6.44	*

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.	: 2661/67
For	: PTT Global Chemical Public Co., Ltd. Branch 6 (Refinery GC6)	Sampling Date	: 17-19/12/2024
Address	: No.8, I-8 Road, Map Ta Phut Industrial Estate, Map Ta Phut, Mueang Rayong, Rayong Province 21150	Received Date	: 21/12/2024
		Test Date	: 24/12/2024
Tel/Fax	: 0-3897-1000 / -	Report Date	: 27/12/2024

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	17/12/2024 10:56-14:56	Benzene	OSHA 1005/GC FID	< 0.04	ND	I
Panel 2	18/12/2024 10:05-14:05	Benzene	OSHA 1005/GC FID	< 0.04	ND	I
Panel 3	17/12/2024 10:47-14:47	Benzene	OSHA 1005/GC FID	< 0.04	ND	I
Panel 5	18/12/2024 10:25-14:25	Benzene	OSHA 1005/GC FID	< 0.04	ND	I
Panel 6	19/12/2024 10:24-14:24	Benzene	OSHA 1005/GC FID	< 0.04	ND	I
สถานีขนถ่ายน้ำมันทางรถบรรทุก	19/12/2024 09:23-13:23	Benzene	OSHA 1005/GC FID	< 0.04	ND	I

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.	: 2661/67
For	: PTT Global Chemical Public Co., Ltd. Branch 6 (Refinery GC6)	Sampling Date	: 17/12/2024
Address	: No.8, I-8 Road, Map Ta Phut Industrial Estate, Map Ta Phut, Mueang Rayong, Rayong Province 21150	Received Date	: 21/12/2024
		Test Date	: 23/12/2024
Tel/Fax	: 0-3897-1000 / -	Report Date	: 27/12/2024

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	17/12/2024 10:17-10:32	NMHC	THC Analyzer / FID	< 0.05	5.45	-

Analyst By : Sudaporn S.
(Miss Sudaporn Soonthorn)

Approved By : Narisa Poowasanpetch
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