

ภาคผนวก ง

ใบรับรองผลการตรวจวัดคุณภาพสิ่งแวดล้อม

ใบรับรองผลการตรวจวัดคุณภาพอากาศในบรรยากาศ



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	: Star Petroleum Refining Public Co., Ltd.	REQUEST SERVICE No.	: 0138/67
SAMPLING BY	: SECOT Co., Ltd .	SAMPLING METHOD	: Subatmospheric Pressure Sampling
SAMPLING DATE	: 26-27/01/2024	ANALYTICAL DATE	: 01-02/02/2024
SAMPLING TIME	: 10:22-10:49	SAMPLE CONDITION	: Normal
RECEIVED DATE	: 28/01/2024	FILE CODE	: 224003_TO-15_January
REPORT DATE	: 21/02/2024		

Compound	Non Detection		SAMPLING LOCATION		STANDARD* ($\mu\text{g}/\text{m}^3$)
			Map Ta Phut New Town		
	ppbv	$\mu\text{g}/\text{m}^3$	ppbv	$\mu\text{g}/\text{m}^3$	
Benzene	0.004	0.013	0.86	2.75	7.6

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

Sirinan Chimsa-nga

(Miss Siriwan Chimsa-nga)

Analyst

Araya Tipparuk

(Mrs. Araya Tipparuk)

Technical Management Team

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AMBIENT AIR QUALITY ANALYSIS REPORT

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SAMPLING BY	: SECOT Co., Ltd .	SAMPLING METHOD	: Subatmospheric Pressure Sampling
SAMPLING DATE	: 26-27/01/2024	ANALYTICAL DATE	: 01-02/02/2024
SAMPLING TIME	: 12:49-12:50	SAMPLE CONDITION	: Normal
RECEIVED DATE	: 28/01/2024	FILE CODE	: 224003_TO-15_January
REPORT DATE	: 21/02/2024		

Compound	SAMPLING LOCATION				STANDARD* (µg/m ³)
	Non Detection		Ban Plong Community		
	ppbv	µg/m ³	ppbv	µg/m ³	
Benzene	0.004	0.013	1.12	3.58	7.6

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Siriwan Chimsa-nga

(Miss Siriwan Chimsa-nga)

Analyst

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AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REQUEST SERVICE No.	: 0205/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Subatmospheric Pressure Sampling
SAMPLING DATE	: 01-02/02/2024	ANALYTICAL DATE	: 21-22/02/2024
SAMPLING TIME	: 12:52-11:55	SAMPLE CONDITION	: Normal
RECEIVED DATE	: 03/02/2024	FILE CODE	: 224003_TO-15_February
REPORT DATE	: 23/02/2024		

Compound	Non Detection		SAMPLING LOCATION		STANDARD* (µg/m ³)
			Map Ta Phut New Town		
	ppbv	µg/m ³	ppbv	µg/m ³	
Benzene	0.004	0.013	0.42	1.34	7.6

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Siriwan Chimsa-nga

(Miss Siriwan Chimsa-nga)

Analyst

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SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Subatmospheric Pressure Sampling
SAMPLING DATE	: 01-02/02/2024	ANALYTICAL DATE	: 21-22/02/2024
SAMPLING TIME	: 12:24-12:10	SAMPLE CONDITION	: Normal
RECEIVED DATE	: 03/02/2024	FILE CODE	: 224003_TO-15_February
REPORT DATE	: 23/02/2024		

Compound	Non Detection		SAMPLING LOCATION		STANDARD* (µg/m ³)
			Ban Plong Community		
	ppbv	µg/m ³	ppbv	µg/m ³	
Benzene	0.004	0.013	0.84	2.68	7.6

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AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REQUEST SERVICE No.	: 0404/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Subatmospheric Pressure Sampling
SAMPLING DATE	: 04-05/03/2024	ANALYTICAL DATE	: 11/03/2024
SAMPLING TIME	: 11:27-11:24	SAMPLE CONDITION	: Normal
RECEIVED DATE	: 06/03/2024	FILE CODE	: 224003_TO-15_March
REPORT DATE	: 21/03/2024		

Compound	Non Detection		SAMPLING LOCATION		STANDARD* ($\mu\text{g}/\text{m}^3$)
			Map Ta Phut New Town		
	ppbv	$\mu\text{g}/\text{m}^3$	ppbv	$\mu\text{g}/\text{m}^3$	
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

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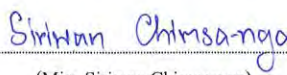
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AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REQUEST SERVICE No.	: 0404/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Subatmospheric Pressure Sampling
SAMPLING DATE	: 04-05/03/2024	ANALYTICAL DATE	: 11/03/2024
SAMPLING TIME	: 11:11-11:11	SAMPLE CONDITION	: Normal
RECEIVED DATE	: 06/03/2024	FILE CODE	: 224003_TO-15_March
REPORT DATE	: 21/03/2024		

Compound	Non Detection		SAMPLING LOCATION		STANDARD* (µg/m ³)
			Ban Plong Community		
	ppbv	µg/m ³	ppbv	µg/m ³	
Benzene	0.004	0.013	1.00	3.20	7.6

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


(Miss Siriwan Chimsa-nga)
Analyst


(Mrs. Araya Tipparuk)
Technical Management Team

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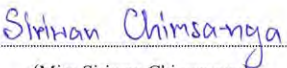
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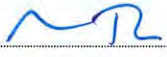
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CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REQUEST SERVICE No.	: 0635/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Subatmospheric Pressure Sampling
SAMPLING DATE	: 01-02/04/2024	ANALYTICAL DATE	: 04/04/2024
SAMPLING TIME	: 15:51-15:37	SAMPLE CONDITION	: Normal
RECEIVED DATE	: 03/04/2024	FILE CODE	: 224003_TO-15_April
REPORT DATE	: 18/04/2024		

Compound	Non Detection		SAMPLING LOCATION		STANDARD* (µg/m ³)
			Map Ta Phut New Town		
	ppbv	µg/m ³	ppbv	µg/m ³	
Benzene	0.004	0.013	0.20	0.64	7.6

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


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CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REQUEST SERVICE No.	: 0635/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Subatmospheric Pressure Sampling
SAMPLING DATE	: 01-02/04/2024	ANALYTICAL DATE	: 04/04/2024
SAMPLING TIME	: 15:39-15:24	SAMPLE CONDITION	: Normal
RECEIVED DATE	: 03/04/2024	FILE CODE	: 224003_TO-15_April
REPORT DATE	: 18/04/2024		

Compound	SAMPLING LOCATION				STANDARD* ($\mu\text{g}/\text{m}^3$)
	Non Detection		Ban Plong Community		
	ppbv	$\mu\text{g}/\text{m}^3$	ppbv	$\mu\text{g}/\text{m}^3$	
Benzene	0.004	0.013	0.41	1.31	7.6

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Siriwan Chimsa-nga

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Analyst

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AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REQUEST SERVICE No.	: 0888/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Subatmospheric Pressure Sampling
SAMPLING DATE	: 06-07/05/2024	ANALYTICAL DATE	: 10, 13/05/2024
SAMPLING TIME	: 11:21-12:21	SAMPLE CONDITION	: Normal
RECEIVED DATE	: 08/05/2024	FILE CODE	: 224003_TO-15_May
REPORT DATE	: 17/05/2024		

Compound	SAMPLING LOCATION				STANDARD* (µg/m ³)
	Non Detection		Map Ta Phut New Town		
	ppbv	µg/m ³	ppbv	µg/m ³	
Benzene	0.004	0.013	0.18	0.57	7.6

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CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REQUEST SERVICE No.	: 0888/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Subatmospheric Pressure Sampling
SAMPLING DATE	: 06-07/05/2024	ANALYTICAL DATE	: 10, 13/05/2024
SAMPLING TIME	: 11:06-12:06	SAMPLE CONDITION	: Normal
RECEIVED DATE	: 08/05/2024	FILE CODE	: 224003_TO-15_May
REPORT DATE	: 17/05/2024		

Compound	SAMPLING LOCATION				STANDARD* (µg/m ³)
	Non Detection		Ban Plong Community		
	ppbv	µg/m ³	ppbv	µg/m ³	
Benzene	0.004	0.013	0.40	1.28	7.6

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AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REQUEST SERVICE No.	: 1130/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Subatmospheric Pressure Sampling
SAMPLING DATE	: 04-05/06/2024	ANALYTICAL DATE	: 11/06/2024
SAMPLING TIME	: 15:40-16:40	SAMPLE CONDITION	: Normal
RECEIVED DATE	: 06/06/2024	FILE CODE	: 224003_TO-15_June
REPORT DATE	: 17/06/2024		

Compound	Non Detection		SAMPLING LOCATION		STANDARD* (µg/m ³)
			Map Ta Phut New Town		
	ppbv	µg/m ³	ppbv	µg/m ³	
Benzene	0.004	0.013	0.86	2.75	7.6

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SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Subatmospheric Pressure Sampling
SAMPLING DATE	: 04-05/06/2024	ANALYTICAL DATE	: 11/06/2024
SAMPLING TIME	: 14:43-14:51	SAMPLE CONDITION	: Normal
RECEIVED DATE	: 06/06/2024	FILE CODE	: 224003_TO-15_June
REPORT DATE	: 17/06/2024		

Compound	SAMPLING LOCATION				STANDARD* (µg/m ³)
	Non Detection		Ban Plong Community		
	ppbv	µg/m ³	ppbv	µg/m ³	
Benzene	0.004	0.013	3.28	10.48	7.6

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Ambient Air Monitoring Results : Sulfur dioxide

MTR-SPRC PLC-Refinery

Location : With in Refinery Plant, North

Monitor Period : 03-10 May 2024

Analyzer Model : API 100A

Station No : SS2-20

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)						
	03-04 May 2024	04-05 May 2024	05-06 May 2024	06-07 May 2024	07-08 May 2024	08-09 May 2024	09-10 May 2024
08:00 - 09:00	9.3	1.5	2.0	2.3	3.7	2.3	2.3
09:00 - 10:00	12.1	5.2	2.2	3.4	5.0	2.9	2.2
10:00 - 11:00	2.8	4.1	9.8	14.0	5.4	5.6	2.4
11:00 - 12:00	9.9	5.4	12.6	20.5	2.8	16.6	2.5
12:00 - 13:00	26.3	3.7	11.9	31.1	3.5	13.1	3.6
13:00 - 14:00	16.6	1.9	6.5	22.0	5.1	2.9	13.3
14:00 - 15:00	9.7	1.9	5.5	26.6	3.8	13.7	10.8
15:00 - 16:00	8.5	1.9	6.6	4.5	3.5	13.5	6.1
16:00 - 17:00	3.8	2.2	8.8	8.7	2.9	10.2	7.8
17:00 - 18:00	1.4	1.7	3.4	2.8	5.9	6.6	4.8
18:00 - 19:00	2.8	1.6	2.0	3.0	8.2	4.2	2.5
19:00 - 20:00	1.7	1.7	1.7	2.4	6.0	3.5	2.4
20:00 - 21:00	2.1	1.5	1.8	2.8	4.8	2.6	2.5
21:00 - 22:00	5.2	1.6	2.0	2.4	3.6	3.0	2.4
22:00 - 23:00	5.2	1.5	1.6	2.6	2.7	2.3	2.7
23:00 - 00:00	9.3	1.6	1.8	2.9	3.9	2.4	3.2
00:00 - 01:00	6.6	1.7	1.9	2.5	4.7	3.2	5.2
01:00 - 02:00	3.0	2.1	1.7	2.5	6.5	3.7	6.9
02:00 - 03:00	3.6	2.6	1.9	2.9	5.4	2.7	6.8
03:00 - 04:00	1.9	2.9	1.9	2.3	2.7	2.3	12.3
04:00 - 05:00	1.7	2.1	2.8	2.2	3.3	3.1	6.8
05:00 - 06:00	2.0	1.9	1.7	2.0	2.7	2.3	3.0
06:00 - 07:00	1.9	2.0	1.7	1.9	2.2	2.4	5.8
07:00 - 08:00	1.4	1.7	1.7	2.1	2.3	2.3	6.6
Average-24Hr*	6.2	2.3	4.0	7.1	4.2	5.3	5.2
Max-1Hr	26.3	5.4	12.6	31.1	8.2	16.6	13.3
Min-1Hr	1.4	1.5	1.6	1.9	2.2	2.3	2.2
Standard-1Hr	300 ppb(780 ug/cu.m)						
Standard-24Hr	120 ppb(300 ug/cu.m)						

Remark : * Average time between 08:00-08:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team



Ambient Air Monitoring Results : Sulfur dioxide

MTR-SPRC PLC-Refinery

Location : Map Ta Phut New Town

Monitor Period : 03-10 May 2024

Analyzer Model : API 100A

Station No : SS2-19

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)						
	03-04 May 2024	04-05 May 2024	05-06 May 2024	06-07 May 2024	07-08 May 2024	08-09 May 2024	09-10 May 2024
10:00 - 11:00	1.1	3.4	10.2	15.8	5.8	8.1	5.2
11:00 - 12:00	9.9	2.4	15.6	24.7	3.8	16.0	6.0
12:00 - 13:00	23.8	4.4	12.7	31.0	2.9	11.5	4.0
13:00 - 14:00	10.0	4.3	8.5	25.4	6.8	4.9	10.3
14:00 - 15:00	5.2	3.4	5.6	25.4	5.8	14.0	11.3
15:00 - 16:00	11.0	5.6	6.6	2.4	2.8	13.9	3.3
16:00 - 17:00	8.3	7.0	3.5	9.9	6.7	13.4	4.8
17:00 - 18:00	5.3	4.4	5.7	6.6	3.6	9.0	6.8
18:00 - 19:00	3.2	5.6	4.7	2.8	5.8	5.2	7.1
19:00 - 20:00	5.3	5.5	3.8	6.9	7.0	4.7	7.3
20:00 - 21:00	2.3	5.5	3.8	4.9	5.1	4.8	7.3
21:00 - 22:00	2.4	6.7	2.8	2.9	4.7	4.8	7.4
22:00 - 23:00	4.4	4.6	5.8	7.0	5.2	5.3	3.4
23:00 - 00:00	3.5	6.7	3.9	4.0	3.2	5.3	3.5
00:00 - 01:00	5.5	6.6	3.8	2.9	7.2	5.3	5.4
01:00 - 02:00	3.4	6.7	3.8	3.0	5.2	3.2	5.9
02:00 - 03:00	2.4	6.6	6.9	7.0	4.2	6.3	3.4
03:00 - 04:00	5.4	5.2	6.9	6.9	3.2	7.4	3.3
04:00 - 05:00	4.4	2.7	5.8	6.0	4.0	5.3	7.8
05:00 - 06:00	4.0	5.7	4.9	2.9	4.7	6.3	3.4
06:00 - 07:00	4.0	6.7	6.9	5.0	3.2	4.3	4.9
07:00 - 08:00	2.6	5.8	2.9	4.9	7.2	7.3	3.9
08:00 - 09:00	3.6	3.2	6.4	5.9	4.3	3.3	8.3
09:00 - 10:00	6.1	4.2	7.4	7.9	5.7	5.2	6.5
Average-24Hr*	5.7	5.1	6.2	9.3	4.9	7.3	5.9
Max-1Hr	23.8	7.0	15.6	31.0	7.2	16.0	11.3
Min-1Hr	1.1	2.4	2.8	2.4	2.8	3.2	3.3
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

(Miss Preeda Somjai)
Technical Management Team



Ambient Air Monitoring Results : Sulfur dioxide

MTR-SPRC PLC-Refinery

Location : Ban Plong Community

Monitor Period : 03-10 May 2024

Analyzer Model : Thermo 43C

Station No : SS2-04

Serial No : 0607415773

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)						
	03-04 May 2024	04-05 May 2024	05-06 May 2024	06-07 May 2024	07-08 May 2024	08-09 May 2024	09-10 May 2024
09:00 - 10:00	5.6	3.9	5.9	3.6	4.5	4.4	4.3
10:00 - 11:00	5.6	3.8	8.3	9.3	5.1	5.2	3.9
11:00 - 12:00	8.4	2.8	10.1	12.5	3.4	9.3	3.9
12:00 - 13:00	15.0	2.9	10.5	17.7	3.5	7.7	4.0
13:00 - 14:00	8.8	2.9	5.0	12.8	3.4	3.5	7.5
14:00 - 15:00	6.2	3.6	3.3	14.9	3.4	9.1	7.4
15:00 - 16:00	8.6	2.9	3.3	3.3	3.5	9.7	4.5
16:00 - 17:00	8.7	3.1	3.1	6.1	3.7	7.0	4.3
17:00 - 18:00	7.7	2.6	3.3	3.6	3.6	5.5	4.5
18:00 - 19:00	4.2	2.7	2.9	3.5	3.4	4.7	4.0
19:00 - 20:00	2.8	2.9	3.1	3.4	3.5	4.4	4.0
20:00 - 21:00	2.8	2.9	3.1	3.4	3.5	4.0	4.0
21:00 - 22:00	2.8	2.9	3.2	3.4	3.8	4.0	3.9
22:00 - 23:00	2.7	2.9	3.2	3.4	3.6	4.3	3.9
23:00 - 00:00	2.7	2.9	3.2	3.4	3.6	5.2	4.0
00:00 - 01:00	2.7	2.9	3.1	3.2	3.6	4.3	4.5
01:00 - 02:00	2.7	2.9	3.1	3.4	3.6	3.8	4.3
02:00 - 03:00	2.7	3.0	3.1	3.4	4.0	3.8	4.0
03:00 - 04:00	2.8	3.2	3.1	3.2	3.6	3.8	4.1
04:00 - 05:00	2.7	3.5	3.4	3.2	4.1	4.3	4.3
05:00 - 06:00	3.1	3.5	3.1	3.3	3.9	3.8	4.1
06:00 - 07:00	3.1	4.1	3.1	3.4	3.4	3.9	4.3
07:00 - 08:00	2.8	4.1	3.2	3.5	3.8	3.9	4.4
08:00 - 09:00	2.5	5.3	3.1	3.5	3.6	4.4	4.7
Average-24Hr*	4.9	3.3	4.2	5.6	3.7	5.2	4.5
Max-1Hr	15.0	5.3	10.5	17.7	5.1	9.7	7.5
Min-1Hr	2.5	2.6	2.9	3.2	3.4	3.5	3.9
Standard-1Hr	300 ppb(780 ug/cu.m)						
Standard-24Hr	120 ppb(300 ug/cu.m)						

Remark : * Average time between 09:00-09:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team



Ambient Air Monitoring Results : Nitrogen dioxide

MTR-SPRC PLC-Refinery

Location : With in Refinery Plant, North

Monitor Period : 03-10 May 2024

Analyzer Model : API 200A

Station No : SS2-20

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)						
	03-04 May 2024	04-05 May 2024	05-06 May 2024	06-07 May 2024	07-08 May 2024	08-09 May 2024	09-10 May 2024
08:00 - 09:00	9.7	5.6	7.5	6.8	10.2	9.6	9.5
09:00 - 10:00	6.1	8.0	7.4	7.8	10.7	11.6	8.5
10:00 - 11:00	9.6	8.0	7.9	7.3	12.7	8.6	6.5
11:00 - 12:00	9.6	8.0	7.9	7.3	10.2	9.0	7.4
12:00 - 13:00	9.6	8.0	7.3	8.2	12.1	10.5	6.9
13:00 - 14:00	9.0	8.4	7.8	7.7	10.1	9.0	10.9
14:00 - 15:00	9.5	8.4	8.3	6.7	11.6	10.0	5.9
15:00 - 16:00	9.0	8.4	8.3	6.7	12.1	9.4	6.8
16:00 - 17:00	10.5	8.9	8.2	6.6	13.5	7.4	8.3
17:00 - 18:00	11.4	9.8	8.7	15.1	12.0	9.4	7.8
18:00 - 19:00	10.9	10.8	9.7	12.6	14.5	12.4	11.8
19:00 - 20:00	10.9	11.3	9.2	15.1	17.5	11.8	11.7
20:00 - 21:00	11.4	9.3	9.1	16.5	16.9	17.3	15.2
21:00 - 22:00	10.8	9.2	8.6	15.5	15.4	12.8	9.2
22:00 - 23:00	10.8	7.7	8.1	13.5	11.9	13.3	11.2
23:00 - 00:00	10.3	8.2	9.6	14.0	11.9	13.2	10.1
00:00 - 01:00	13.8	7.7	11.0	12.4	11.3	14.7	9.6
01:00 - 02:00	5.7	5.1	4.5	3.9	3.3	2.7	2.1
02:00 - 03:00	10.7	11.1	8.5	10.4	9.3	10.7	2.1
03:00 - 04:00	11.2	9.6	8.5	10.4	8.7	2.6	7.5
04:00 - 05:00	11.2	9.6	8.4	10.3	3.2	9.6	7.5
05:00 - 06:00	9.6	9.5	8.4	3.8	7.7	10.6	6.5
06:00 - 07:00	10.6	9.5	4.4	11.3	7.7	10.6	6.0
07:00 - 08:00	10.1	5.0	8.9	9.8	8.1	11.0	7.9
Average-24Hr*	10.1	8.5	8.2	10.0	10.9	10.3	8.2
Max-1Hr	13.8	11.3	11.0	16.5	17.5	17.3	15.2
Min-1Hr	5.7	5.0	4.4	3.8	3.2	2.6	2.1
Standard-1Hr	170 ppb(320 ug/cu.m)						
Standard-24Hr	-						

Remark : * Average time between 08:00-08:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



Ambient Air Monitoring Results : Nitrogen dioxide

MTR-SPRC PLC-Refinery

Location : Map Ta Phut New Town

Monitor Period : 03-10 May 2024

Analyzer Model : API 200A

Station No : SS2-19

Serial No : 2365

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)						
	03-04 May 2024	04-05 May 2024	05-06 May 2024	06-07 May 2024	07-08 May 2024	08-09 May 2024	09-10 May 2024
10:00 - 11:00	7.8	6.9	6.5	6.0	10.5	7.9	5.4
11:00 - 12:00	6.0	6.9	5.2	4.8	8.8	6.3	6.3
12:00 - 13:00	7.6	5.0	6.4	5.8	9.0	8.6	5.4
13:00 - 14:00	7.3	6.1	5.8	7.1	7.5	6.5	8.9
14:00 - 15:00	6.4	7.2	6.5	5.5	8.3	7.2	6.0
15:00 - 16:00	7.6	6.8	7.1	5.7	8.6	8.3	6.5
16:00 - 17:00	6.6	7.0	6.2	4.9	9.2	5.7	7.6
17:00 - 18:00	7.6	7.0	6.3	10.3	8.7	8.4	5.9
18:00 - 19:00	8.2	8.2	6.6	10.2	11.8	9.6	9.9
19:00 - 20:00	8.8	7.8	6.5	11.9	12.3	9.8	9.4
20:00 - 21:00	8.5	7.3	7.7	11.9	11.9	11.8	11.5
21:00 - 22:00	7.2	7.9	7.3	11.9	11.7	9.9	8.5
22:00 - 23:00	7.5	5.1	6.9	9.2	8.9	9.8	9.5
23:00 - 00:00	7.1	5.8	8.1	9.7	8.4	9.4	9.0
00:00 - 01:00	8.8	5.0	8.1	9.7	9.6	10.4	7.7
01:00 - 02:00	3.6	5.1	3.4	4.4	3.5	2.8	3.2
02:00 - 03:00	8.5	9.0	7.2	8.9	7.7	9.0	2.6
03:00 - 04:00	7.5	6.9	6.9	7.9	6.6	2.1	6.3
04:00 - 05:00	7.8	6.5	6.5	8.6	2.6	8.3	6.1
05:00 - 06:00	6.6	7.8	5.7	3.9	5.8	7.4	5.5
06:00 - 07:00	8.5	7.0	3.5	8.5	6.6	7.4	5.5
07:00 - 08:00	6.5	3.5	6.6	7.6	7.5	8.7	6.0
08:00 - 09:00	5.1	5.2	5.1	7.3	8.5	6.9	7.3
09:00 - 10:00	6.4	5.8	5.9	7.5	7.9	7.8	6.4
Average-24Hr*	7.2	6.5	6.3	7.9	8.4	7.9	6.9
Max-1Hr	8.8	9.0	8.1	11.9	12.3	11.8	11.5
Min-1Hr	3.6	3.5	3.4	3.9	2.6	2.1	2.6
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-SPRC PLC-Refinery

Location : Ban Plong Community

Monitor Period : 03-10 May 2024

Analyzer Model : API 200A

Station No : SS2-04

Serial No : 1528

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)						
	03-04 May 2024	04-05 May 2024	05-06 May 2024	06-07 May 2024	07-08 May 2024	08-09 May 2024	09-10 May 2024
09:00 - 10:00	6.1	11.6	6.1	6.0	14.8	12.5	12.0
10:00 - 11:00	13.3	8.3	9.3	9.0	15.4	9.1	4.8
11:00 - 12:00	9.6	10.6	8.3	6.9	8.3	10.1	11.3
12:00 - 13:00	13.8	8.9	8.6	11.6	10.4	14.1	6.7
13:00 - 14:00	7.5	8.9	9.2	6.2	13.3	12.6	11.3
14:00 - 15:00	9.2	6.8	12.0	10.1	12.4	10.1	9.5
15:00 - 16:00	10.6	7.8	7.9	6.2	12.8	10.5	9.3
16:00 - 17:00	14.8	11.3	11.5	6.3	17.3	5.8	8.3
17:00 - 18:00	13.2	11.4	10.5	14.9	10.3	11.9	9.1
18:00 - 19:00	11.8	15.0	7.9	14.0	14.3	15.8	13.1
19:00 - 20:00	9.3	10.0	11.0	16.8	16.8	12.4	14.3
20:00 - 21:00	10.7	12.6	9.5	16.1	18.0	16.0	15.3
21:00 - 22:00	10.5	10.7	11.7	15.3	17.3	11.0	12.2
22:00 - 23:00	14.0	10.1	9.1	16.5	15.0	16.3	9.4
23:00 - 00:00	11.7	9.2	12.6	15.6	12.1	13.1	10.5
00:00 - 01:00	14.7	8.9	13.4	15.3	12.0	14.7	10.6
01:00 - 02:00	6.9	5.0	6.4	5.9	4.4	1.3	0.8
02:00 - 03:00	14.6	11.2	12.5	12.2	11.1	12.8	1.3
03:00 - 04:00	11.7	10.8	7.8	10.9	12.7	3.1	7.3
04:00 - 05:00	12.8	12.5	9.0	13.0	1.5	10.2	10.5
05:00 - 06:00	10.7	8.3	11.4	5.7	11.7	13.5	9.9
06:00 - 07:00	11.5	9.9	6.9	13.4	10.0	14.6	8.0
07:00 - 08:00	13.0	7.9	8.2	10.0	6.3	13.0	9.4
08:00 - 09:00	6.4	6.5	7.0	12.9	10.1	9.0	11.3
Average-24Hr*	11.2	9.8	9.5	11.3	12.0	11.4	9.4
Max-1Hr	14.8	15.0	13.4	16.8	18.0	16.3	15.3
Min-1Hr	6.1	5.0	6.1	5.7	1.5	1.3	0.8
Standard-1Hr	170 ppb(320 ug/cu.m)						
Standard-24Hr	-						

Remark : * Average time between 09:00-09:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



Ambient Air Monitoring Results : Carbon monoxide

MTR-SPRC PLC-Refinery

Location : With in Refinery Plant, North

Monitor Period : 03-10 May 2024

Analyzer Model : Thermo 48C

Station No : SS2-20

Serial No : 0507710894

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	CO Concentration (ppm)						
	03-04 May 2024	04-05 May 2024	05-06 May 2024	06-07 May 2024	07-08 May 2024	08-09 May 2024	09-10 May 2024
08:00 - 09:00	1.1	0.6	0.6	0.8	0.9	0.8	0.9
09:00 - 10:00	0.7	0.7	0.6	0.6	0.7	0.7	0.8
10:00 - 11:00	0.8	0.4	0.5	0.8	0.8	0.8	1.1
11:00 - 12:00	0.7	0.8	0.6	0.5	0.5	1.1	0.8
12:00 - 13:00	0.7	0.7	0.6	0.7	0.7	0.8	1.1
13:00 - 14:00	0.5	0.7	0.6	0.7	0.9	0.8	0.7
14:00 - 15:00	0.5	0.8	0.4	0.6	0.8	1.1	0.9
15:00 - 16:00	0.4	0.6	0.5	0.5	0.5	0.7	0.7
16:00 - 17:00	0.7	0.5	0.6	0.9	0.8	0.7	0.7
17:00 - 18:00	0.5	0.6	0.8	0.5	0.6	0.8	1.1
18:00 - 19:00	0.8	0.8	0.9	0.5	1.0	0.8	1.0
19:00 - 20:00	0.8	0.5	0.8	0.8	0.9	0.7	0.8
20:00 - 21:00	0.6	0.5	0.5	0.8	0.6	0.8	1.1
21:00 - 22:00	0.5	0.7	0.6	0.7	0.5	1.1	1.1
22:00 - 23:00	0.6	0.4	0.8	0.6	0.5	1.0	0.8
23:00 - 00:00	0.7	0.8	0.5	0.5	0.6	1.0	0.9
00:00 - 01:00	0.5	0.8	0.9	0.6	0.5	1.2	0.9
01:00 - 02:00	0.4	0.5	0.7	0.6	0.9	0.7	1.1
02:00 - 03:00	0.6	0.7	0.6	0.7	0.7	1.1	0.7
03:00 - 04:00	0.5	0.5	0.8	0.4	0.8	0.7	0.8
04:00 - 05:00	0.7	0.4	0.4	1.1	0.7	0.8	0.8
05:00 - 06:00	0.6	0.6	1.0	0.6	0.5	1.0	1.0
06:00 - 07:00	0.5	1.2	0.7	0.7	0.8	1.1	0.9
07:00 - 08:00	0.9	0.9	0.5	0.6	0.9	1.1	1.0
Average-24Hr*	0.6	0.7	0.6	0.7	0.7	0.9	0.9
Max-1Hr	1.1	1.2	1.0	1.1	1.0	1.2	1.1
Min-1Hr	0.4	0.4	0.4	0.4	0.5	0.7	0.7
Standard-1Hr	30 ppm(34.2 mg/cu.m)						
Standard-24Hr	-						

Remark : * Average time between 08:00-08:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team



Ambient Air Monitoring Results : Carbon monoxide

MTR-SPRC PLC-Refinery

Location : Map Ta Phut New Town

Monitor Period : 03-10 May 2024

Analyzer Model : API 300A

Station No : SS2-19

Serial No : 1343

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	CO Concentration (ppm)						
	03-04 May 2024	04-05 May 2024	05-06 May 2024	06-07 May 2024	07-08 May 2024	08-09 May 2024	09-10 May 2024
10:00 - 11:00	0.7	0.7	0.7	0.8	0.9	0.6	0.8
11:00 - 12:00	0.6	0.5	0.6	0.6	0.9	0.7	0.7
12:00 - 13:00	0.6	0.5	0.8	0.7	0.5	0.9	1.1
13:00 - 14:00	0.5	0.8	0.4	0.5	0.9	0.7	0.8
14:00 - 15:00	0.4	0.8	0.4	0.5	0.9	1.1	0.7
15:00 - 16:00	0.7	0.8	0.6	0.4	0.5	1.1	0.8
16:00 - 17:00	0.7	0.5	0.7	0.4	0.6	1.0	0.7
17:00 - 18:00	0.5	0.7	0.5	0.5	0.9	0.7	1.0
18:00 - 19:00	0.4	0.5	0.8	0.5	0.7	1.2	1.0
19:00 - 20:00	0.8	0.9	0.8	0.7	0.8	0.8	0.9
20:00 - 21:00	0.7	0.8	0.8	0.7	1.0	1.0	1.2
21:00 - 22:00	0.4	0.4	0.4	0.5	0.7	0.9	1.0
22:00 - 23:00	0.5	0.5	0.4	0.6	0.8	0.7	1.1
23:00 - 00:00	0.5	0.4	0.6	0.7	0.6	0.9	0.9
00:00 - 01:00	0.5	0.4	0.9	0.6	0.9	0.8	0.7
01:00 - 02:00	0.7	0.7	0.7	0.8	0.6	0.8	1.3
02:00 - 03:00	0.4	0.4	0.5	0.9	0.6	1.4	0.8
03:00 - 04:00	0.5	0.5	0.4	0.4	1.0	1.0	0.7
04:00 - 05:00	0.5	0.7	0.8	1.0	0.7	0.9	1.1
05:00 - 06:00	0.5	0.7	0.9	0.5	0.7	0.7	0.8
06:00 - 07:00	0.7	0.8	0.5	0.6	1.0	0.7	1.1
07:00 - 08:00	0.9	0.6	0.7	0.8	0.7	1.0	1.1
08:00 - 09:00	0.4	0.6	0.6	0.5	0.8	1.1	0.7
09:00 - 10:00	0.4	0.6	0.9	0.6	0.8	1.0	1.1
Average-24Hr*	0.6	0.6	0.6	0.6	0.8	0.9	0.9
Max-1Hr	0.9	0.9	0.9	1.0	1.0	1.4	1.3
Min-1Hr	0.4	0.4	0.4	0.4	0.5	0.6	0.7
Standard-1Hr	30 ppm(34.2 mg/cu.m)						
Standard-24Hr	-						

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 : Carbon monoxide

MTR-SPRC PLC-Refinery

Location : Ban Plong Community

Monitor Period : 03-10 May 2024

Analyzer Model : Teledyne 300E

Station No : SS2-04

Serial No : 1077

Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Teledyne 700E

Serial No : 587

Calibration Gas Cylinder I.D.: EB0102326

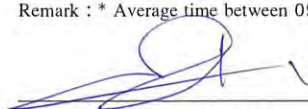
Certified Date : 04 Jan 2024


Cal Concentration (ppb) : 0,100,200,400

Expire Date : 03 Jan 2025

Time	CO Concentration (ppm)						
	03-04 May 2024	04-05 May 2024	05-06 May 2024	06-07 May 2024	07-08 May 2024	08-09 May 2024	09-10 May 2024
09:00 - 10:00	0.5	0.8	0.9	0.9	0.5	0.9	0.8
10:00 - 11:00	0.7	0.5	0.8	0.7	0.5	0.6	0.7
11:00 - 12:00	0.6	0.6	0.5	0.9	0.8	0.7	0.9
12:00 - 13:00	0.5	0.7	0.9	0.7	0.6	0.5	0.8
13:00 - 14:00	0.8	0.8	0.6	0.4	0.7	0.7	0.4
14:00 - 15:00	0.7	0.8	0.9	0.4	0.5	0.5	0.8
15:00 - 16:00	0.7	0.4	0.6	0.8	0.6	0.4	0.4
16:00 - 17:00	0.8	0.5	0.5	0.5	0.6	0.9	0.8
17:00 - 18:00	0.5	0.7	0.5	0.5	0.9	0.6	0.9
18:00 - 19:00	0.4	0.6	0.4	0.4	0.7	0.9	0.5
19:00 - 20:00	0.7	0.5	0.6	0.5	0.8	0.7	0.7
20:00 - 21:00	0.7	0.6	0.7	0.6	1.0	0.7	0.5
21:00 - 22:00	0.6	0.5	0.8	0.5	0.9	0.8	0.4
22:00 - 23:00	0.8	0.7	0.6	0.9	0.5	0.5	0.7
23:00 - 00:00	0.5	0.7	0.8	0.4	0.5	0.6	0.7
00:00 - 01:00	0.7	0.6	0.8	0.5	0.5	0.6	0.6
01:00 - 02:00	0.7	0.8	0.7	0.6	0.7	0.6	1.0
02:00 - 03:00	0.6	0.5	0.4	0.8	0.7	1.1	0.5
03:00 - 04:00	0.4	0.7	0.6	0.4	0.9	0.6	0.8
04:00 - 05:00	0.4	0.6	0.6	1.0	0.7	0.7	0.7
05:00 - 06:00	0.4	0.7	0.9	0.8	0.5	0.6	0.8
06:00 - 07:00	0.6	1.0	0.6	0.8	0.7	0.8	0.5
07:00 - 08:00	1.1	0.6	0.7	0.6	0.8	0.5	0.7
08:00 - 09:00	0.8	0.9	0.7	0.5	0.7	0.7	0.7
Average-24Hr*	0.6	0.7	0.7	0.6	0.7	0.7	0.7
Max-1Hr	1.1	1.0	0.9	1.0	1.0	1.1	1.0
Min-1Hr	0.4	0.4	0.4	0.4	0.5	0.4	0.4
Standard-1Hr	30 ppm(34.2 mg/cu.m)						
Standard-24Hr	-						

Remark : * Average time between 09:00-09:00


 (Miss Katesarin Vorradetwittaya)
 Environmental Scientist


 (Miss Preeda Somjai)
 Technical Management Team



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AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REFERENCE NO.	: SPRC-224003-COA-Amb/H ₂ S
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING DATE	: 04-06/05/2024
RECEIVE DATE	: 14/05/2024	ANALYTICAL DATE	: 23/05/2024
REPORT DATE	: 31/05/2024	SAMPLE CONDITION	: Normal
INSTRUMENT	: Impingment Absorption	SITE OPERATOR	: Mr.Siwanon Kulawong
CALIBRATOR MODEL	: Defender 520-H	SERIAL NO.	: 114069
STATION DESCRIPTION	: 1. Within the Refinery Plant 2. Map Ta Phut New Town 3. Ban Plong Community		

PARAMETER	SAMPLING DATE	UNIT	ND (Non-detectable)	RESULTS			REFERENCE METHODS
				1	2	3	
Hydrogen Sulfide (1 hr)	04/05/2024	ppm	<0.001	ND	ND	ND	Intersociety Committee
	05/05/2024	ppm	<0.001	ND	ND	ND	Method 701
	06/05/2024	ppm	<0.001	ND	ND	ND	

Phatchara Samanchan

(Miss Phatchara Samanchan)

Analyst

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

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

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AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME : Star Petroleum Refining Public Co., Ltd. REF. NO. : SPRC-224003-COA-Amb/TSP
SAMPLING BY : SECOT Co., Ltd. SAMPLING DATE : 03-10/05/2024
RECEIVED DATE : 14/05/2024 ANALYTICAL DATE : 14-16/05/2024
REPORT DATE : 21/05/2024 SAMPLE CONDITION : Normal
OPERATOR : Mr.Siwanon Kulawong
STATION DESCRIPTION : 1. Within the Refinery Plant 2. Map Ta Phut New Town
3. Ban Plong Community

PARAMETER	SAMPLING DATE	UNITS	RESULTS			STANDARD*	REFERENCE METHODS
			1	2	3		
TSP (24 hr.)	03-04/05/2024	mg/m ³	0.025	0.030	0.045	0.330	High Volume
	04-05/05/2024	mg/m ³	0.027	0.029	0.053		Air Sampler/
	05-06/05/2024	mg/m ³	0.029	0.040	0.054		Gravimetric
	06-07/05/2024	mg/m ³	0.026	0.023	0.043		Method
	07-08/05/2024	mg/m ³	0.034	0.029	0.051		
	08-09/05/2024	mg/m ³	0.027	0.037	0.062		
	09-10/05/2024	mg/m ³	0.022	0.025	0.038		

Phatchara Samanchan

(Miss Phatchara Samanchan)

Analyst

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

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



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AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME : Star Petroleum Refining Public Co., Ltd. REF. NO. : SPRC-224003-COA-Amb/PM10
SAMPLING BY : SECOT Co., Ltd. SAMPLING DATE : 03-10/05/2024
RECEIVED DATE : 14/05/2024 ANALYTICAL DATE : 14-16/05/2024
REPORT DATE : 21/05/2024 SAMPLE CONDITION : Normal
OPERATOR : Mr.Siwanon Kulawong
STATION DESCRIPTION : 1. Within the Refinery Plant 2. Map Ta Phut New Town
3. Ban Plong Community

PARAMETER	SAMPLING DATE	UNITS	RESULTS			STANDARD*	REFERENCE METHODS
			1	2	3		
PM-10 (24 hr.)	03-04/05/2024	mg/m ³	0.022	0.026	0.028	0.120	High Volume
	04-05/05/2024	mg/m ³	0.025	0.027	0.033		Air Sampler
	05-06/05/2024	mg/m ³	0.027	0.038	0.036		(Hi-Vol PM-10
	06-07/05/2024	mg/m ³	0.021	0.018	0.026		Size Selective Inlet)
	07-08/05/2024	mg/m ³	0.018	0.024	0.030		Gravimetric
	08-09/05/2024	mg/m ³	0.024	0.028	0.038		Method
	09-10/05/2024	mg/m ³	0.019	0.017	0.026		

Phatchara Samanchan

(Miss Phatchara Samanchan)

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. * Notification of the National Environment Board, No.24, B.E.2547.

ใบรับรองผลการตรวจวัดคุณภาพอากาศจากปล่องระบายอากาศ



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STACK EMISSION ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REFERENCE NO.	: Refinery-224003-COA-Stk/PM
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING DATE	: 08/05/2024
RECEIVED DATE	: 13/05/2024	ANALYTICAL DATE	: 13-15/05/2024
REPORT DATE	: 21/05/2024	SAMPLE CONDITION	: Normal
STACK LOCATION	: RFCCU Stack	OPERATOR	: Mr. Song Hengchwankun
SOURCE DESCRIPTION	: Combustion	FUEL TYPE	: Natural Gas + Refinery Fuel Gas

STACK DESCRIPTION

Height	: 70.0	m	Gas Velocity	: 16.7	m/s
Diameter	: 3.2	m	Flow rate ⁽¹⁾	: 3,668	Ncu.m/min
Temperature	: 294.3	°C	Excess Oxygen	: 3.1	%

PARAMETER	UNIT	RESULTS ⁽¹⁾		ASSIGNED VALUE ⁽²⁾	STANDARD ⁽³⁾	REFERENCE METHODS
		3.1 % O ₂	7 % O ₂			
Particulate Matter	mg/Ncu.m	117.9	92.1	240	320	US. EPA Method 5

Phatchara Samanchan

(Miss Phatchara Samanchan)

Analyst

REG.NO.จ-239-จ-0021

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO.จ-239-ค-0010

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⁾ Assigned value in EIA Report Expansion 3 of Refinery Plant, B.E. 2561 (2018).

5. ⁽³⁾ Notification of the Ministry of Natural Resources and Environment B.E.2554 (2011).



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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	: Star Petroleum Refining Public Co., Ltd.	REFERENCE NO.	: Refinery-224003-COA-Stk/HM
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING DATE	: 08/05/2024
RECEIVED DATE	: 13/05/2024	ANALYTICAL DATE	: 13-16/05/2024
REPORT DATE	: 23/05/2024	SAMPLE CONDITION	: Normal
STACK LOCATION	: RFCCU Stack	OPERATOR	: Mr. Song Hengchwankun
SOURCE DESCRIPTION	: Combustion	FUEL TYPE	: Natural Gas + Refinery Fuel Gas

STACK DESCRIPTION

Height	: 70.0	m	Gas Velocity	: 16.7	m/s
Diameter	: 3.2	m	Flow rate ⁽¹⁾	: 3,668	Ncu.m/min
Temperature	: 294.3	°C	Excess Oxygen	: 3.1	%

PARAMETER	UNIT	RESULTS ⁽¹⁾		ASSIGNED VALUE ⁽²⁾	STANDARD ⁽³⁾	REFERENCE METHODS
		3.1 % O ₂	7 % O ₂			
Mercury	mg/Ncu.m	<0.0003	<0.0002	2.4	2.4	US. EPA Method 29
Lead	mg/Ncu.m	0.06	0.05	5.0	5.0	US. EPA Method 29


.....
(Miss Krisana Chanthoom)

Analyst

REG.NO.จ-239-จ-0017


.....
(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO.จ-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.

4. ⁽²⁾ Assigned value in EIA Report Expansion 3 of Refinery Plant, B.E. 2561 (2018).

5. ⁽³⁾ Notification of the Ministry of Natural Resources and Environment B.E.2554 (2011).

The Monitoring Result of Emission Concentration
RFCCU
STAR PETROLEUM REFINING PUBLIC CO.,LTD.
May 8, 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	3.03	3.02	176.92	177.15	137.72
2	3.31	3.29	181.10	181.35	143.14
3	2.92	2.90	185.34	185.62	143.34
Average	3.09	3.07	181.12	181.37	141.40

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	3.03	3.02	715.64	716.10	556.70
2	3.31	3.29	775.16	775.70	612.28
3	2.92	2.90	756.85	757.41	584.89
Average	3.09	3.07	749.22	749.74	584.48


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	3.03	3.02	336.49	336.71	261.76
2	3.31	3.29	308.32	308.58	243.57
3	2.92	2.90	317.50	317.83	245.44
Average	3.09	3.07	320.77	321.04	250.28

STAR PETROLEUM REFINING PUBLIC CO.,LTD.

EMISSION TEST RESULT

Date: <u>May 8, 2024</u> Start time: <u>11:00 AM</u> O₂ instrument Model: <u>AMI 70</u> NO_x instrument Model: <u>API 200 AH</u> SO₂ instrument Model: <u>API 100 AH</u> CO instrument Model: <u>THERMO 48 C</u> Fuel Type : <u>Fuel Gas</u>	Run # : <u>1</u> Location : <u>RFCCU</u> Finish time : <u>11:20 AM</u> Serial No.: <u>111117-2</u> Serial No.: <u>441</u> Serial No.: <u>060</u> Serial No.: <u>388</u> Test Operator : <u>Kittipong T.</u>
---	--

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
11:00 AM	2.89	174.17	699.44	346.75
11:01 AM	2.88	173.88	693.64	349.58
11:02 AM	2.85	175.18	697.75	349.92
11:03 AM	2.86	174.63	699.58	348.75
11:04 AM	2.83	174.83	706.26	348.26
11:05 AM	2.83	176.41	703.64	345.39
11:06 AM	2.81	176.92	705.99	345.57
11:07 AM	2.84	177.17	705.72	345.91
11:08 AM	2.88	177.12	703.50	346.42
11:09 AM	2.89	177.73	709.55	344.22
11:10 AM	2.89	180.41	716.90	342.36
11:11 AM	2.92	180.78	712.65	337.12
11:12 AM	2.96	181.23	710.81	333.58
11:13 AM	3.03	179.91	701.95	331.28
11:14 AM	3.10	178.47	720.42	330.44
11:15 AM	3.18	178.63	725.11	328.40
11:16 AM	3.22	179.04	724.37	326.87
11:17 AM	3.35	178.24	726.50	324.34
11:18 AM	3.42	174.69	745.17	318.43
11:19 AM	3.44	172.85	757.17	313.06
11:20 AM	3.52	172.97	762.25	309.68
Average	3.03	176.92	715.64	336.49


Signature _____
Miss Katesarin Vorradetwittaya
Environmental Scientist

STAR PETROLEUM REFINING PUBLIC CO.,LTD.

EMISSION TEST RESULT

Date: <u>May 8, 2024</u> Start time: <u>11:21 AM</u> O₂ instrument Model: <u>AMI 70</u> NO_x instrument Model: <u>API 200 AH</u> SO₂ instrument Model: <u>API 100 AH</u> CO instrument Model: <u>THERMO 48 C</u> Fuel Type : <u>Fuel Gas</u>	Run # : <u>2</u> Location : <u>RFCCU</u> Finish time : <u>11:41 AM</u> Serial No.: <u>111117-2</u> Serial No.: <u>441</u> Serial No.: <u>060</u> Serial No.: <u>388</u> Test Operator : <u>Kittipong T.</u>
---	--

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
11:21 AM	3.53	172.72	768.93	306.29
11:22 AM	3.56	171.89	775.93	301.89
11:23 AM	3.48	172.11	793.55	300.70
11:24 AM	3.38	173.92	792.00	299.84
11:25 AM	3.38	176.54	786.83	300.35
11:26 AM	3.37	178.28	793.09	299.84
11:27 AM	3.29	179.86	782.48	300.51
11:28 AM	3.23	181.04	780.49	301.54
11:29 AM	3.24	181.45	773.66	301.53
11:30 AM	3.23	181.53	771.03	301.03
11:31 AM	3.12	183.00	779.91	302.55
11:32 AM	3.08	195.16	766.08	303.74
11:33 AM	3.15	193.88	759.84	306.62
11:34 AM	3.21	189.15	759.39	312.02
11:35 AM	3.32	185.28	752.93	316.24
11:36 AM	3.28	182.81	754.56	320.28
11:37 AM	3.37	180.07	754.50	322.14
11:38 AM	3.42	178.67	773.02	322.14
11:39 AM	3.43	180.51	787.20	319.60
11:40 AM	3.30	182.27	787.95	317.91
11:41 AM	3.19	182.99	785.01	317.91
Average	3.31	181.10	775.16	308.32

Signature 

Miss Katesarin Vorradetwittaya

Environmental Scientist

STAR PETROLEUM REFINING PUBLIC CO.,LTD.

EMISSION TEST RESULT

Date: <u>May 8, 2024</u> Start time: <u>11:42 AM</u> O₂ instrument Model: <u>AMI 70</u> NO_x instrument Model: <u>API 200 AH</u> SO₂ instrument Model: <u>API 100 AH</u> CO instrument Model: <u>THERMO 48 C</u> Fuel Type : <u>Fuel Gas</u>	Run # : <u>3</u> Location : <u>RFCCU</u> Finish time : <u>12:02 PM</u> Serial No.: <u>111117-2</u> Serial No.: <u>441</u> Serial No.: <u>060</u> Serial No.: <u>388</u> Test Operator : <u>Kittipong T.</u>
---	--

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
11:42 AM	3.13	182.84	781.35	317.91
11:43 AM	3.07	183.11	775.92	317.41
11:44 AM	3.05	184.29	776.29	317.92
11:45 AM	3.05	184.68	766.36	319.27
11:46 AM	3.02	184.31	771.13	317.74
11:47 AM	2.96	184.56	776.87	317.58
11:48 AM	2.93	184.76	772.56	317.92
11:49 AM	2.86	184.68	766.23	318.42
11:50 AM	2.82	184.86	760.04	318.25
11:51 AM	2.83	185.05	746.15	319.11
11:52 AM	2.84	185.76	752.17	317.40
11:53 AM	2.83	185.32	749.33	318.26
11:54 AM	2.81	186.35	747.65	317.08
11:55 AM	2.80	186.65	750.08	316.59
11:56 AM	2.81	187.80	745.82	315.61
11:57 AM	2.77	188.17	745.15	317.09
11:58 AM	2.81	188.00	740.97	317.26
11:59 AM	2.88	188.29	728.69	319.12
12:00 PM	2.94	186.36	735.00	317.45
12:01 PM	2.99	184.47	747.85	316.42
12:02 PM	3.04	181.73	758.31	313.75
Average	2.92	185.34	756.85	317.50

Signature



Miss Katesarin Vorradetwittaya

Environmental Scientist



บริษัท ซีคอต จำกัด
SECOT CO., LTD.

239 ถนนริมคลองประปา แขวงบางซื่อ เขตบางซื่อ กรุงเทพฯ 10800

239 RIMKLONGPRAPA ROAD, BANGSUE, BANGKOK 10800, THAILAND

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

STACK EMISSION ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REFERENCE NO.	: Refinery-224003-COA-Stk/PM
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING DATE	: 10/05/2024
RECEIVED DATE	: 13/05/2024	ANALYTICAL DATE	: 13-15/05/2024
REPORT DATE	: 21/05/2024	SAMPLE CONDITION	: Normal
STACK LOCATION	: CDU Stack	OPERATOR	: Mr. Song Hengchwankun
SOURCE DESCRIPTION	: Combustion	FUEL TYPE	: Natural Gas + Refinery Fuel Gas

STACK DESCRIPTION

Height	: 63.2	m	Gas Velocity	: 8.0	m/s
Diameter	: 3.0	m	Flow rate ⁽¹⁾	: 1,927	Ncu.m/min
Temperature	: 191.0	°C	Excess Oxygen	: 4.7	%

PARAMETER	UNIT	RESULTS ⁽¹⁾		ASSIGNED VALUE ⁽²⁾	STANDARD ⁽³⁾	REFERENCE METHODS
		4.7 % O ₂	7 % O ₂			
Particulate Matter	mg/Ncu.m	5.2	4.5	60	60	US. EPA Method 5

Phatchara Samanchan

(Miss Phatchara Samanchan)

Analyst

REG.NO.จ-239-จ-0021

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO.จ-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⁾ Assigned value in EIA Report Expansion 3 of Refinery Plant, B.E. 2561 (2018).

5. ⁽³⁾ Notification of the Ministry of Natural Resources and Environment B.E.2554 (2011).

The Monitoring Result of Emission Concentration
CDU
STAR PETROLEUM REFINING PUBLIC CO.,LTD.
May 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	4.72	4.72	15.74	15.73	13.51
2	4.70	4.69	16.14	16.13	13.83
3	4.69	4.68	16.36	16.35	14.01
Average	4.70	4.70	16.08	16.07	13.79

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	4.72	4.72	5.10	5.08	4.36
2	4.70	4.69	3.53	3.50	3.00
3	4.69	4.68	3.10	3.07	2.63
Average	4.70	4.70	3.91	3.88	3.33


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	4.72	4.72	0.64	0.63	0.54
2	4.70	4.69	0.73	0.72	0.62
3	4.69	4.68	0.77	0.76	0.65
Average	4.70	4.70	0.71	0.70	0.60

STAR PETROLEUM REFINING PUBLIC CO.,LTD.

EMISSION TEST RESULT

Date: <u>May 10, 2024</u> Start time: <u>11:00 AM</u> O₂ instrument Model: <u>AMI 70</u> NO_x instrument Model: <u>TELEDYNE 200 EM</u> SO₂ instrument Model: <u>API 100 AH</u> CO instrument Model: <u>API 300 A</u> Fuel Type : <u>Natural Gas</u>	Run # : <u>1</u> Location : <u>CDU</u> Finish time : <u>11:20 AM</u> Serial No.: <u>161212-14</u> Serial No.: <u>435</u> Serial No.: <u>058</u> Serial No.: <u>1070</u> Test Operator : <u>Pisanu S.</u>
--	---

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
11:00 AM	4.75	15.87	5.45	0.54
11:01 AM	4.79	15.76	5.58	0.58
11:02 AM	4.81	15.00	5.72	0.55
11:03 AM	4.76	15.12	5.84	0.56
11:04 AM	4.70	15.16	5.75	0.59
11:05 AM	4.75	15.39	5.68	0.62
11:06 AM	4.60	15.74	5.67	0.63
11:07 AM	4.71	15.92	5.49	0.64
11:08 AM	4.76	15.86	5.45	0.64
11:09 AM	4.72	15.77	5.29	0.65
11:10 AM	4.76	15.99	5.15	0.66
11:11 AM	4.72	16.20	5.26	0.66
11:12 AM	4.60	16.23	5.05	0.67
11:13 AM	4.74	16.21	4.99	0.67
11:14 AM	4.66	15.89	4.89	0.68
11:15 AM	4.76	15.50	4.58	0.68
11:16 AM	4.71	15.42	4.37	0.69
11:17 AM	4.68	15.60	4.36	0.69
11:18 AM	4.69	15.86	4.26	0.69
11:19 AM	4.74	15.97	4.10	0.70
11:20 AM	4.72	16.05	4.07	0.70
Average	4.72	15.74	5.10	0.64

Signature 
 Miss Katesarin Vorradetwittaya
 Environmental Scientist

STAR PETROLEUM REFINING PUBLIC CO.,LTD.

EMISSION TEST RESULT

Date: <u>May 10, 2024</u> Start time: <u>11:21 AM</u> O₂ instrument Model: <u>AMI 70</u> NO_x instrument Model: <u>TELEDYNE 200 EM</u> SO₂ instrument Model: <u>API 100 AH</u> CO instrument Model: <u>API 300 A</u> Fuel Type : <u>Natural Gas</u>	Run # : <u>2</u> Location : <u>CDU</u> Finish time : <u>11:41 AM</u> Serial No.: <u>161212-14</u> Serial No.: <u>435</u> Serial No.: <u>058</u> Serial No.: <u>1070</u> Test Operator : <u>Pisanu S.</u>
--	---

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
11:21 AM	4.71	16.17	4.06	0.70
11:22 AM	4.74	16.37	4.03	0.70
11:23 AM	4.86	16.40	3.80	0.71
11:24 AM	4.72	16.31	3.75	0.71
11:25 AM	4.68	16.19	3.74	0.71
11:26 AM	4.71	15.90	3.73	0.72
11:27 AM	4.66	15.57	3.56	0.72
11:28 AM	4.69	15.45	3.33	0.72
11:29 AM	4.74	15.70	3.35	0.73
11:30 AM	4.67	15.98	3.11	0.73
11:31 AM	4.49	15.95	2.99	0.73
11:32 AM	4.61	15.99	3.06	0.73
11:33 AM	4.69	16.35	3.82	0.74
11:34 AM	4.69	16.59	3.71	0.74
11:35 AM	4.79	16.52	3.50	0.74
11:36 AM	4.73	16.12	3.33	0.74
11:37 AM	4.71	16.08	3.21	0.74
11:38 AM	4.74	16.55	3.20	0.75
11:39 AM	4.71	16.64	3.07	0.75
11:40 AM	4.72	16.27	3.92	0.75
11:41 AM	4.66	15.89	3.89	0.75
Average	4.70	16.14	3.53	0.73

Signature



Miss Katesarin Vorradetwittaya

Environmental Scientist

STAR PETROLEUM REFINING PUBLIC CO.,LTD.

EMISSION TEST RESULT

Date: May 10, 2024 Start time: 11:42 AM O₂ instrument Model: AMI 70 NO_x instrument Model: TELEDYNE 200 EM SO₂ instrument Model: API 100 AH CO instrument Model: API 300 A Fuel Type : Natural Gas	Run # : 3 Location : CDU Finish time : 12:02 PM Serial No.: 161212-14 Serial No.: 435 Serial No.: 058 Serial No.: 1070 Test Operator : Pisanu S.
---	---

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
11:42 AM	4.69	15.86	3.89	0.75
11:43 AM	4.61	16.16	3.84	0.75
11:44 AM	4.65	16.47	3.60	0.75
11:45 AM	4.69	16.58	3.59	0.76
11:46 AM	4.63	16.14	3.47	0.76
11:47 AM	4.62	15.85	3.29	0.76
11:48 AM	4.68	16.32	3.48	0.76
11:49 AM	4.62	16.75	3.38	0.76
11:50 AM	4.64	16.79	3.28	0.76
11:51 AM	4.67	16.60	3.08	0.76
11:52 AM	4.66	16.32	3.08	0.77
11:53 AM	4.68	16.07	2.98	0.77
11:54 AM	4.67	16.14	2.98	0.77
11:55 AM	4.65	16.25	2.97	0.77
11:56 AM	4.58	16.15	2.80	0.77
11:57 AM	4.66	16.24	2.67	0.77
11:58 AM	4.79	16.45	2.66	0.77
11:59 AM	4.83	16.55	2.54	0.77
12:00 PM	4.87	16.67	2.56	0.78
12:01 PM	4.86	16.65	2.65	0.78
12:02 PM	4.76	16.56	2.41	0.78
Average	4.69	16.36	3.10	0.77

Signature



Miss Katesarin Vorradetwittaya

Environmental Scientist



บริษัท ซีคอต จำกัด
SECOT CO., LTD.

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

STACK EMISSION ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REFERENCE NO.	: Refinery-224003-COA-Stk/PM
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING DATE	: 10/05/2024
RECEIVED DATE	: 13/05/2024	ANALYTICAL DATE	: 13-15/05/2024
REPORT DATE	: 21/05/2024	SAMPLE CONDITION	: Normal
STACK LOCATION	: VDU Stack	OPERATOR	: Mr. Song Hengchwankun
SOURCE DESCRIPTION	: Combustion	FUEL TYPE	: Natural Gas + Refinery Fuel Gas

STACK DESCRIPTION

Height	: 54.0	m	Gas Velocity	: 11.4	m/s
Diameter	: 2.0	m	Flow rate ⁽¹⁾	: 1,234	Ncu.m/min
Temperature	: 180.3	°C	Excess Oxygen	: 4.5	%

PARAMETER	UNIT	RESULTS ⁽¹⁾		ASSIGNED VALUE ⁽²⁾	STANDARD ⁽³⁾	REFERENCE METHODS
		4.5 % O ₂	7 % O ₂			
Particulate Matter	mg/Ncu.m	1.9	1.6	60	60	US. EPA Method 5

Phatchara Samanchan

(Miss Phatchara Samanchan)

Analyst

REG.NO.จ-239-จ-0021

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO.จ-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.

4. ⁽²⁾ Assigned value in EIA Report Expansion 3 of Refinery Plant, B.E. 2561 (2018).

5. ⁽³⁾ Notification of the Ministry of Natural Resources and Environment B.E.2554 (2011).

The Monitoring Result of Emission Concentration
VDU
STAR PETROLEUM REFINING PUBLIC CO.,LTD.
May 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	4.41	4.40	17.35	17.33	14.60
2	4.43	4.43	17.72	17.69	14.93
3	4.51	4.51	17.99	17.96	15.23
Average	4.45	4.45	17.69	17.66	14.92

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	4.41	4.40	5.46	5.42	4.57
2	4.43	4.43	5.32	5.28	4.46
3	4.51	4.51	5.30	5.25	4.45
Average	4.45	4.45	5.36	5.32	4.49

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	4.41	4.40	0.06	0.10	0.08
2	4.43	4.43	0.05	0.09	0.08
3	4.51	4.51	0.05	0.10	0.08
Average	4.45	4.45	0.06	0.10	0.08

STAR PETROLEUM REFINING PUBLIC CO.,LTD.

EMISSION TEST RESULT

Date: <u>May 10, 2024</u> Start time: <u>11:50 AM</u> O₂ instrument Model: <u>AMI 70</u> NO_x instrument Model: <u>API 200 AH</u> SO₂ instrument Model: <u>API 100 AH</u> CO instrument Model: <u>THERMO 48 C</u> Fuel Type : <u>Natural Gas</u>	Run # : <u>1</u> Location : <u>VDU</u> Finish time : <u>12:10 PM</u> Serial No.: <u>071023-47</u> Serial No.: <u>441</u> Serial No.: <u>060</u> Serial No.: <u>388</u> Test Operator : <u>Kittipong T.</u>
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Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
11:50 AM	4.38	16.72	5.43	0.00
11:51 AM	4.43	16.88	5.41	0.06
11:52 AM	4.46	16.97	5.41	0.00
11:53 AM	4.41	17.19	5.42	0.06
11:54 AM	4.45	17.32	5.50	0.06
11:55 AM	4.50	17.39	5.36	0.06
11:56 AM	4.50	17.42	5.44	0.07
11:57 AM	4.47	17.41	5.53	0.05
11:58 AM	4.43	17.44	5.47	0.07
11:59 AM	4.45	17.43	5.50	0.01
12:00 PM	4.46	17.37	5.60	0.05
12:01 PM	4.43	17.43	5.47	0.01
12:02 PM	4.45	17.53	5.34	0.13
12:03 PM	4.40	17.46	5.34	0.02
12:04 PM	4.39	17.43	5.45	0.03
12:05 PM	4.34	17.52	5.36	0.07
12:06 PM	4.30	17.57	5.48	0.14
12:07 PM	4.29	17.50	5.50	0.11
12:08 PM	4.34	17.44	5.58	0.12
12:09 PM	4.41	17.40	5.61	0.04
12:10 PM	4.42	17.58	5.54	0.13
Average	4.41	17.35	5.46	0.06


 Signature _____
Miss Katesarin Vorradetwittaya
Environmental Scientist

STAR PETROLEUM REFINING PUBLIC CO.,LTD.

EMISSION TEST RESULT

Date: <u>May 10, 2024</u> Start time: <u>12:11 PM</u> O₂ instrument Model: <u>AMI 70</u> NO_x instrument Model: <u>API 200 AH</u> SO₂ instrument Model: <u>API 100 AH</u> CO instrument Model: <u>THERMO 48 C</u> Fuel Type : <u>Natural Gas</u>	Run # : <u>2</u> Location : <u>VDU</u> Finish time : <u>12:31 PM</u> Serial No.: <u>071023-47</u> Serial No.: <u>441</u> Serial No.: <u>060</u> Serial No.: <u>388</u> Test Operator : <u>Kittipong T.</u>
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Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
12:11 PM	4.42	17.61	5.37	0.08
12:12 PM	4.45	17.56	5.37	0.01
12:13 PM	4.41	17.64	5.42	0.06
12:14 PM	4.43	17.67	5.38	0.12
12:15 PM	4.41	17.64	5.42	0.07
12:16 PM	4.38	17.62	5.38	0.03
12:17 PM	4.45	17.67	5.49	0.01
12:18 PM	4.47	17.68	5.46	0.08
12:19 PM	4.42	17.71	5.41	0.11
12:20 PM	4.42	17.79	5.43	0.04
12:21 PM	4.44	17.74	5.23	0.01
12:22 PM	4.45	17.67	5.23	0.07
12:23 PM	4.42	17.66	5.26	0.01
12:24 PM	4.45	17.66	5.29	0.01
12:25 PM	4.46	17.75	5.20	0.04
12:26 PM	4.42	17.81	5.20	0.07
12:27 PM	4.47	17.77	5.21	0.09
12:28 PM	4.43	17.82	5.23	0.07
12:29 PM	4.39	17.87	5.20	0.03
12:30 PM	4.41	17.88	5.25	0.08
12:31 PM	4.44	17.94	5.37	0.06
Average	4.43	17.72	5.32	0.05

Signature



Miss Katesarin Vorradetwittaya

Environmental Scientist

STAR PETROLEUM REFINING PUBLIC CO.,LTD.

EMISSION TEST RESULT

Date: <u>May 10, 2024</u> Start time: <u>12:32 PM</u> O₂ instrument Model: <u>AMI 70</u> NO_x instrument Model: <u>API 200 AH</u> SO₂ instrument Model: <u>API 100 AH</u> CO instrument Model: <u>THERMO 48 C</u> Fuel Type : <u>Natural Gas</u>	Run # : <u>3</u> Location : <u>VDU</u> Finish time : <u>12:52 PM</u> Serial No.: <u>071023-47</u> Serial No.: <u>441</u> Serial No.: <u>060</u> Serial No.: <u>388</u> Test Operator : <u>Kittipong T.</u>
---	---

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
12:32 PM	4.54	17.94	5.42	0.06
12:33 PM	4.66	17.99	5.39	0.00
12:34 PM	4.61	18.07	5.44	0.05
12:35 PM	4.60	18.15	5.39	0.03
12:36 PM	4.55	18.10	5.43	0.11
12:37 PM	4.50	18.06	5.43	0.04
12:38 PM	4.48	17.93	5.39	0.02
12:39 PM	4.42	17.83	5.30	0.03
12:40 PM	4.46	17.79	5.29	0.06
12:41 PM	4.52	17.90	5.31	0.04
12:42 PM	4.49	18.02	5.15	0.06
12:43 PM	4.51	18.06	5.19	0.02
12:44 PM	4.54	18.02	5.23	0.02
12:45 PM	4.47	17.97	5.21	0.03
12:46 PM	4.50	17.99	5.11	0.00
12:47 PM	4.47	18.01	5.11	0.09
12:48 PM	4.48	17.92	5.27	0.06
12:49 PM	4.47	17.98	5.28	0.12
12:50 PM	4.46	18.11	5.28	0.06
12:51 PM	4.49	17.94	5.35	0.09
12:52 PM	4.53	18.02	5.31	0.08
Average	4.51	17.99	5.30	0.05

Signature



Miss Katesarin Vorradetwittaya

Environmental Scientist



บริษัท ซีคอต จำกัด

SECOT CO., LTD.

239 ถนนริมคลองประปา แขวงบางซื่อ เขตบางซื่อ กรุงเทพฯ 10800

239 RIMKLONGPRAPA ROAD, BANGSUE, BANGKOK 10800, THAILAND

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

STACK EMISSION ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REFERENCE NO.	: Refinery-224003-COA-Stk/PM
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING DATE	: 10/05/2024
RECEIVED DATE	: 13/05/2024	ANALYTICAL DATE	: 13-15/05/2024
REPORT DATE	: 21/05/2024	SAMPLE CONDITION	: Normal
STACK LOCATION	: NHTU/CCRU Stack	OPERATOR	: Mr. Song Hengchwankun
SOURCE DESCRIPTION	: Combustion	FUEL TYPE	: Natural Gas + Refinery Fuel Gas

STACK DESCRIPTION

Height	: 65.0	m	Gas Velocity	: 9.6	m/s
Diameter	: 3.1	m	Flow rate ⁽¹⁾	: 2,315	Ncu.m/min
Temperature	: 206.3	°C	Excess Oxygen	: 3.9	%

PARAMETER	UNIT	RESULTS ⁽¹⁾		ASSIGNED VALUE ⁽²⁾	STANDARD ⁽³⁾	REFERENCE METHODS
		3.9 % O ₂	7 % O ₂			
Particulate Matter	mg/Ncu.m	1.5	1.2	60	60	US. EPA Method 5

Phatchara Samanchan

(Miss Phatchara Samanchan)

Analyst

REG.NO.จ-239-จ-0021

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO.จ-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⁾ Assigned value in EIA Report Expansion 3 of Refinery Plant, B.E. 2561 (2018).

5. ⁽³⁾ Notification of the Ministry of Natural Resources and Environment B.E.2554 (2011).

The Monitoring Result of Emission Concentration
NHTU
STAR PETROLEUM REFINING PUBLIC CO.,LTD.
May 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	4.11	4.11	29.41	29.39	24.33
2	3.73	3.73	30.81	30.80	24.93
3	3.90	3.90	31.13	31.12	25.45
Average	3.91	3.91	30.45	30.44	24.91

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	4.11	4.11	4.63	4.58	3.79
2	3.73	3.73	5.47	5.42	4.39
3	3.90	3.90	5.95	5.90	4.82
Average	3.91	3.91	5.35	5.30	4.34

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	4.11	4.11	0.08	0.08	0.07
2	3.73	3.73	0.09	0.09	0.07
3	3.90	3.90	0.09	0.08	0.07
Average	3.91	3.91	0.09	0.08	0.07

STAR PETROLEUM REFINING PUBLIC CO.,LTD.

EMISSION TEST RESULT

Date: May 10, 2024 Start time: 2:40 PM O₂ instrument Model: AMI 70 NO_x instrument Model: API 200 AH SO₂ instrument Model: API 100 AH CO instrument Model: THERMO 48 C Fuel Type : Natural Gas	Run # : 1 Location : NHTU Finish time : 3:00 PM Serial No.: 071023-47 Serial No.: 441 Serial No.: 060 Serial No.: 388 Test Operator : Kittipong T.
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Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
2:40 PM	4.00	27.26	4.74	0.08
2:41 PM	4.06	27.69	4.32	0.12
2:42 PM	4.09	28.18	3.57	0.04
2:43 PM	4.10	28.58	3.64	0.05
2:44 PM	4.13	28.91	3.91	0.10
2:45 PM	4.26	29.06	4.23	0.09
2:46 PM	4.32	29.43	4.36	0.17
2:47 PM	4.32	29.54	4.47	0.05
2:48 PM	4.17	29.53	4.62	0.03
2:49 PM	4.27	29.46	4.67	0.03
2:50 PM	4.11	29.60	4.76	0.09
2:51 PM	4.11	29.83	4.87	0.16
2:52 PM	4.09	29.70	4.87	0.07
2:53 PM	4.04	29.88	4.98	0.07
2:54 PM	4.07	30.34	5.05	0.05
2:55 PM	4.05	30.25	5.00	0.18
2:56 PM	4.00	30.10	4.95	0.07
2:57 PM	3.97	30.09	4.97	0.18
2:58 PM	4.00	29.95	5.07	0.04
2:59 PM	4.04	30.10	5.12	0.06
3:00 PM	4.01	30.15	5.15	0.04
Average	4.11	29.41	4.63	0.08


 Signature _____
Miss Katesarin Vorradetwittaya
Environmental Scientist

STAR PETROLEUM REFINING PUBLIC CO.,LTD.

EMISSION TEST RESULT

Date: May 10, 2024 Start time: 3:01 PM O₂ instrument Model: AMI 70 NO_x instrument Model: API 200 AH SO₂ instrument Model: API 100 AH CO instrument Model: THERMO 48 C Fuel Type : Natural Gas	Run # : 2 Location : NHTU Finish time : 3:21 PM Serial No.: 071023-47 Serial No.: 441 Serial No.: 060 Serial No.: 388 Test Operator : Kittipong T.
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Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
3:01 PM	3.92	30.19	5.30	0.01
3:02 PM	4.00	30.11	5.27	0.06
3:03 PM	4.04	30.03	5.22	0.12
3:04 PM	3.98	30.12	5.30	0.04
3:05 PM	3.98	30.16	5.19	0.03
3:06 PM	3.99	30.19	5.30	0.08
3:07 PM	3.99	30.22	5.33	0.01
3:08 PM	3.89	30.51	5.48	0.17
3:09 PM	3.66	30.44	5.57	0.13
3:10 PM	3.46	30.93	5.47	0.03
3:11 PM	3.45	31.41	5.39	0.22
3:12 PM	3.47	31.21	5.44	0.10
3:13 PM	3.55	31.12	5.52	0.16
3:14 PM	3.60	31.24	5.62	0.13
3:15 PM	3.64	31.25	5.57	0.12
3:16 PM	3.58	31.22	5.60	0.04
3:17 PM	3.53	31.49	5.60	0.11
3:18 PM	3.57	31.36	5.64	0.02
3:19 PM	3.57	31.26	5.73	0.01
3:20 PM	3.65	31.36	5.73	0.14
3:21 PM	3.78	31.25	5.61	0.10
Average	3.73	30.81	5.47	0.09

Signature



Miss Katesarin Vorradetwittaya

Environmental Scientist

STAR PETROLEUM REFINING PUBLIC CO.,LTD.

EMISSION TEST RESULT

Date: <u>May 10, 2024</u> Start time: <u>3:22 PM</u> O₂ instrument Model: <u>AMI 70</u> NO_x instrument Model: <u>API 200 AH</u> SO₂ instrument Model: <u>API 100 AH</u> CO instrument Model: <u>THERMO 48 C</u> Fuel Type : <u>Natural Gas</u>	Run # : <u>3</u> Location : <u>NHTU</u> Finish time : <u>3:42 PM</u> Serial No.: <u>071023-47</u> Serial No.: <u>441</u> Serial No.: <u>060</u> Serial No.: <u>388</u> Test Operator : <u>Kittipong T.</u>
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Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
3:22 PM	3.95	31.17	5.53	0.14
3:23 PM	3.98	30.79	5.56	0.13
3:24 PM	3.86	30.57	5.66	0.04
3:25 PM	3.77	30.44	5.74	0.02
3:26 PM	3.78	30.60	5.84	0.10
3:27 PM	3.62	30.71	5.96	0.03
3:28 PM	3.63	30.85	5.97	0.02
3:29 PM	3.84	31.04	6.03	0.07
3:30 PM	4.06	31.04	5.98	0.01
3:31 PM	3.95	31.17	5.88	0.00
3:32 PM	3.86	30.97	5.89	0.19
3:33 PM	3.74	31.08	5.97	0.10
3:34 PM	3.86	31.19	6.03	0.16
3:35 PM	3.90	31.08	5.91	0.14
3:36 PM	3.96	31.12	5.98	0.02
3:37 PM	4.00	31.48	6.08	0.08
3:38 PM	4.00	31.55	6.23	0.21
3:39 PM	4.05	31.57	6.18	0.05
3:40 PM	3.96	31.79	6.11	0.00
3:41 PM	3.97	31.78	6.17	0.19
3:42 PM	4.09	31.69	6.16	0.19
Average	3.90	31.13	5.95	0.09

Signature



Miss Katesarin Vorradetwittaya

Environmental Scientist



บริษัท ซีคอต จำกัด
SECOT CO., LTD.

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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

STACK EMISSION ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REFERENCE NO.	: Refinery-224003-COA-Stk/PM
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING DATE	: 11/05/2024
RECEIVED DATE	: 13/05/2024	ANALYTICAL DATE	: 13-15/05/2024
REPORT DATE	: 21/05/2024	SAMPLE CONDITION	: Normal
STACK LOCATION	: DHTU Stack	OPERATOR	: Mr. Song Hengchwankun
SOURCE DESCRIPTION	: Combustion	FUEL TYPE	: Natural Gas + Refinery Fuel Gas

STACK DESCRIPTION

Height	: 36.2	m	Gas Velocity	: 6.7	m/s
Diameter	: 1.6	m	Flow rate ⁽¹⁾	: 307.8	Ncu.m/min
Temperature	: 393.0	°C	Excess Oxygen	: 4.4	%

PARAMETER	UNIT	RESULTS ⁽¹⁾		ASSIGNED VALUE ⁽²⁾	STANDARD ⁽³⁾	REFERENCE METHODS
		4.4 % O ₂	7 % O ₂			
Particulate Matter	mg/Ncu.m	3.4	2.9	60	60	US. EPA Method 5

Phatchara Samanchan

(Miss Phatchara Samanchan)

Analyst

REG.NO.จ-239-จ-0021

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO.จ-239-ค-0010

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⁾ Assigned value in EIA Report Expansion 3 of Refinery Plant, B.E. 2561 (2018).

5. ⁽³⁾ Notification of the Ministry of Natural Resources and Environment B.E.2554 (2011).

The Monitoring Result of Emission Concentration
DHTU
STAR PETROLEUM REFINING PUBLIC CO.,LTD.
May 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	4.07	4.01	29.65	29.64	24.39
2	4.49	4.44	28.96	28.95	24.45
3	4.81	4.76	33.82	33.81	29.12
Average	4.46	4.40	30.81	30.80	25.95

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	4.07	4.01	1.28	1.25	1.03
2	4.49	4.44	2.92	2.90	2.45
3	4.81	4.76	3.64	3.63	3.13
Average	4.46	4.40	2.61	2.59	2.19


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	4.07	4.01	4.67	4.65	3.83
2	4.49	4.44	2.45	2.43	2.05
3	4.81	4.76	1.60	1.57	1.35
Average	4.46	4.40	2.91	2.88	2.43

STAR PETROLEUM REFINING PUBLIC CO.,LTD.

EMISSION TEST RESULT

Date: <u>May 11, 2024</u> Start time: <u>12:30 PM</u> O₂ instrument Model: <u>AMI 70</u> NO_x instrument Model: <u>TELEDYNE 200 EM</u> SO₂ instrument Model: <u>API 100 AH</u> CO instrument Model: <u>API 300 A</u> Fuel Type : <u>Natural Gas</u>	Run # : <u>1</u> Location : <u>DHTU</u> Finish time : <u>12:50 PM</u> Serial No.: <u>161212-14</u> Serial No.: <u>435</u> Serial No.: <u>058</u> Serial No.: <u>1070</u> Test Operator : <u>Pisanu S.</u>
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Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
12:30 PM	4.51	28.68	0.92	4.87
12:31 PM	4.29	29.51	1.14	4.14
12:32 PM	4.25	29.97	1.47	4.04
12:33 PM	4.15	30.41	1.54	4.24
12:34 PM	4.17	30.64	1.54	7.99
12:35 PM	4.08	30.90	1.55	3.87
12:36 PM	4.13	30.69	1.37	4.32
12:37 PM	4.11	30.65	1.25	3.32
12:38 PM	4.09	30.32	1.25	2.11
12:39 PM	4.09	30.17	1.08	1.25
12:40 PM	4.07	29.44	0.96	1.08
12:41 PM	4.03	30.16	0.96	1.99
12:42 PM	3.95	30.00	0.78	8.12
12:43 PM	3.97	29.68	0.93	8.09
12:44 PM	4.02	29.49	0.95	9.47
12:45 PM	4.00	29.36	1.10	7.04
12:46 PM	3.98	29.24	1.24	6.09
12:47 PM	3.87	28.99	1.47	4.93
12:48 PM	3.92	28.62	1.54	4.00
12:49 PM	3.89	28.08	1.80	3.59
12:50 PM	3.96	27.58	1.95	3.52
Average	4.07	29.65	1.28	4.67


Signature
Miss Katesarin Vorradetwittaya
Environmental Scientist

STAR PETROLEUM REFINING PUBLIC CO.,LTD.

EMISSION TEST RESULT

Date: <u>May 11, 2024</u> Start time: <u>12:51 PM</u> O₂ instrument Model: <u>AMI 70</u> NO_x instrument Model: <u>TELEDYNE 200 EM</u> SO₂ instrument Model: <u>API 100 AH</u> CO instrument Model: <u>API 300 A</u> Fuel Type : <u>Natural Gas</u>	Run # : <u>2</u> Location : <u>DHTU</u> Finish time : <u>1:11 PM</u> Serial No.: <u>161212-14</u> Serial No.: <u>435</u> Serial No.: <u>058</u> Serial No.: <u>1070</u> Test Operator : <u>Pisanu S.</u>
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Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
12:51 PM	4.08	27.52	2.13	3.29
12:52 PM	4.01	27.42	2.13	3.10
12:53 PM	4.09	27.21	2.40	3.00
12:54 PM	4.07	27.01	2.42	2.80
12:55 PM	4.17	27.15	2.58	2.70
12:56 PM	4.43	27.38	2.73	2.70
12:57 PM	4.52	27.60	2.73	2.70
12:58 PM	4.51	27.77	2.82	2.46
12:59 PM	4.45	27.67	2.82	2.41
1:00 PM	4.50	27.78	3.01	2.41
1:01 PM	4.50	28.04	3.01	2.41
1:02 PM	4.55	28.41	3.01	2.41
1:03 PM	4.69	28.83	3.12	2.41
1:04 PM	4.61	29.05	3.21	2.10
1:05 PM	4.53	29.47	3.13	2.10
1:06 PM	4.73	29.85	3.31	2.09
1:07 PM	4.74	30.66	3.31	2.09
1:08 PM	4.74	31.75	3.36	2.09
1:09 PM	4.81	32.38	3.31	2.09
1:10 PM	4.70	32.55	3.33	2.08
1:11 PM	4.78	32.63	3.54	2.03
Average	4.49	28.96	2.92	2.45

Signature 
Miss Katesarin Vorradetwittaya
Environmental Scientist

STAR PETROLEUM REFINING PUBLIC CO.,LTD.

EMISSION TEST RESULT

Date: <u>May 11, 2024</u> Start time: <u>1:12 PM</u> O₂ instrument Model: <u>AMI 70</u> NO_x instrument Model: <u>TELEDYNE 200 EM</u> SO₂ instrument Model: <u>API 100 AH</u> CO instrument Model: <u>API 300 A</u> Fuel Type : <u>Natural Gas</u>	Run # : <u>3</u> Location : <u>DHTU</u> Finish time : <u>1:32 PM</u> Serial No.: <u>161212-14</u> Serial No.: <u>435</u> Serial No.: <u>058</u> Serial No.: <u>1070</u> Test Operator : <u>Pisanu S.</u>
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Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
1:12 PM	4.77	32.79	3.56	1.79
1:13 PM	4.74	32.86	3.58	1.79
1:14 PM	4.80	33.11	3.57	1.79
1:15 PM	4.79	33.51	3.56	1.78
1:16 PM	4.78	33.62	3.56	1.78
1:17 PM	4.80	33.40	3.56	1.78
1:18 PM	4.77	33.55	3.57	1.78
1:19 PM	4.84	33.81	3.54	1.73
1:20 PM	4.82	34.12	3.53	1.48
1:21 PM	4.86	34.29	3.75	1.48
1:22 PM	4.84	34.18	3.60	1.47
1:23 PM	4.75	34.23	3.52	1.47
1:24 PM	4.71	34.27	3.81	1.32
1:25 PM	4.81	34.28	3.80	1.56
1:26 PM	4.85	34.36	3.80	2.22
1:27 PM	4.96	34.17	3.68	1.54
1:28 PM	4.81	33.92	3.80	1.29
1:29 PM	4.73	33.84	3.79	1.12
1:30 PM	4.72	33.88	3.79	1.47
1:31 PM	4.86	34.01	3.81	1.47
1:32 PM	4.93	34.07	3.24	1.47
Average	4.81	33.82	3.64	1.60


 Signature _____
Miss Katesarin Vorradetwittaya
Environmental Scientist



บริษัท ซีคอต จำกัด
SECOT CO., LTD.

239 ถนนริมคลองประปา แขวงบางซื่อ เขตบางซื่อ กรุงเทพฯ 10800

239 RIMKLONGPRAPA ROAD, BANGSUE, BANGKOK 10800, THAILAND

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STACK EMISSION ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REFERENCE NO.	: Refinery-224003-COA-Stk/PM
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING DATE	: 11/05/2024
RECEIVED DATE	: 13/05/2024	ANALYTICAL DATE	: 13-15/05/2024
REPORT DATE	: 21/05/2024	SAMPLE CONDITION	: Normal
STACK LOCATION	: HVGO-HTU Stack	OPERATOR	: Mr. Song Hengchwankun
SOURCE DESCRIPTION	: Combustion	FUEL TYPE	: Natural Gas + Refinery Fuel Gas

STACK DESCRIPTION

Height	: 36.2	m	Gas Velocity	: 7.2	m/s
Diameter	: 1.6	m	Flow rate ⁽¹⁾	: 343.5	Ncu.m/min
Temperature	: 362.0	°C	Excess Oxygen	: 6.9	%

PARAMETER	UNIT	RESULTS ⁽¹⁾		ASSIGNED VALUE ⁽²⁾	STANDARD ⁽³⁾	REFERENCE METHODS
		6.9 % O ₂	7 % O ₂			
Particulate Matter	mg/Ncu.m	2.6	2.6	60	60	US. EPA Method 5

Phatchara Samanchan

(Miss Phatchara Samanchan)

Analyst

REG.NO.จ-239-จ-0021

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO.จ-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.

4. ⁽²⁾ Assigned value in EIA Report Expansion 3 of Refinery Plant, B.E. 2561 (2018).

5. ⁽³⁾ Notification of the Ministry of Natural Resources and Environment B.E.2554 (2011).

The Monitoring Result of Emission Concentration
HVGO
STAR PETROLEUM REFINING PUBLIC CO.,LTD.
May 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	6.53	6.51	55.86	55.87	53.97
2	7.02	7.01	56.40	56.41	56.45
3	7.25	7.24	55.37	55.38	56.35
Average	6.93	6.92	55.88	55.89	55.57

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	6.53	6.51	0.91	0.88	0.85
2	7.02	7.01	1.22	1.19	1.19
3	7.25	7.24	1.24	1.21	1.23
Average	6.93	6.92	1.12	1.09	1.09

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	6.53	6.51	5.28	5.27	5.09
2	7.02	7.01	1.07	1.06	1.06
3	7.25	7.24	0.36	0.34	0.35
Average	6.93	6.92	2.24	2.22	2.21

STAR PETROLEUM REFINING PUBLIC CO.,LTD.

EMISSION TEST RESULT

Date: May 11, 2024 Start time: 10:30 AM O₂ instrument Model: AMI 70 NO_x instrument Model: Teledyne 200 EM SO₂ instrument Model: API 100 AH CO instrument Model: API 300 A Fuel Type : Natural Gas	Run # : 1 Location : HVGO Finish time : 10:50 AM Serial No.: 161212-14 Serial No.: 435 Serial No.: 058 Serial No.: 1070 Test Operator : Pisanu S.
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Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
10:30 AM	6.33	55.37	2.37	5.83
10:31 AM	6.59	55.87	2.01	7.50
10:32 AM	6.41	56.09	1.58	7.81
10:33 AM	6.33	55.94	1.19	8.00
10:34 AM	6.33	55.54	0.86	8.10
10:35 AM	6.47	55.12	0.60	8.07
10:36 AM	6.46	55.09	0.29	7.78
10:37 AM	6.49	55.49	0.09	7.21
10:38 AM	6.49	55.65	0.20	6.59
10:39 AM	6.49	55.83	0.35	5.96
10:40 AM	6.53	55.77	0.53	5.34
10:41 AM	6.55	55.64	0.62	4.85
10:42 AM	6.54	55.87	0.62	4.35
10:43 AM	6.61	55.98	0.31	3.96
10:44 AM	6.49	56.15	2.12	3.60
10:45 AM	6.47	56.32	0.78	3.25
10:46 AM	6.44	56.14	0.90	2.98
10:47 AM	6.77	56.00	0.95	2.68
10:48 AM	6.80	56.28	0.31	2.53
10:49 AM	6.79	56.57	1.84	2.39
10:50 AM	6.66	56.25	0.57	2.16
Average	6.53	55.86	0.91	5.28

Signature 

Miss Katesarin Vorradetwittaya
Environmental Scientist

STAR PETROLEUM REFINING PUBLIC CO.,LTD.

EMISSION TEST RESULT

Date: <u>May 11, 2024</u> Start time: <u>10:51 AM</u> O₂ instrument Model: <u>AMI 70</u> NO_x instrument Model: <u>Teledyne 200 EM</u> SO₂ instrument Model: <u>API 100 AH</u> CO instrument Model: <u>API 300 A</u> Fuel Type : <u>Natural Gas</u>	Run # : <u>2</u> Location : <u>HVGO</u> Finish time : <u>11:11 AM</u> Serial No.: <u>161212-14</u> Serial No.: <u>435</u> Serial No.: <u>058</u> Serial No.: <u>1070</u> Test Operator : <u>Pisanu S.</u>
--	--

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
10:51 AM	6.74	56.18	1.12	2.08
10:52 AM	6.79	56.59	0.15	1.82
10:53 AM	6.75	56.73	1.60	1.79
10:54 AM	6.77	56.82	0.48	1.59
10:55 AM	6.67	56.90	0.40	1.49
10:56 AM	6.80	56.74	0.03	1.49
10:57 AM	6.65	56.78	2.21	1.24
10:58 AM	6.68	56.96	1.63	1.19
10:59 AM	6.79	56.64	2.04	1.19
11:00 AM	6.69	56.64	0.20	1.09
11:01 AM	6.65	56.85	0.34	0.89
11:02 AM	6.63	56.71	2.98	0.89
11:03 AM	6.60	56.56	0.83	0.88
11:04 AM	6.60	56.38	0.60	0.74
11:05 AM	6.86	56.39	3.46	0.60
11:06 AM	7.36	55.96	1.52	0.59
11:07 AM	7.81	55.59	3.46	0.59
11:08 AM	7.83	55.60	0.01	0.59
11:09 AM	7.91	55.84	1.98	0.59
11:10 AM	7.90	55.91	0.09	0.59
11:11 AM	7.91	55.67	0.49	0.59
Average	7.02	56.40	1.22	1.07

Signature



Miss Katesarin Vorradetwittaya

Environmental Scientist

STAR PETROLEUM REFINING PUBLIC CO.,LTD.

EMISSION TEST RESULT

Date: <u>May 11, 2024</u> Start time: <u>11:12 AM</u> O₂ instrument Model: <u>AMI 70</u> NO_x instrument Model: <u>Teledyne 200 EM</u> SO₂ instrument Model: <u>API 100 AH</u> CO instrument Model: <u>API 300 A</u> Fuel Type : <u>Natural Gas</u>	Run # : <u>3</u> Location : <u>HVGO</u> Finish time : <u>11:32 AM</u> Serial No.: <u>161212-14</u> Serial No.: <u>435</u> Serial No.: <u>058</u> Serial No.: <u>1070</u> Test Operator : <u>Pisanu S.</u>
--	--

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
11:12 AM	7.87	55.55	1.94	0.59
11:13 AM	7.81	55.56	1.74	0.59
11:14 AM	7.80	55.39	0.41	0.54
11:15 AM	7.71	55.13	2.26	0.29
11:16 AM	7.54	55.08	0.18	0.29
11:17 AM	7.47	55.22	1.39	0.29
11:18 AM	7.38	55.22	1.27	0.29
11:19 AM	7.41	55.22	3.00	0.28
11:20 AM	7.28	55.38	1.77	0.28
11:21 AM	7.20	55.58	1.83	0.19
11:22 AM	7.23	55.72	1.14	0.32
11:23 AM	7.19	55.72	0.71	0.32
11:24 AM	7.20	55.78	0.45	0.32
11:25 AM	7.16	55.53	0.09	0.32
11:26 AM	7.14	55.11	0.86	0.32
11:27 AM	7.00	55.22	1.26	0.32
11:28 AM	6.87	55.33	0.51	0.33
11:29 AM	6.83	55.31	1.33	0.36
11:30 AM	6.77	55.39	1.80	0.39
11:31 AM	6.72	55.40	1.94	0.40
11:32 AM	6.69	54.89	0.14	0.45
Average	7.25	55.37	1.24	0.36

Signature



Miss Katesarin Vorradetwittaya

Environmental Scientist



บริษัท ซีคอต จำกัด

SECOT CO., LTD.

239 ถนนริมคลองประปา แขวงบางซื่อ เขตบางซื่อ กรุงเทพฯ 10800

239 RIMKLONGPRAPA ROAD, BANGSUE, BANGKOK 10800, THAILAND

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

STACK EMISSION ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REFERENCE NO.	: Refinery-224003-COA-Stk/PM
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING DATE	: 11/05/2024
RECEIVED DATE	: 13/05/2024	ANALYTICAL DATE	: 13-15/05/2024
REPORT DATE	: 21/05/2024	SAMPLE CONDITION	: Normal
STACK LOCATION	: WCN-HTU Stack	OPERATOR	: Mr. Song Hengchwankun
SOURCE DESCRIPTION	: Combustion	FUEL TYPE	: Natural Gas + Refinery Fuel Gas

STACK DESCRIPTION

Height	: 32.5	m	Gas Velocity	: 5.4	m/s
Diameter	: 0.86	m	Flow rate ⁽¹⁾	: 87.3	Ncu.m/min
Temperature	: 280.0	°C	Excess Oxygen	: 4.6	%

PARAMETER	UNIT	RESULTS ⁽¹⁾		ASSIGNED VALUE ⁽²⁾	STANDARD ⁽³⁾	REFERENCE METHODS
		4.6 % O ₂	7 % O ₂			
Particulate Matter	mg/Ncu.m	2.4	2.0	35	60	US. EPA Method 5

Phatchara Samanchan

(Miss Phatchara Samanchan)

Analyst

REG.NO.จ-239-จ-0021

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO.จ-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.

4. ⁽²⁾ Assigned value in EIA Report Expansion 3 of Refinery Plant, B.E. 2561 (2018).

5. ⁽³⁾ Notification of the Ministry of Natural Resources and Environment B.E.2554 (2011).

The Monitoring Result of Emission Concentration
WCN-HTU
STAR PETROLEUM REFINING PUBLIC CO.,LTD.
May 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	4.53	4.54	14.35	14.32	12.17
2	4.57	4.58	15.42	15.39	13.11
3	4.53	4.54	15.66	15.63	13.28
Average	4.54	4.55	15.14	15.11	12.85

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	4.53	4.54	2.43	2.38	2.02
2	4.57	4.58	3.01	2.97	2.53
3	4.53	4.54	3.04	3.00	2.55
Average	4.54	4.55	2.83	2.78	2.37

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	4.53	4.54	0.84	0.79	0.67
2	4.57	4.58	0.49	0.44	0.37
3	4.53	4.54	0.31	0.27	0.23
Average	4.54	4.55	0.54	0.50	0.43

STAR PETROLEUM REFINING PUBLIC CO.,LTD.

EMISSION TEST RESULT

Date: May 11, 2024 Start time: 10:50 AM O₂ instrument Model: AMI 70 NO_x instrument Model: API 200 AH SO₂ instrument Model: API 100 AH CO instrument Model: THERMO 48 C Fuel Type : Natural Gas	Run # : 1 Location : WCN-HTU Finish time : 11:10 AM Serial No.: 071023-47 Serial No.: 441 Serial No.: 60 Serial No.: 388 Test Operator : Kittipong T.
--	--

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
10:50 AM	4.78	13.58	1.11	0.23
10:51 AM	4.75	13.60	1.14	0.43
10:52 AM	4.65	13.51	1.42	0.65
10:53 AM	4.66	13.63	1.71	0.99
10:54 AM	4.47	13.65	1.88	1.09
10:55 AM	4.51	13.75	2.07	1.23
10:56 AM	4.44	14.09	2.21	1.33
10:57 AM	4.47	14.13	2.38	1.31
10:58 AM	4.40	14.10	2.54	1.05
10:59 AM	4.41	14.26	2.63	0.92
11:00 AM	4.47	14.59	2.75	0.82
11:01 AM	4.45	14.58	2.75	0.73
11:02 AM	4.50	14.43	2.83	0.82
11:03 AM	4.59	14.53	2.88	0.83
11:04 AM	4.57	14.99	2.89	0.83
11:05 AM	4.64	15.23	2.92	0.80
11:06 AM	4.64	15.20	2.95	0.58
11:07 AM	4.45	14.96	3.01	0.40
11:08 AM	4.40	14.96	2.98	0.69
11:09 AM	4.40	14.74	3.01	0.87
11:10 AM	4.44	14.84	2.92	0.99
Average	4.53	14.35	2.43	0.84


 Signature _____
Miss Katesarin Vorradetwittaya
Environmental Scientist

STAR PETROLEUM REFINING PUBLIC CO.,LTD.

EMISSION TEST RESULT

Date: <u>May 11, 2024</u> Start time: <u>11:11 AM</u> O₂ instrument Model: <u>AMI 70</u> NO_x instrument Model: <u>API 200 AH</u> SO₂ instrument Model: <u>API 100 AH</u> CO instrument Model: <u>THERMO 48 C</u> Fuel Type : <u>Natural Gas</u>	Run # : <u>2</u> Location : <u>WCN-HTU</u> Finish time : <u>11:31 AM</u> Serial No.: <u>071023-47</u> Serial No.: <u>441</u> Serial No.: <u>60</u> Serial No.: <u>388</u> Test Operator : <u>Kittipong T.</u>
---	--

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
11:11 AM	4.44	14.82	2.98	1.21
11:12 AM	4.45	15.03	2.99	1.17
11:13 AM	4.48	14.99	2.95	0.89
11:14 AM	4.50	14.93	3.00	0.74
11:15 AM	4.58	15.18	2.97	0.64
11:16 AM	4.50	15.36	3.00	0.46
11:17 AM	4.56	15.38	2.97	0.39
11:18 AM	4.74	15.68	2.98	0.20
11:19 AM	4.69	15.68	3.01	0.22
11:20 AM	4.60	15.19	2.96	0.32
11:21 AM	4.63	15.17	2.99	0.32
11:22 AM	4.62	15.36	3.06	0.35
11:23 AM	4.66	15.46	3.05	0.42
11:24 AM	4.54	15.51	3.09	0.35
11:25 AM	4.60	15.41	3.02	0.32
11:26 AM	4.56	15.52	3.05	0.50
11:27 AM	4.65	15.91	3.08	0.44
11:28 AM	4.59	16.17	3.05	0.32
11:29 AM	4.45	15.95	3.03	0.38
11:30 AM	4.45	15.52	2.98	0.40
11:31 AM	4.62	15.59	3.03	0.22
Average	4.57	15.42	3.01	0.49

Signature



Miss Katesarin Vorradetwittaya

Environmental Scientist

STAR PETROLEUM REFINING PUBLIC CO.,LTD.

EMISSION TEST RESULT

Date: <u>May 11, 2024</u> Start time: <u>11:32 AM</u> O₂ instrument Model: <u>AMI 70</u> NO_x instrument Model: <u>API 200 AH</u> SO₂ instrument Model: <u>API 100 AH</u> CO instrument Model: <u>THERMO 48 C</u> Fuel Type : <u>Natural Gas</u>	Run # : <u>3</u> Location : <u>WCN-HTU</u> Finish time : <u>11:52 AM</u> Serial No.: <u>071023-47</u> Serial No.: <u>441</u> Serial No.: <u>60</u> Serial No.: <u>388</u> Test Operator : <u>Kittipong T.</u>
---	--

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
11:32 AM	4.58	15.93	2.94	0.25
11:33 AM	4.62	15.74	2.95	0.40
11:34 AM	4.57	15.62	3.02	0.32
11:35 AM	4.49	15.68	3.00	0.23
11:36 AM	4.46	15.72	2.99	0.28
11:37 AM	4.59	15.62	3.00	0.30
11:38 AM	4.62	15.67	3.02	0.21
11:39 AM	4.59	15.74	3.07	0.26
11:40 AM	4.46	15.48	3.03	0.32
11:41 AM	4.45	15.50	3.09	0.26
11:42 AM	4.38	15.67	3.04	0.33
11:43 AM	4.46	15.36	3.06	0.45
11:44 AM	4.50	15.35	3.17	0.47
11:45 AM	4.47	15.71	3.13	0.42
11:46 AM	4.53	15.69	3.07	0.50
11:47 AM	4.66	15.64	3.01	0.45
11:48 AM	4.60	15.93	3.02	0.30
11:49 AM	4.64	15.94	3.06	0.22
11:50 AM	4.59	15.85	3.10	0.13
11:51 AM	4.44	15.60	3.07	0.13
11:52 AM	4.45	15.33	3.05	0.22
Average	4.53	15.66	3.04	0.31

Signature



Miss Katesarin Vorradetwittaya

Environmental Scientist



บริษัท ซีคอต จำกัด

SECOT CO., LTD.

239 ถนนริมคลองประปา แขวงบางซื่อ เขตบางซื่อ กรุงเทพฯ 10800

239 RIMKLONGPRAPA ROAD, BANGSUE, BANGKOK 10800, THAILAND

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

STACK EMISSION ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REFERENCE NO.	: Refinery-224003-COA-Stk/PM
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING DATE	: 08/05/2024
RECEIVED DATE	: 13/05/2024	ANALYTICAL DATE	: 13-15/05/2024
REPORT DATE	: 21/05/2024	SAMPLE CONDITION	: Normal
STACK LOCATION	: Boiler#1 Stack	OPERATOR	: Mr. Song Hengchwankun
SOURCE DESCRIPTION	: Combustion	FUEL TYPE	: Natural Gas + Refinery Fuel Gas

STACK DESCRIPTION

Height	: 32.4	m	Gas Velocity	: 13.5	m/s
Diameter	: 1.5	m	Flow rate ⁽¹⁾	: 845.4	Ncu.m/min
Temperature	: 171.4	°C	Excess Oxygen	: 4.6	%

PARAMETER	UNIT	RESULTS ⁽¹⁾		ASSIGNED VALUE ⁽²⁾	STANDARD ⁽³⁾	REFERENCE METHODS
		4.6 % O ₂	7 % O ₂			
Particulate Matter	mg/Ncu.m	2.4	2.1	60	60	US. EPA Method 5

Phatchara Samanchan

(Miss Phatchara Samanchan)

Analyst

REG.NO.จ-239-จ-0021

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO.จ-239-ค-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⁾ Assigned value in EIA Report Expansion 3 of Refinery Plant, B.E. 2561 (2018).

5. ⁽³⁾ Notification of the Ministry of Natural Resources and Environment B.E.2554 (2011).

The Monitoring Result of Emission Concentration
Boiler 1
STAR PETROLEUM REFINING PUBLIC CO.,LTD.
May 8, 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	4.60	4.60	88.19	88.23	75.24
2	4.60	4.60	86.21	86.24	73.54
3	4.56	4.56	85.32	85.35	72.60
Average	4.59	4.59	86.57	86.61	73.79

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	4.60	4.60	2.21	2.17	1.85
2	4.60	4.60	2.45	2.42	2.06
3	4.56	4.56	2.62	2.59	2.20
Average	4.59	4.59	2.43	2.39	2.04

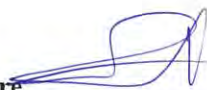
Run Number	Oxygen content (%)		Carbonmonoxide (ppm)		
	RM Stack Gas Conc	Corrected Gas Conc	RM Stack Gas Conc	Corrected Gas Conc @Actual O2	Corrected Gas Conc @7% O2
1	4.60	4.60	8.84	8.79	7.50
2	4.60	4.60	7.59	7.54	6.43
3	4.56	4.56	8.73	8.69	7.39
Average	4.59	4.59	8.39	8.34	7.11

STAR PETROLEUM REFINING PUBLIC CO.,LTD.

EMISSION TEST RESULT

Date: <u>May 8, 2024</u> Start time: <u>10:40 AM</u> O₂ instrument Model: <u>AMI 70</u> NO_x instrument Model: <u>TELEDYNE 200 EM</u> SO₂ instrument Model: <u>API 100 AH</u> CO instrument Model: <u>API 300 A</u> Fuel Type : <u>Natural Gas</u>	Run # : <u>1</u> Location : <u>Boiler 1</u> Finish time : <u>11:00 AM</u> Serial No.: <u>161212-14</u> Serial No.: <u>435</u> Serial No.: <u>058</u> Serial No.: <u>1070</u> Test Operator : <u>Song H.</u>
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Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
10:40 AM	4.71	86.58	2.03	1.45
10:41 AM	4.52	86.57	2.06	10.70
10:42 AM	4.47	87.91	2.09	12.51
10:43 AM	4.75	88.49	2.15	2.40
10:44 AM	4.44	87.84	2.30	3.22
10:45 AM	4.56	88.49	2.25	17.72
10:46 AM	4.64	89.02	2.20	5.88
10:47 AM	4.57	88.11	2.15	4.05
10:48 AM	4.57	88.43	2.19	21.81
10:49 AM	4.65	89.02	2.18	6.43
10:50 AM	4.47	88.36	2.21	2.95
10:51 AM	4.78	88.64	2.19	12.67
10:52 AM	4.26	89.87	2.23	10.35
10:53 AM	4.76	89.17	2.20	1.44
10:54 AM	4.59	88.57	2.30	11.35
10:55 AM	4.44	88.94	2.29	8.84
10:56 AM	4.76	88.56	2.21	0.87
10:57 AM	4.56	87.24	2.29	11.21
10:58 AM	4.69	87.40	2.29	24.09
10:59 AM	4.75	87.63	2.33	2.37
11:00 AM	4.74	87.13	2.33	13.29
Average	4.60	88.19	2.21	8.84


 Signature _____
Miss Katesarin Vorradetwittaya
Environmental Scientist

STAR PETROLEUM REFINING PUBLIC CO.,LTD.

EMISSION TEST RESULT

Date: <u>May 8, 2024</u> Start time: <u>11:01 AM</u> O₂ instrument Model: <u>AMI 70</u> NO_x instrument Model: <u>TELEDYNE 200 EM</u> SO₂ instrument Model: <u>API 100 AH</u> CO instrument Model: <u>API 300 A</u> Fuel Type : <u>Natural Gas</u>	Run # : <u>2</u> Location : <u>Boiler 1</u> Finish time : <u>11:21 AM</u> Serial No.: <u>161212-14</u> Serial No.: <u>435</u> Serial No.: <u>058</u> Serial No.: <u>1070</u> Test Operator : <u>Song H.</u>
---	--

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
11:01 AM	4.63	87.50	2.31	12.54
11:02 AM	4.86	87.36	2.39	1.93
11:03 AM	4.58	86.55	2.33	5.36
11:04 AM	4.74	87.09	2.37	12.02
11:05 AM	4.68	87.21	2.35	4.56
11:06 AM	4.83	85.47	2.43	0.52
11:07 AM	4.47	84.81	2.39	0.85
11:08 AM	4.51	85.76	2.39	1.49
11:09 AM	4.57	86.09	2.45	1.99
11:10 AM	4.54	85.89	2.38	2.23
11:11 AM	4.63	86.04	2.41	8.83
11:12 AM	4.57	86.61	2.40	23.83
11:13 AM	4.54	86.79	2.40	8.26
11:14 AM	4.45	86.01	2.51	3.47
11:15 AM	4.85	86.15	2.50	22.84
11:16 AM	4.36	86.74	2.55	15.58
11:17 AM	4.61	85.96	2.50	2.27
11:18 AM	4.47	85.44	2.56	13.59
11:19 AM	4.55	85.90	2.53	10.69
11:20 AM	4.62	85.90	2.62	4.24
11:21 AM	4.60	85.06	2.63	2.26
Average	4.60	86.21	2.45	7.59

Signature



Miss Katesarin Vorradetwittaya

Environmental Scientist

STAR PETROLEUM REFINING PUBLIC CO.,LTD.

EMISSION TEST RESULT

Date: <u>May 8, 2024</u> Start time: <u>11:22 AM</u> O₂ instrument Model: <u>AMI 70</u> NO_x instrument Model: <u>TELEDYNE 200 EM</u> SO₂ instrument Model: <u>API 100 AH</u> CO instrument Model: <u>API 300 A</u> Fuel Type : <u>Natural Gas</u>	Run # : <u>3</u> Location : <u>Boiler 1</u> Finish time : <u>11:42 AM</u> Serial No.: <u>161212-14</u> Serial No.: <u>435</u> Serial No.: <u>058</u> Serial No.: <u>1070</u> Test Operator : <u>Song H.</u>
---	--

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
11:22 AM	4.54	84.88	2.59	15.46
11:23 AM	4.48	85.61	2.63	12.34
11:24 AM	4.80	85.09	2.61	1.82
11:25 AM	4.52	84.19	2.59	8.35
11:26 AM	4.83	84.55	2.57	13.74
11:27 AM	4.66	85.09	2.61	5.47
11:28 AM	4.62	84.75	2.63	3.12
11:29 AM	4.63	84.90	2.67	18.44
11:30 AM	4.31	85.62	2.66	16.98
11:31 AM	4.60	85.40	2.65	3.29
11:32 AM	4.43	84.94	2.62	2.77
11:33 AM	4.54	85.30	2.66	18.38
11:34 AM	4.39	85.91	2.59	10.08
11:35 AM	4.79	85.76	2.60	1.07
11:36 AM	4.24	85.47	2.60	5.14
11:37 AM	4.29	86.09	2.61	13.11
11:38 AM	4.79	86.10	2.61	1.38
11:39 AM	4.51	85.11	2.59	2.79
11:40 AM	4.63	85.34	2.61	20.40
11:41 AM	4.53	86.03	2.63	7.60
11:42 AM	4.64	85.50	2.67	1.70
Average	4.56	85.32	2.62	8.73

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	: Star Petroleum Refining Public Co., Ltd.	REFERENCE NO.	: Refinery-224003-COA-Stk/PM
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING DATE	: 08/05/2024
RECEIVED DATE	: 13/05/2024	ANALYTICAL DATE	: 13-15/05/2024
REPORT DATE	: 21/05/2024	SAMPLE CONDITION	: Normal
STACK LOCATION	: Boiler#3 Stack	OPERATOR	: Mr. Song Hengchwankun
SOURCE DESCRIPTION	: Combustion	FUEL TYPE	: Natural Gas + Refinery Fuel Gas

STACK DESCRIPTION

Height	: 32.4	m	Gas Velocity	: 9.3	m/s
Diameter	: 1.5	m	Flow rate ⁽¹⁾	: 602.4	Ncu.m/min
Temperature	: 156.3	°C	Excess Oxygen	: 2.4	%

PARAMETER	UNIT	RESULTS ⁽¹⁾		ASSIGNED VALUE ⁽²⁾	STANDARD ⁽³⁾	REFERENCE METHODS
		2.4 % O ₂	7 % O ₂			
Particulate Matter	mg/Ncu.m	1.9	1.4	60	60	US. EPA Method 5

Phatchara Samanchan

(Miss Phatchara Samanchan)

Analyst

REG.NO.จ-239-จ-0021

Narisa Poowasanpeth

(Miss Narisa Poowasanpeth)

Technical Management Team

REG.NO.จ-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⁾ Assigned value in EIA Report Expansion 3 of Refinery Plant, B.E. 2561 (2018).

5. ⁽³⁾ Notification of the Ministry of Natural Resources and Environment B.E.2554 (2011).

The Monitoring Result of Emission Concentration
Boiler 3
STAR PETROLEUM REFINING PUBLIC CO.,LTD.
May 8, 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	2.44	2.40	45.85	45.86	34.46
2	2.45	2.43	45.86	45.87	34.52
3	2.47	2.46	45.71	45.72	34.46
Average	2.45	2.43	45.81	45.82	34.48

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	2.44	2.40	1.11	1.07	0.80
2	2.45	2.43	1.07	1.04	0.78
3	2.47	2.46	0.98	0.95	0.72
Average	2.45	2.43	1.06	1.02	0.77


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	2.44	2.40	1.66	1.61	1.21
2	2.45	2.43	1.71	1.67	1.26
3	2.47	2.46	1.57	1.53	1.15
Average	2.45	2.43	1.65	1.60	1.21

STAR PETROLEUM REFINING PUBLIC CO.,LTD.

EMISSION TEST RESULT

Date: <u>May 8, 2024</u> Start time: <u>11:00 AM</u> O₂ instrument Model: <u>AMI 70</u> NO_x instrument Model: <u>Teledyne 200 EM</u> SO₂ instrument Model: <u>THERMO 43 C</u> CO instrument Model: <u>THERMO 48 C</u> Fuel Type : <u>Natural Gas</u>	Run # : <u>1</u> Location : <u>Boiler 3</u> Finish time : <u>11:20 AM</u> Serial No.: <u>121121-10</u> Serial No.: <u>433</u> Serial No.: <u>58702-319</u> Serial No.: <u>0412106049</u> Test Operator : <u>Song H.</u>
--	--

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
11:00 AM	2.44	46.02	1.07	1.93
11:01 AM	2.49	45.95	1.13	1.81
11:02 AM	2.48	45.86	1.22	1.83
11:03 AM	2.47	45.78	1.24	1.84
11:04 AM	2.44	45.74	1.23	1.82
11:05 AM	2.42	45.73	1.23	1.60
11:06 AM	2.41	45.76	1.15	1.55
11:07 AM	2.43	45.85	1.07	1.66
11:08 AM	2.47	45.98	1.08	1.61
11:09 AM	2.47	45.98	1.03	1.60
11:10 AM	2.45	45.86	1.06	1.54
11:11 AM	2.47	45.76	1.04	1.60
11:12 AM	2.48	45.75	1.04	1.62
11:13 AM	2.44	45.79	1.10	1.51
11:14 AM	2.43	45.85	1.08	1.54
11:15 AM	2.43	45.83	1.10	1.54
11:16 AM	2.42	45.87	1.09	1.49
11:17 AM	2.43	45.87	1.11	1.60
11:18 AM	2.45	45.87	1.11	1.77
11:19 AM	2.43	45.86	1.09	1.75
11:20 AM	2.39	45.98	1.09	1.73
Average	2.44	45.85	1.11	1.66


 Signature _____
Miss Katesarin Vorradetwittaya
Environmental Scientist

STAR PETROLEUM REFINING PUBLIC CO.,LTD.

EMISSION TEST RESULT

Date: May 8, 2024 Start time: 11:21 AM O₂ instrument Model: AMI 70 NO_x instrument Model: Teledyne 200 EM SO₂ instrument Model: THERMO 43 C CO instrument Model: THERMO 48 C Fuel Type : Natural Gas	Run # : 2 Location : Boiler 3 Finish time : 11:41 AM Serial No.: 121121-10 Serial No.: 433 Serial No.: 58702-319 Serial No.: 0412106049 Test Operator : Song H.
---	--

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
11:21 AM	2.39	46.00	1.07	1.64
11:22 AM	2.38	45.93	1.07	1.73
11:23 AM	2.43	45.89	1.07	1.65
11:24 AM	2.43	45.90	1.07	1.76
11:25 AM	2.45	45.90	1.09	1.91
11:26 AM	2.48	45.85	1.07	1.99
11:27 AM	2.42	45.87	1.07	2.48
11:28 AM	2.44	45.91	1.07	1.72
11:29 AM	2.42	45.95	1.03	1.57
11:30 AM	2.37	45.88	1.04	1.53
11:31 AM	2.45	45.73	1.01	1.58
11:32 AM	2.53	45.71	1.02	1.64
11:33 AM	2.50	45.78	1.06	1.55
11:34 AM	2.50	45.91	1.05	1.75
11:35 AM	2.49	45.98	1.07	1.65
11:36 AM	2.50	45.94	1.13	1.54
11:37 AM	2.47	45.89	1.15	1.66
11:38 AM	2.42	45.74	1.16	1.72
11:39 AM	2.50	45.73	1.10	1.72
11:40 AM	2.50	45.77	1.06	1.59
11:41 AM	2.42	45.80	1.03	1.54
Average	2.45	45.86	1.07	1.71

Signature



Miss Katesarin Vorradetwittaya

Environmental Scientist

STAR PETROLEUM REFINING PUBLIC CO.,LTD.

EMISSION TEST RESULT

Date: <u>May 8, 2024</u> Start time: <u>11:42 AM</u> O₂ instrument Model: <u>AMI 70</u> NO_x instrument Model: <u>Teledyne 200 EM</u> SO₂ instrument Model: <u>THERMO 43 C</u> CO instrument Model: <u>THERMO 48 C</u> Fuel Type : <u>Natural Gas</u>	Run # : <u>3</u> Location : <u>Boiler 3</u> Finish time : <u>12:02 PM</u> Serial No.: <u>121121-10</u> Serial No.: <u>433</u> Serial No.: <u>58702-319</u> Serial No.: <u>0412106049</u> Test Operator : <u>Song H.</u>
--	--

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
11:42 AM	2.38	45.80	0.98	1.49
11:43 AM	2.47	45.85	1.00	1.45
11:44 AM	2.43	45.95	0.96	1.54
11:45 AM	2.52	45.97	0.98	1.53
11:46 AM	2.49	45.95	1.01	1.47
11:47 AM	2.49	45.92	0.96	1.48
11:48 AM	2.42	45.99	0.96	1.51
11:49 AM	2.41	45.92	0.95	1.58
11:50 AM	2.44	45.74	0.90	1.65
11:51 AM	2.52	45.60	0.88	1.73
11:52 AM	2.52	45.63	0.87	1.64
11:53 AM	2.49	45.65	0.89	1.61
11:54 AM	2.52	45.67	0.93	1.66
11:55 AM	2.52	45.70	1.01	1.64
11:56 AM	2.46	45.63	1.03	1.68
11:57 AM	2.44	45.51	1.04	1.63
11:58 AM	2.49	45.51	1.05	1.68
11:59 AM	2.43	45.54	1.07	1.55
12:00 PM	2.39	45.51	1.07	1.46
12:01 PM	2.48	45.49	1.02	1.52
12:02 PM	2.52	45.40	1.06	1.55
Average	2.47	45.71	0.98	1.57


Signature _____
Miss Katesarin Vorradetwittaya
Environmental Scientist



บริษัท ซีคอต จำกัด
SECOT CO., LTD.

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

STACK EMISSION ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REFERENCE NO.	: Refinery-224003-COA-Stk/PM
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING DATE	: 09/05/2024
RECEIVED DATE	: 13/05/2024	ANALYTICAL DATE	: 13-15/05/20224
REPORT DATE	: 21/05/2024	SAMPLE CONDITION	: Normal
STACK LOCATION	: HRSG#1 Stack	OPERATOR	: Mr. Song Hengchwankun
SOURCE DESCRIPTION	: Combustion	FUEL TYPE	: Natural Gas + Refinery Fuel Gas

STACK DESCRIPTION

Height	: 21.7	m	Gas Velocity	: 12.9	m/s
Diameter	: 3.0	m	Flow rate ⁽¹⁾	: 3,006	Ncu.m/min
Temperature	: 201.5	°C	Excess Oxygen	: 14.0	%

PARAMETER	UNIT	RESULTS ⁽¹⁾		ASSIGNED VALUE ⁽²⁾	STANDARD ⁽³⁾	REFERENCE METHODS
		14.0 % O ₂	7 % O ₂			
Particulate Matter	mg/Ncu.m	1.8	3.6	60	60	US. EPA Method 5

Phatchara Samanchan

(Miss Phatchara Samanchan)

Analyst

REG.NO.จ-239-จ-0021

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO.จ-239-ค-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⁾ Assigned value in EIA Report Expansion 3 of Refinery Plant, B.E. 2561 (2018).

5. ⁽³⁾ Notification of the Ministry of Natural Resources and Environment B.E.2554 (2011).

The Monitoring Result of Emission Concentration
HRSG 1
STAR PETROLEUM REFINING PUBLIC CO.,LTD.
May 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	13.94	14.01	49.80	49.81	100.49
2	13.92	13.99	44.91	44.92	90.36
3	13.92	13.98	43.85	43.86	88.10
Average	13.92	13.99	46.19	46.20	92.97

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	13.94	14.01	1.63	1.59	3.21
2	13.92	13.99	1.29	1.25	2.51
3	13.92	13.98	1.36	1.32	2.65
Average	13.92	13.99	1.43	1.39	2.79

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	13.94	14.01	1.07	1.02	2.06
2	13.92	13.99	1.17	1.11	2.23
3	13.92	13.98	1.08	1.02	2.05
Average	13.92	13.99	1.10	1.05	2.11

STAR PETROLEUM REFINING PUBLIC CO.,LTD.

EMISSION TEST RESULT

Date: <u>May 9, 2024</u> Start time: <u>11:20 AM</u> O₂ instrument Model: <u>AMI 70</u> NO_x instrument Model: <u>API 200 AH</u> SO₂ instrument Model: <u>API 100 AH</u> CO instrument Model: <u>THERMO 48 C</u> Fuel Type : <u>Natural Gas</u>	Run # : <u>1</u> Location : <u>HRSG 1</u> Finish time : <u>11:40 AM</u> Serial No.: <u>111117-2</u> Serial No.: <u>441</u> Serial No.: <u>060</u> Serial No.: <u>388</u> Test Operator : <u>Kittipong T.</u>
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Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
11:20 AM	13.93	53.35	1.98	1.11
11:21 AM	13.93	53.22	1.86	1.11
11:22 AM	13.94	53.09	1.88	1.11
11:23 AM	13.94	53.10	1.83	1.02
11:24 AM	13.94	52.19	1.81	1.01
11:25 AM	13.92	50.88	1.75	1.03
11:26 AM	13.92	50.13	1.75	1.05
11:27 AM	13.93	51.18	1.78	1.07
11:28 AM	13.92	51.47	1.72	1.11
11:29 AM	13.93	50.99	1.64	1.10
11:30 AM	13.93	49.80	1.63	1.06
11:31 AM	13.95	49.44	1.58	1.01
11:32 AM	13.94	47.95	1.51	1.01
11:33 AM	13.94	48.12	1.48	1.01
11:34 AM	13.94	48.02	1.49	1.01
11:35 AM	13.94	47.12	1.48	1.03
11:36 AM	13.94	47.03	1.45	1.10
11:37 AM	13.94	47.21	1.47	1.10
11:38 AM	13.94	47.48	1.42	1.11
11:39 AM	13.95	47.30	1.40	1.11
11:40 AM	13.96	46.70	1.36	1.11
Average	13.94	49.80	1.63	1.07

Signature



Miss Katesarin Vorradetwittaya

Environmental Scientist

STAR PETROLEUM REFINING PUBLIC CO.,LTD.

EMISSION TEST RESULT

Date: May 9, 2024 Start time: 11:41 AM O₂ instrument Model: AMI 70 NO_x instrument Model: API 200 AH SO₂ instrument Model: API 100 AH CO instrument Model: THERMO 48 C Fuel Type : Natural Gas	Run # : 2 Location : HRSG 1 Finish time : 12:01 PM Serial No.: 111117-2 Serial No.: 441 Serial No.: 060 Serial No.: 388 Test Operator : Kittipong T.
---	---

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
11:41 AM	13.96	45.57	1.35	1.11
11:42 AM	13.95	44.81	1.35	1.11
11:43 AM	13.94	44.37	1.29	1.11
11:44 AM	13.91	44.10	1.30	1.11
11:45 AM	13.91	44.69	1.31	1.11
11:46 AM	13.91	44.83	1.31	1.11
11:47 AM	13.93	44.59	1.30	1.11
11:48 AM	13.90	44.39	1.27	1.11
11:49 AM	13.89	44.63	1.33	1.11
11:50 AM	13.88	45.18	1.29	1.11
11:51 AM	13.89	45.42	1.34	1.11
11:52 AM	13.92	45.80	1.25	1.18
11:53 AM	13.93	45.10	1.22	1.17
11:54 AM	13.93	45.61	1.22	1.21
11:55 AM	13.93	45.10	1.24	1.13
11:56 AM	13.92	45.32	1.26	1.11
11:57 AM	13.94	45.35	1.26	1.13
11:58 AM	13.94	44.47	1.29	1.21
11:59 AM	13.91	44.67	1.27	1.30
12:00 PM	13.90	44.62	1.35	1.34
12:01 PM	13.90	44.45	1.33	1.49
Average	13.92	44.91	1.29	1.17

Signature



Miss Katesarin Vorradetwittaya

Environmental Scientist

STAR PETROLEUM REFINING PUBLIC CO.,LTD.

EMISSION TEST RESULT

Date: <u>May 9, 2024</u> Start time: <u>12:02 PM</u> O₂ instrument Model: <u>AMI 70</u> NO_x instrument Model: <u>API 200 AH</u> SO₂ instrument Model: <u>API 100 AH</u> CO instrument Model: <u>THERMO 48 C</u> Fuel Type : <u>Natural Gas</u>	Run # : <u>3</u> Location : <u>HRSG 1</u> Finish time : <u>12:22 PM</u> Serial No.: <u>111117-2</u> Serial No.: <u>441</u> Serial No.: <u>060</u> Serial No.: <u>388</u> Test Operator : <u>Kittipong T.</u>
--	---

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
12:02 PM	13.90	44.44	1.36	1.54
12:03 PM	13.92	44.39	1.37	1.61
12:04 PM	13.91	44.32	1.37	1.46
12:05 PM	13.91	44.70	1.33	1.41
12:06 PM	13.94	44.50	1.37	1.24
12:07 PM	13.92	44.48	1.30	1.17
12:08 PM	13.92	44.40	1.36	1.11
12:09 PM	13.93	44.15	1.33	1.11
12:10 PM	13.91	43.92	1.31	1.01
12:11 PM	13.92	43.85	1.34	1.01
12:12 PM	13.92	43.57	1.34	0.98
12:13 PM	13.93	43.92	1.36	0.91
12:14 PM	13.93	44.34	1.39	0.91
12:15 PM	13.90	44.34	1.37	0.90
12:16 PM	13.93	43.71	1.37	0.91
12:17 PM	13.91	43.11	1.36	0.91
12:18 PM	13.91	42.99	1.39	0.91
12:19 PM	13.91	42.84	1.37	0.91
12:20 PM	13.92	42.77	1.35	0.91
12:21 PM	13.89	43.06	1.37	0.88
12:22 PM	13.89	43.09	1.35	0.82
Average	13.92	43.85	1.36	1.08

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	: Star Petroleum Refining Public Co., Ltd.	REFERENCE NO.	: Refinery-224003-COA-Stk/PM
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING DATE	: 11/06/2024
RECEIVED DATE	: 12/06/2024	ANALYTICAL DATE	: 12-13/06/2024
REPORT DATE	: 19/06/2024	SAMPLE CONDITION	: Normal
STACK LOCATION	: SRU/TGTU Stack	OPERATOR	: Mr. Song Hengchwankun
SOURCE DESCRIPTION	: Combustion	FUEL TYPE	: Natural Gas + Refinery Fuel Gas

STACK DESCRIPTION

Height	: 70.1	m	Gas Velocity	: 4.2	m/s
Diameter	: 2.2	m	Flow rate ⁽¹⁾	: 332.4	Ncu.m/min
Temperature	: 467.8	°C	Excess Oxygen	: 7.0	%

PARAMETER	UNIT	RESULTS ⁽¹⁾		ASSIGNED VALUE ⁽²⁾	STANDARD ⁽³⁾	REFERENCE METHODS
		7.0 % O ₂	7 % O ₂			
Particulate Matter	mg/Ncu.m	2.9	2.9	60	-	US. EPA Method 5

Phatchara Samanchan

(Miss Phatchara Samanchan)

Analyst

REG.NO.จ-239-จ-0021

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO.จ-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.

4. ⁽²⁾ Assigned value in EIA Report Expansion 3 of Refinery Plant, B.E. 2561 (2018).

5. ⁽³⁾ Notification of the Ministry of Natural Resources and Environment B.E.2554 (2011).



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STACK EMISSION ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd	REFERENCE NO.	: Refinery-224003-COA-Stk/H2S
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING DATE	: 11/06/2024
RECEIVED DATE	: 12/06/2024	ANALYTICAL DATE	: 17/06/2024
REPORT DATE	: 19/06/2024	SAMPLE CONDITION	: Normal
STACK LOCATION	: SRU/TGTU Stack	OPERATOR	: Mr. Song Hengchwankun
SOURCE DESCRIPTION	: Combustion	FUEL TYPE	: Natural Gas + Refinery Fuel Gas

STACK DESCRIPTION

Height	: 70.1	m	Gas Velocity	: 4.2	m/s
Diameter	: 2.2	m	Flow rate ⁽¹⁾	: 332	Ncu.m/min
Temperature	: 467.8	°C	Excess Oxygen	: 7.0	%

PARAMETER	UNIT	RESULTS ⁽¹⁾		ASSIGNED VALUE ⁽²⁾	STANDARD	REFERENCE METHODS
		7.0 % O ₂	7 % O ₂			
Hydrogen Sulfide	ppm	<0.3	<0.3	60	-	US. EPA Method 16

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

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3. ⁽¹⁾ At standard pressure of 760 mmHg and temperature of 25 °C, dry basis.

4. ⁽²⁾ Assigned value in EIA Report Expansion 3 of Refinery Plant, B.E. 2561 (2018).

The Monitoring Result of Emission Concentration
SRU
STAR PETROLEUM REFINING PUBLIC CO.,LTD.
June 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	6.97	6.91	14.13	14.11	14.02
2	7.01	6.99	14.38	14.36	14.35
3	7.03	7.05	14.37	14.35	14.40
Average	7.00	6.98	14.29	14.27	14.26

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	6.97	6.91	315.15	315.24	313.21
2	7.01	6.99	315.49	315.59	315.36
3	7.03	7.05	319.43	319.54	320.69
Average	7.00	6.98	316.69	316.79	316.41

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	6.97	6.91	245.83	246.13	244.55
2	7.01	6.99	241.75	242.06	241.89
3	7.03	7.05	241.20	241.52	242.39
Average	7.00	6.98	242.93	243.24	242.95

STAR PETROLEUM REFINING PUBLIC CO.,LTD.

EMISSION TEST RESULT

Run # : 1

Date: June 11, 2024

Location : SRU

Start time: 2:40 PM

Finish time : 3:00 PM

O₂ instrument Model: AMI 70

Serial No.: 071023-47

NO_x instrument Model: Teledyne 200 EM

Serial No.: 433

SO₂ instrument Model: API 100 AH

Serial No.: 118

CO instrument Model: THERMO 48 C

Serial No.: 70162-365

Fuel Type : Natural Gas

Test Operator : Song H.

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
2:40 PM	6.98	14.06	314.18	246.14
2:41 PM	6.99	14.12	313.50	245.56
2:42 PM	6.99	14.16	313.73	250.40
2:43 PM	6.95	14.06	315.49	247.39
2:44 PM	6.94	13.95	313.40	250.65
2:45 PM	6.87	14.07	313.72	248.89
2:46 PM	6.92	14.17	313.79	249.73
2:47 PM	6.93	14.02	316.54	248.02
2:48 PM	6.94	14.02	316.10	246.02
2:49 PM	6.95	14.22	313.35	238.31
2:50 PM	6.96	14.18	313.62	240.84
2:51 PM	6.98	13.98	313.47	246.68
2:52 PM	7.00	13.96	315.42	246.42
2:53 PM	6.94	14.06	314.63	242.29
2:54 PM	6.98	14.25	315.98	242.71
2:55 PM	7.05	14.29	318.34	246.37
2:56 PM	7.06	14.22	317.96	244.25
2:57 PM	6.98	14.23	315.29	245.46
2:58 PM	7.00	14.23	316.15	244.13
2:59 PM	6.92	14.21	315.56	247.55
3:00 PM	7.02	14.19	317.99	244.54
Average	6.97	14.13	315.15	245.83

Signature

Miss Katesarin Vorradetwittaya


Environmental Scientist

STAR PETROLEUM REFINING PUBLIC CO.,LTD.

EMISSION TEST RESULT

Date: <u>June 11, 2024</u> Start time: <u>3:01 PM</u> O₂ instrument Model: <u>AMI 70</u> NO_x instrument Model: <u>Teledyne 200 EM</u> SO₂ instrument Model: <u>API 100 AH</u> CO instrument Model: <u>THERMO 48 C</u> Fuel Type : <u>Natural Gas</u>	Run # : <u>2</u> Location : <u>SRU</u> Finish time : <u>3:21 PM</u> Serial No.: <u>071023-47</u> Serial No.: <u>433</u> Serial No.: <u>118</u> Serial No.: <u>70162-365</u> Test Operator : <u>Song H.</u>
--	---

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
3:01 PM	7.04	14.17	317.65	240.54
3:02 PM	7.01	14.18	316.03	238.00
3:03 PM	7.01	14.25	315.22	243.25
3:04 PM	7.03	14.29	314.89	245.49
3:05 PM	6.97	14.28	314.11	242.62
3:06 PM	6.94	14.35	313.69	244.45
3:07 PM	7.04	14.40	315.33	243.25
3:08 PM	7.03	14.47	314.81	241.32
3:09 PM	7.04	14.53	314.69	241.07
3:10 PM	6.99	14.56	314.67	238.87
3:11 PM	6.91	14.49	315.30	239.20
3:12 PM	6.91	14.36	314.91	235.91
3:13 PM	7.00	14.29	314.93	241.65
3:14 PM	7.04	14.31	315.75	240.74
3:15 PM	7.04	14.30	316.43	242.82
3:16 PM	7.07	14.35	315.18	243.78
3:17 PM	7.01	14.43	316.45	242.99
3:18 PM	6.99	14.55	315.67	239.28
3:19 PM	7.04	14.55	315.83	244.69
3:20 PM	7.01	14.47	316.25	244.32
3:21 PM	6.99	14.43	317.50	242.53
Average	7.01	14.38	315.49	241.75


Signature _____
Miss Katesarin Vorradetwittaya
Environmental Scientist

STAR PETROLEUM REFINING PUBLIC CO.,LTD.

EMISSION TEST RESULT

Date: <u>June 11, 2024</u> Start time: <u>3:22 PM</u> O₂ instrument Model: <u>AMI 70</u> NO_x instrument Model: <u>Teledyne 200 EM</u> SO₂ instrument Model: <u>API 100 AH</u> CO instrument Model: <u>THERMO 48 C</u> Fuel Type : <u>Natural Gas</u>	Run # : <u>3</u> Location : <u>SRU</u> Finish time : <u>3:42 PM</u> Serial No.: <u>071023-47</u> Serial No.: <u>433</u> Serial No.: <u>118</u> Serial No.: <u>70162-365</u> Test Operator : <u>Song H.</u>
--	---

Time, min	O ₂ (%)	NO _x (ppm)	SO ₂ (ppm)	CO (ppm)
3:22 PM	6.99	14.47	316.55	239.70
3:23 PM	7.07	14.57	317.36	239.32
3:24 PM	7.08	14.55	317.16	242.53
3:25 PM	7.01	14.42	317.62	245.53
3:26 PM	7.04	14.34	320.52	245.24
3:27 PM	7.03	14.38	320.78	244.20
3:28 PM	7.11	14.33	320.55	243.99
3:29 PM	7.09	14.25	320.55	241.28
3:30 PM	7.10	14.25	319.70	237.46
3:31 PM	7.05	14.24	321.08	238.80
3:32 PM	6.98	14.20	320.11	242.80
3:33 PM	7.00	14.14	320.06	241.97
3:34 PM	7.03	14.18	320.27	240.39
3:35 PM	7.05	14.37	321.83	235.02
3:36 PM	7.03	14.45	321.15	238.48
3:37 PM	7.02	14.43	318.43	243.31
3:38 PM	7.02	14.43	318.80	240.31
3:39 PM	7.03	14.53	318.32	239.86
3:40 PM	7.00	14.55	318.31	241.31
3:41 PM	6.94	14.37	319.00	242.81
3:42 PM	7.03	14.26	319.78	240.98
Average	7.03	14.37	319.43	241.20

Signature



Miss Katesarin Vorradetwittaya

Environmental Scientist



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STACK EMISSION ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REF. NO.	: Refinery-224003-COA-Stk/Bz
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING DATE	: 08/05/2024
RECEIVED DATE	: 10/05/2024	ANALYTICAL DATE	: 14/05/2024
REPORT DATE	: 18/05/2024	SAMPLE CONDITION	: Normal
STACK LOCATION	: VRU Stack	OPERATOR	: Mr. Song Hengchwankun
SOURCE DESCRIPTION	: Process	FUEL TYPE	: -

STACK DESCRIPTION

Height	: 10.0	m.	Velocity ⁽¹⁾	: 2	m/s
Diameter	: 0.25	m.	Flow Rate ⁽¹⁾	: 5.2	Nm ³ /min
Temperature ⁽¹⁾	: 43.0	°C	Excess Oxygen ⁽¹⁾	: 20.8	%

PARAMETER	UNIT	RESULTS		ASSIGN VALUE ⁽²⁾	STANDARD	REFERENCE METHODS
		INLET	OUTLET			
Benzene	ppm	31.52	0.13	-	-	US. EPA Method 18
	mg/l	0.10	0.0004	0.21	-	
	g/s	-	0.00004	0.017	-	

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⁾ The data from VRU Outlet.

4. ⁽²⁾ Assigned value in EIA Report Expasion 3 of Refinery Plant, B.E. 2561 (2018).



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STACK EMISSION ANALYSIS REPORT

CLIENT NAME : Star Petroleum Refining Public Co., Ltd. REF. NO. : Refinery-224003-COA-Stk/TVOC
SAMPLING BY : SECOT Co., Ltd. SAMPLING DATE : 08/05/2024
RECEIVED DATE : 10/05/2024 ANALYTICAL DATE : 13/05/2024
REPORT DATE : 18/05/2024 SAMPLE CONDITION : Normal
STACK LOCATION : VRU Stack OPERATOR : Mr. Song Hengchwankun
SOURCE DESCRIPTION : Process FUEL TYPE : -

STACK DESCRIPTION

Height : 10.0 m. Velocity⁽¹⁾ : 2.0 m/s
Diameter : 0.25 m. Flow Rate⁽¹⁾ : 5.2 Nm³/min
Temperature⁽¹⁾ : 43.0 °C Excess Oxygen⁽¹⁾ : 20.8 %

PARAMETER	UNIT	RESULTS		ASSIGN VALUE ⁽²⁾	STANDARD ⁽³⁾	REFERENCE METHODS
		INLET	OUTLET			
TVOCs	ppm	8,741	81	-	-	US. EPA Method 25A
	mg/l	15.73	0.15	15	17	
	g/s	-	0.013	1.212	-	

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

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4. ⁽²⁾ Assigned value in EIA Report Expansion 3 of Refinery Plant, B.E. 2561 (2018).

5. ⁽³⁾ Notification of the Ministry of Natural Resources and Environment B.E.2553 (2010).

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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REQUEST SERVICE No.	: 0015/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 04/01/2024	SAMPLING TIME	: 15:20
RECEIVED DATE	: 05/01/2024	ANALYTICAL DATE	: 05-10/01/2024
REPORT DATE	: 11/01/2024	SITE OPERATOR	: Miss Mareeyanee Hawae
SAMPLE CONDITION	: Normal	FILE CODE	: 224003_WW_January

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD ^{1/}
				Near the refinery outfall	
Temperature	°C	2550 B	< 0.5	32.6	≤ 40
pH	-	4500-H ⁺ B	< 0.10	8.04	5.5-9.0
Total Dissolved Solids	mg/l	2540 C	< 50	1,556	≤ 3,000
Total Suspended Solids	mg/l	2540 D	< 5	< 5	≤ 50
Ammonia Nitrogen	mg/l	4500-NH ₃ B,C	< 0.02	0.79	-
Sulfide	mg/l	4500-S ²⁻ F	< 0.20	ND	≤ 1
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	≤ 5
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 D	< 40.00	< 40.00	≤ 120
Chromium Hexavalent (Cr ⁶⁺)	mg/l	3500-Cr B	< 0.01	ND	≤ 0.25
Chromium Trivalent (Cr ³⁺)	mg/l	3113 B/Calculation	< 0.001	ND	≤ 0.75
Mercury (Hg)	mg/l	3112 B	< 0.0005	ND	≤ 0.005

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

Khemchuda Insorn

(Miss Khemchuda Insorn)

Analyst

REG. NO. ๖-239-ก-0005

Araya Tipparuk

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. ๖-239-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.2560 (2017).
 4. - Not available.



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REQUEST SERVICE No.	: 0185/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 01/02/2024	SAMPLING TIME	: 14:18
RECEIVED DATE	: 02/02/2024	ANALYTICAL DATE	: 02-08/02/2024
REPORT DATE	: 08/02/2024	SITE OPERATOR	: Mr. Baworn Deechaiya
SAMPLE CONDITION	: Normal	FILE CODE	: 224003_WW_February

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD ^{1/}
				Near the refinery outfall	
Temperature	°C	2550 B	< 0.5	32.8	≤ 40
pH	-	4500-H ⁺ B	< 0.10	8.23	5.5-9.0
Total Dissolved Solids	mg/l	2540 C	< 50	1,366	≤ 3,000
Total Suspended Solids	mg/l	2540 D	< 5	< 5	≤ 50
Ammonia Nitrogen	mg/l	Method 350.2	< 0.02	0.10	-
Sulfide	mg/l	4500-S ²⁻ F	< 0.20	ND	≤ 1
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	≤ 5
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 D	< 40.00	< 40.00	≤ 120
Chromium Hexavalent (Cr ⁶⁺)	mg/l	3500-Cr B	< 0.01	ND	≤ 0.25
Chromium Trivalent (Cr ³⁺)	mg/l	3113 B/Calculation	< 0.001	ND	≤ 0.75
Mercury (Hg)	mg/l	3112 B	< 0.0005	ND	≤ 0.005

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



(Miss Khemchuda Insorn)

Analyst

REG. NO. ๖-239-๓-0005



(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. ๖-239-๓-0004

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 3. ^{1/} Notification of the Ministry of Industry, B.E.2560 (2017).
 4. - Not available.



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REQUEST SERVICE No.	: 0432/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 07/03/2024	SAMPLING TIME	: 14:55
RECEIVED DATE	: 08/03/2024	ANALYTICAL DATE	: 08-14/03/2024
REPORT DATE	: 15/03/2024	SITE OPERATOR	: Miss Mareeyanee Hawae
SAMPLE CONDITION	: Normal	FILE CODE	: 224003_WW_March

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD ^{1/}
				Near the refinery outfall	
Temperature	°C	2550 B	< 0.5	35.2	≤ 40
pH	-	4500-H ⁺ B	< 0.10	8.37	5.5-9.0
Total Dissolved Solids	mg/l	2540 C	< 50	1,392	≤ 3,000
Total Suspended Solids	mg/l	2540 D	< 5	6	≤ 50
Ammonia Nitrogen	mg/l	4500-NH ₃ B,C	< 0.02	0.16	-
Sulfide	mg/l	4500-S ²⁻ F	< 0.20	ND	≤ 1
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	≤ 5
Phenols	mg/l	5530 B,C	< 0.001	ND	≤ 1
BOD ₅	mg/l	5210 B	< 1.0	1.8	≤ 20
COD	mg/l	5220 D	< 40.00	< 40.00	≤ 120
Chromium Hexavalent (Cr ⁶⁺)	mg/l	3500-Cr B	< 0.01	ND	≤ 0.25
Chromium Trivalent (Cr ³⁺)	mg/l	3113 B/Calculation	< 0.001	ND	≤ 0.75
Mercury (Hg)	mg/l	3112 B	< 0.0005	ND	≤ 0.005

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

Khemchuda Insorn

(Miss Khemchuda Insorn)

Analyst

REG. NO. ว-239-ท-0005

Araya Tipparuk

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. ว-239-ท-0004

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 3. ^{1/} Notification of the Ministry of Industry, B.E.2560 (2017).
 4. - Not available.



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REQUEST SERVICE No.	: 0629/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 01/04/2024	SAMPLING TIME	: 10:27
RECEIVED DATE	: 02/04/2024	ANALYTICAL DATE	: 02-09/04/2024
REPORT DATE	: 09/04/2024	SITE OPERATOR	: Mr. Aniwat Pimwanna
SAMPLE CONDITION	: Normal	FILE CODE	: 224003_WW_April

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD ^{1/}
				Near the refinery outfall	
Temperature	°C	2550 B	< 0.5	33.8	≤ 40
pH	-	4500-H ⁺ B	< 0.10	7.54	5.5-9.0
Total Dissolved Solids	mg/l	2540 C	< 50	2,340	≤ 3,000
Total Suspended Solids	mg/l	2540 D	< 5	15	≤ 50
Ammonia Nitrogen	mg/l	Method 350.2	< 0.02	0.11	-
Sulfide	mg/l	4500-S ²⁻ F	< 0.20	ND	≤ 1
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	≤ 5
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 D	< 40.00	< 40.00	≤ 120
Chromium Hexavalent (Cr ⁶⁺)	mg/l	3500-Cr B	< 0.01	ND	≤ 0.25
Chromium Trivalent (Cr ³⁺)	mg/l	3113 B/Calculation	< 0.001	0.002	≤ 0.75
Mercury (Hg)	mg/l	3112 B	< 0.0005	ND	≤ 0.005

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

(Miss Khemchuda Insorn)

Analyst

REG. NO. ๖-239-ก-0005

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. ๖-239-ก-0004

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 4. - Not available.



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REQUEST SERVICE No.	: 0847/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 02/05/2024	SAMPLING TIME	: 10:26
RECEIVED DATE	: 03/05/2024	ANALYTICAL DATE	: 03-10/05/2024
REPORT DATE	: 10/05/2024	SITE OPERATOR	: Miss Mareeyanee Hawae
SAMPLE CONDITION	: Normal	FILE CODE	: 224003_WW_May

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD ^{1/}
				Near the refinery outfall	
Temperature	°C	2550 B	< 0.5	35.9	≤ 40
pH	-	4500-H ⁺ B	< 0.10	7.72	5.5-9.0
Total Dissolved Solids	mg/l	2540 C	< 50	1,712	≤ 3,000
Total Suspended Solids	mg/l	2540 D	< 5	5	≤ 50
Ammonia Nitrogen	mg/l	4500-NH ₃ B,C	< 0.02	1.5	-
Sulfide	mg/l	4500-S ²⁻ F	< 0.20	ND	≤ 1
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	≤ 5
Phenols	mg/l	5530 B,C	< 0.001	ND	≤ 1
BOD ₅	mg/l	5210 B	< 1.0	1.8	≤ 20
COD	mg/l	5220 D	< 40.00	49.21	≤ 120
Chromium Hexavalent (Cr ⁶⁺)	mg/l	3500-Cr B	< 0.01	ND	≤ 0.25
Chromium Trivalent (Cr ³⁺)	mg/l	3113 B/Calculation	< 0.001	0.003	≤ 0.75
Mercury (Hg)	mg/l	3112 B	< 0.0005	ND	≤ 0.005

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

Khemchuda Insorn

(Miss Khemchuda Insorn)

Analyst

REG. NO. ว-239-ก-0005

Araya Tipparuk

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. ว-239-ก-0004

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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REQUEST SERVICE No.	: 1137/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 06/06/2024	SAMPLING TIME	: 10:35
RECEIVED DATE	: 07/06/2024	ANALYTICAL DATE	: 07-14/06/2024
REPORT DATE	: 15/06/2024	SITE OPERATOR	: Miss Mareeyanee Hawae
SAMPLE CONDITION	: Normal	FILE CODE	: 224003_WW_June

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD ^{1/}
				Near the refinery outfall	
Temperature	°C	2550 B	< 0.5	32.5	≤ 40
pH	-	4500-H ⁺ B	< 0.10	8.15	5.5-9.0
Total Dissolved Solids	mg/l	2540 C	< 50	980	≤ 3,000
Total Suspended Solids	mg/l	2540 D	< 5	< 5	≤ 50
Ammonia Nitrogen	mg/l	4500-NH ₃ B,C	< 0.02	0.26	-
Sulfide	mg/l	4500-S ²⁻ F.	< 0.20	ND	≤ 1
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	≤ 5
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 D	< 40.00	< 40.00	≤ 120
Chromium Hexavalent (Cr ⁶⁺)	mg/l	3500-Cr B	< 0.01	ND	≤ 0.25
Chromium Trivalent (Cr ³⁺)	mg/l	3113 B/Calculation	< 0.001	0.001	≤ 0.75
Mercury (Hg)	mg/l	3112 B	< 0.0005	ND	≤ 0.005

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



(Miss Khemchuda Insorn)

Analyst

REG. NO. ว-239-ก-0005



(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. ว-239-ก-0004

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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REQUEST SERVICE No.	: 0068/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 11/01/2024	SAMPLING TIME	: 10:27-11:24
RECEIVED DATE	: 12/01/2024	ANALYTICAL DATE	: 12-17/01/2024
REPORT DATE	: 18/01/2024	SITE OPERATOR	: Mr. Baworn Deechaiya
SAMPLE CONDITION	: Normal	FILE CODE	: 224003_SW_January
SAMPLE DESCRIPTION	: 1 = Within IEAT drainage channel upstream from refinery outfall 2 = Within IEAT drainage channel downstream from refinery outfall		

PARAMETER	UNIT	ANALYSIS	ND (non-detectable)	STATION		STANDARD ^{1/}
		METHODS		1	2	
Temperature	°C	2550 B	< 0.5	33.0	32.2	-
pH	-	4500-H ⁺ B	< 0.10	8.63	8.62	-
Total Dissolved Solids	mg/l	2540 C	< 50	5,088	4,172	-
Suspended Solids	mg/l	2540 D	< 5	15	24	-
Ammonia Nitrogen	mg/l	4500-NH ₃ B,C	< 0.02	1.9	1.1	-
Sulfide as H ₂ S	mg/l	4500-S ²⁻ F	< 0.20	ND	ND	-
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	ND	-
Phenols	mg/l	5530 B,C	< 0.001	ND	ND	-
BOD ₅	mg/l	5210 B	< 1.0	1.3	2.4	-
COD	mg/l	5220 D	< 40.00	< 40.00	< 40.00	-
Chromium Hexavalent (Cr ⁶⁺)	mg/l	3500-Cr B	< 0.01	ND	ND	-
Chromium Trivalent (Cr ³⁺)	mg/l	3113 B/Calculation	< 0.001	ND	ND	-
Mercury (Hg)	mg/l	3112 B	< 0.0005	ND	ND	-

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

Khemchuda Insorn

(Miss Khemchuda Insorn)

Analyst

Araya Tipparuk

(Mrs. Araya Tipparuk)

Technical Management Team

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 5. - Not available.



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REQUEST SERVICE No.	: 0186/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 01/02/2024	SAMPLING TIME	: 11:12-11:23
RECEIVED DATE	: 02/02/2024	ANALYTICAL DATE	: 02-08/02/2024
REPORT DATE	: 08/02/2024	SITE OPERATOR	: Mr. Baworn Deechaiya
SAMPLE CONDITION	: Normal	FILE CODE	: 224003_SW_February
SAMPLE DESCRIPTION	1 = Within IEAT drainage channel upstream from refinery outfall 2 = Within IEAT drainage channel downstream from refinery outfall		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^{1/}
				1	2	
Temperature	°C	2550 B	< 0.5	33.3	33.4	-
pH	-	4500-H ⁺ B	< 0.10	8.11	8.06	-
Total Dissolved Solids	mg/l	2540 C	< 50	4,984	4,496	-
Suspended Solids	mg/l	2540 D	< 5	15	13	-
Ammonia Nitrogen	mg/l	4500-NH ₃ B,C	< 0.02	1.3	3.4	-
Sulfide as H ₂ S	mg/l	4500-S ²⁻ F	< 0.20	ND	ND	-
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	ND	-
Phenols	mg/l	5530 B,C	< 0.001	ND	ND	-
BOD ₅	mg/l	5210 B	< 1.0	1.6	1.4	-
COD	mg/l	5220 D	< 40.00	< 40.00	< 40.00	-
Chromium Hexavalent (Cr ⁶⁺)	mg/l	3500-Cr B	< 0.01	ND	ND	-
Chromium Trivalent (Cr ³⁺)	mg/l	3113 B/Calculation	< 0.001	0.006	0.007	-
Mercury (Hg)	mg/l	3112 B	< 0.0005	ND	ND	-

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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 5. - Not available.



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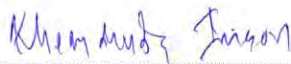
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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REQUEST SERVICE No.	: 0433/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 07/03/2024	SAMPLING TIME	: 17:15, 15:59
RECEIVED DATE	: 08/03/2024	ANALYTICAL DATE	: 08-14/03/2024
REPORT DATE	: 15/03/2024	SITE OPERATOR	: Miss Mareeyanee Hawae
SAMPLE CONDITION	: Normal	FILE CODE	: 224003_SW_March
SAMPLE DESCRIPTION	: 1 = Within IEAT drainage channel upstream from refinery outfall 2 = Within IEAT drainage channel downstream from refinery outfall		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^{1/}
				1	2	
Temperature	°C	2550 B	< 0.5	33.7	34.6	-
pH	-	4500-H ⁺ B	< 0.10	8.37	8.84	-
Total Dissolved Solids	mg/l	2540 C	< 50	4,528	3,672	-
Suspended Solids	mg/l	2540 D	< 5	14	32	-
Ammonia Nitrogen	mg/l	4500-NH ₃ B,C	< 0.02	1.3	0.62	-
Sulfide as H ₂ S	mg/l	4500-S ²⁻ F	< 0.20	ND	ND	-
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	ND	-
Phenols	mg/l	5530 B,C	< 0.001	ND	ND	-
BOD ₅	mg/l	5210 B	< 1.0	2.2	2.4	-
COD	mg/l	5220 D	< 40.00	< 40.00	< 40.00	-
Chromium Hexavalent (Cr ⁶⁺)	mg/l	3500-Cr B	< 0.01	ND	ND	-
Chromium Trivalent (Cr ³⁺)	mg/l	3113 B/Calculation	< 0.001	0.002	0.002	-
Mercury (Hg)	mg/l	3112 B	< 0.0005	ND	ND	-

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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 5. - Not available.



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REQUEST SERVICE No.	: 0630/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 01/04/2024	SAMPLING TIME	: 11:50, 12:10
RECEIVED DATE	: 02/04/2024	ANALYTICAL DATE	: 02-09/04/2024
REPORT DATE	: 09/04/2024	SITE OPERATOR	: Mr. Aniwat Pimwanna
SAMPLE CONDITION	: Normal	FILE CODE	: 224003_SW_April
SAMPLE DESCRIPTION	: 1 = Within IEAT drainage channel upstream from refinery outfall 2 = Within IEAT drainage channel downstream from refinery outfall		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^{1/}
				1	2	
Temperature	°C	2550 B	< 0.5	36.6	36.6	-
pH	-	4500-H ⁺ B	< 0.10	8.28	8.35	-
Total Dissolved Solids	mg/l	2540 C	< 50	5,680	4,880	-
Suspended Solids	mg/l	2540 D	< 5	27	28	-
Ammonia Nitrogen	mg/l	Method 350.2	< 0.02	0.22	0.17	-
Sulfide as H ₂ S	mg/l	4500-S ²⁻ F	< 0.20	ND	ND	-
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	ND	-
Phenols	mg/l	5530 B,C	< 0.001	ND	ND	-
BOD ₅	mg/l	5210 B	< 1.0	1.7	1.2	-
COD	mg/l	5220 D	< 40.00	< 40.00	< 40.00	-
Chromium Hexavalent (Cr ⁶⁺)	mg/l	3500-Cr B	< 0.01	ND	ND	-
Chromium Trivalent (Cr ³⁺)	mg/l	3113 B/Calculation	< 0.001	0.003	0.003	-
Mercury (Hg)	mg/l	3112 B	< 0.0005	ND	ND	-

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



(Miss Khemchuda Insorn)

Analyst



(Mrs. Araya Tipparuk)

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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REQUEST SERVICE No.	: 0848/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 02/05/2024	SAMPLING TIME	: 11:37, 10:54
RECEIVED DATE	: 03/05/2024	ANALYTICAL DATE	: 03-10/05/2024
REPORT DATE	: 13/05/2024	SITE OPERATOR	: Miss Mareeyanee Hawae
SAMPLE CONDITION	: Normal	FILE CODE	: 224003_SW_May
SAMPLE DESCRIPTION	: 1 = Within IEAT drainage channel upstream from refinery outfall 2 = Within IEAT drainage channel downstream from refinery outfall		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^{1/}
				1	2	
Temperature	°C	2550 B	< 0.5	36.6	37.2	-
pH	-	4500-H ⁺ B	< 0.10	8.44	8.69	-
Total Dissolved Solids	mg/l	2540 C	< 50	4,876	5,816	-
Suspended Solids	mg/l	2540 D	< 5	9	14	-
Ammonia Nitrogen	mg/l	Method 350.2	< 0.02	1.1	1.1	-
Sulfide as H ₂ S	mg/l	4500-S ²⁻ F	< 0.20	ND	ND	-
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	ND	-
Phenols	mg/l	5530 B,C	< 0.001	ND	ND	-
BOD ₅	mg/l	5210 B	< 1.0	1.6	1.8	-
COD	mg/l	5220 D	< 40.00	< 40.00	< 40.00	-
Chromium Hexavalent (Cr ⁶⁺)	mg/l	3500-Cr B	< 0.01	ND	ND	-
Chromium Trivalent (Cr ³⁺)	mg/l	3113 B/Calculation	< 0.001	0.006	0.028	-
Mercury (Hg)	mg/l	3112 B	< 0.0005	ND	ND	-

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

Khemchuda Inorn

(Miss Khemchuda Inorn)

Analyst

Araya Tipparuk

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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REQUEST SERVICE No.	: 1136/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 06/06/2024	SAMPLING TIME	: 12:36, 11:05
RECEIVED DATE	: 07/06/2024	ANALYTICAL DATE	: 07-13/06/2024
REPORT DATE	: 15/06/2024	SITE OPERATOR	: Miss Mareeyanee Hawae
SAMPLE CONDITION	: Normal	FILE CODE	: 224003_SW_June
SAMPLE DESCRIPTION	: 1 = Within IEAT drainage channel upstream from refinery outfall 2 = Within IEAT drainage channel downstream from refinery outfall		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^{1/}
				1	2	
Temperature	°C	2550 B	< 0.5	34.5	34.8	-
pH	-	4500-H ⁺ B	< 0.10	8.89	8.62	-
Total Dissolved Solids	mg/l	2540 C	< 50	4,000	3,056	-
Suspended Solids	mg/l	2540 D	< 5	25	18	-
Ammonia Nitrogen	mg/l	Method 350.2	< 0.02	1.3	1.4	-
Sulfide as H ₂ S	mg/l	4500-S ²⁻ F	< 0.20	ND	ND	-
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	ND	-
Phenols	mg/l	5530 B,C	< 0.001	ND	ND	-
BOD ₅	mg/l	5210 B	< 1.0	4.1	3.5	-
COD	mg/l	5220 D	< 40.00	43.39	< 40.00	-
Chromium Hexavalent (Cr ⁶⁺)	mg/l	3500-Cr B	< 0.01	ND	ND	-
Chromium Trivalent (Cr ³⁺)	mg/l	3113 B/Calculation	< 0.001	0.004	0.002	-
Mercury (Hg)	mg/l	3112 B	< 0.0005	ND	ND	-

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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 3. ^{1/} Notification of the National Environment Board No.8 B.E.2537 (1994) for Surface Water Class 5.
 4. n¹ means naturally but changing by no more than 3° C.
 5. - Not available.



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REQUEST SERVICE No.	: 0015/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 04/01/2024	SAMPLING TIME	: 14:43-15:08
RECEIVED DATE	: 05/01/2024	ANALYTICAL DATE	: 05-10/01/2024
REPORT DATE	: 11/01/2024	SITE OPERATOR	: Miss Mareeyanee Hawae
SAMPLE CONDITION	: Normal	FILE CODE	: 224003_WW_January
SAMPLE DESCRIPTION	1 = API Separator Effluent 2 = IAF Unit Effluent 3 = Equalization Tank Effluent 4 = Biological Treatment Effluent		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION			
				1	2	3	4
Temperature	°C	2550 B	< 0.5	34.7	35.8	34.9	33.8
pH	-	4500-H ⁺ B	< 0.10	9.32	8.29	10.34	7.64
Total Dissolved Solids	mg/l	2540 C	< 50	948	956	1,154	1,490
Suspended Solids	mg/l	2540 D	< 5	< 5	9	16	< 5
Fat Oil & Grease	mg/l	5520 B	< 0.50	0.50	ND	5.1	ND
Phenols	mg/l	5530 B,C* / B,D	< 0.001*, < 0.10	0.64	1.3	4.0	ND*
Sulfide as H ₂ S	mg/l	4500-S ²⁻ F	< 0.20	1.8	0.49	4.9	ND
BOD ₅	mg/l	5210 B	< 1.0	106	30.5	112	< 1.0
COD	mg/l	5220 D	< 40.00	260	114	370	< 40.00
Ammonia Nitrogen	mg/l	4500-NH ₃ B,C/Method 350.2*	< 0.02	30.1	5.3	10.0	0.11
Chromium Trivalent (Cr ³⁺)	mg/l	3113 B/Calculation	< 0.001	ND	ND	ND	ND
Chromium Hexavalent (Cr ⁶⁺)	mg/l	3500-Cr B	< 0.01	ND	ND	ND	ND
Mercury (Hg)	mg/l	3112 B	< 0.0005	0.0092	ND	0.0027	ND

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

REFERENCE : US, EPA, 1983, Method for Chemical Analysis of Water and Waste, USEPA, EPA 600/4-79/020, Method 350.2.



(Miss Khemchuda Insorn)

Analyst

REG. NO. ๖-239-ก-0005



(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. ๖-239-ก-0004

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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REQUEST SERVICE No.	: 0185/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 01/02/2024	SAMPLING TIME	: 13.38-14.06
RECEIVED DATE	: 02/02/2024	ANALYTICAL DATE	: 02-08/02/2024
REPORT DATE	: 08/02/2024	SITE OPERATOR	: Mr. Baworn Deechaiya
SAMPLE CONDITION	: Normal	FILE CODE	: 224003_WW_February
SAMPLE DESCRIPTION	1 = API Separator Effluent 2 = IAF Unit Effluent 3 = Equalization Tank Effluent 4 = Biological Treatment Effluent		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION			
				1	2	3	4
Temperature	⁰ C	2550 B	< 0.5	32.9	35.5	34.8	34.9
pH	-	4500-H ⁺ B	< 0.10	9.48	7.24	10.37	7.71
Total Dissolved Solids	mg/l	2540 C	< 50	1,034	916	1,232	1,268
Suspended Solids	mg/l	2540 D	< 5	< 5	8	15	< 5
Fat Oil & Grease	mg/l	5520 B	< 0.50	0.93	ND	3.9	ND
Phenols	mg/l	5530 B,C* / B,D	< 0.001*, < 0.10	0.63	1.1	5.7	ND*
Sulfide as H ₂ S	mg/l	4500-S ²⁻ F	< 0.20	1.7	0.46	1.8	ND
BOD ₅	mg/l	5210 B	< 1.0	125	22.6	122	< 1.0
COD	mg/l	5220 D	< 40.00	279	121	338	< 40.00
Ammonia Nitrogen	mg/l	4500-NH ₃ B,C/Method 350.2*	< 0.02	24.1	4.0	5.2	0.14
Chromium Trivalent (Cr ³⁺)	mg/l	3113 B/Calculation	< 0.001	ND	ND	ND	ND
Chromium Hexavalent (Cr ⁶⁺)	mg/l	3500-Cr B	< 0.01	ND	ND	ND	ND
Mercury (Hg)	mg/l	3112 B	< 0.0005	0.0076	ND	0.0009	ND

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

REFERENCE : US.EPA, 1983, Method for Chemical Analysis of Water and Waste, USEPA, EPA 600/4-79/020, Method 350.2.



(Miss Khemchuda Insorn)

Analyst

REG. NO. ว-239-ก-0005



(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. ว-239-ก-0004

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3. - Not available.



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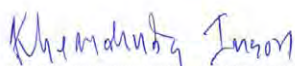
WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REQUEST SERVICE No.	: 0432/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 07/03/2024	SAMPLING TIME	: 14:08-15:03
RECEIVED DATE	: 08/03/2024	ANALYTICAL DATE	: 08-14/03/2024
REPORT DATE	: 15/03/2024	SITE OPERATOR	: Miss Mareeyanee Hawae
SAMPLE CONDITION	: Normal	FILE CODE	: 224003_WW_March
SAMPLE DESCRIPTION	1 = API Separator Effluent 2 = IAF Unit Effluent 3 = Equalization Tank Effluent 4 = Biological Treatment Effluent		

PARAMETER	UNIT	ANALYSIS	ND (non-detectable)	STATION			
		METHODS		1	2	3	4
Temperature	^o C	2550 B	< 0.5	36.8	36.8	35.6	35.2
pH	-	4500-H ⁺ B	< 0.10	7.21	7.32	9.43	7.57
Total Dissolved Solids	mg/l	2540 C	< 50	1,456	1,520	1,642	1,502
Suspended Solids	mg/l	2540 D	< 5	88	17	43	< 5
Fat Oil & Grease	mg/l	5520 B	< 0.50	12.4	1.4	5.3	ND
Phenols	mg/l	5530 B,C* / B,D	< 0.001*, < 0.10	1.7	0.76	3.0	ND*
Sulfide as H ₂ S	mg/l	4500-S ²⁻ F	< 0.20	1.6	0.57	2.3	ND
BOD ₅	mg/l	5210 B	< 1.0	72.4	45.0	64.6	< 1.0
COD	mg/l	5220 D	< 40.00	355	186	293	< 40.00
Ammonia Nitrogen	mg/l	4500-NH ₃ B,C/Method 350.2*	< 0.02	8.2	7.6	7.4	0.06
Chromium Trivalent (Cr ³⁺)	mg/l	3113 B/Calculation	< 0.001	0.007	0.001	ND	ND
Chromium Hexavalent (Cr ⁶⁺)	mg/l	3500-Cr B	< 0.01	ND	ND	ND	ND
Mercury (Hg)	mg/l	3112 B	< 0.0005	0.0250	0.0023	0.0042	0.0005

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

REFERENCE : US EPA, 1983, Method for Chemical Analysis of Water and Waste, USEPA, EPA 600/4-79/020, Method 350.2.



(Miss Khemchuda Insorn)

Analyst

REG. NO. ๓-239-ก-0005



(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. ๓-239-ก-0004

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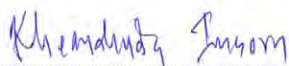
WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REQUEST SERVICE No.	: 0629/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 01/04/2024	SAMPLING TIME	: 09.47-10.20
RECEIVED DATE	: 02/04/2024	ANALYTICAL DATE	: 02-08/04/2024
REPORT DATE	: 09/04/2024	SITE OPERATOR	: Mr. Aniwat Pimwanna
SAMPLE CONDITION	: Normal	FILE CODE	: 224003_WW_April
SAMPLE DESCRIPTION	1 = API Separator Effluent 2 = IAF Unit Effluent 3 = Equalization Tank Effluent 4 = Biological Treatment Effluent		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION			
				1	2	3	4
Temperature	⁰ C	2550 B	< 0.5	32.0	31.5	33.8	34.5
pH	-	4500-H ⁺ B	< 0.10	9.26	7.02	6.95	6.74
Total Dissolved Solids	mg/l	2540 C	< 50	1,059	268	1,672	1,686
Suspended Solids	mg/l	2540 D	< 5	< 5	< 5	30	8
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	ND	ND	ND
Phenols	mg/l	5530 B,C* / B,D	< 0.001*, < 0.10	0.64	ND	0.16	ND*
Sulfide as H ₂ S	mg/l	4500-S ²⁻ F	< 0.20	1.2	0.76	0.20	ND
BOD ₅	mg/l	5210 B	< 1.0	98.4	< 1.0	23.0	< 1.0
COD	mg/l	5220 D	< 40.00	320	< 40.00	147	< 40.00
Ammonia Nitrogen	mg/l	4500-NH ₃ B,C/Method 350.2*	< 0.02	43.2	0.68	3.8	ND*
Chromium Trivalent (Cr ³⁺)	mg/l	3113 B/Calculation	< 0.001	ND	0.001	ND	ND
Chromium Hexavalent (Cr ⁶⁺)	mg/l	3500-Cr B	< 0.01	ND	ND	ND	ND
Mercury (Hg)	mg/l	3112 B	< 0.0005	0.0104	ND	0.0039	0.0006

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

REFERENCE : US EPA, 1983, Method for Chemical Analysis of Water and Waste, USEPA, EPA 600/4-79/020, Method 350.2.



(Miss Khemchuda Insorn)

Analyst

REG. NO. ๖-239-ก-0005



(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. ๖-239-ก-0004

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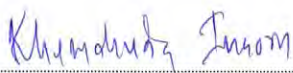
WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REQUEST SERVICE No.	: 0847/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 02/05/2021	SAMPLING TIME	: 09.39-10:15
RECEIVED DATE	: 03/05/2024	ANALYTICAL DATE	: 03-10/05/2024
REPORT DATE	: 13/05/2024	SITE OPERATOR	: Miss Mareeyanee Hawae
SAMPLE CONDITION	: Normal	FILE CODE	: 224003_WW_May
SAMPLE DESCRIPTION	1 = API Separator Effluent 2 = IAF Unit Effluent 3 = Equalization Tank Effluent 4 = Biological Treatment Effluent		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION			
				1	2	3	4
Temperature	°C	2550 B	< 0.5	33.9	33.7	37.8	36.8
pH	-	4500-H ⁺ B	< 0.10	9.11	7.12	9.56	7.49
Total Dissolved Solids	mg/l	2540 C	< 50	1,074	320	1,408	1,642
Suspended Solids	mg/l	2540 D	< 5	< 5	< 5	26	< 5
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	ND	1.6	ND
Phenols	mg/l	5530 B,C* / B,D	< 0.001*, < 0.10	0.66	ND	0.15	ND*
Sulfide as H ₂ S	mg/l	4500-S ²⁻ F	< 0.20	1.8	0.92	6.24	ND
BOD ₅	mg/l	5210 B	< 1.0	145	2.2	28.8	< 1.0
COD	mg/l	5220 D	< 40.00	278	< 40.00	296	< 40.00
Ammonia Nitrogen	mg/l	4500-NH ₃ B,C/Method 350.2*	< 0.02	45.2	0.39	1.1	0.02
Chromium Trivalent (Cr ³⁺)	mg/l	3113 B/Calculation	< 0.001	ND	0.002	ND	ND
Chromium Hexavalent (Cr ⁶⁺)	mg/l	3500-Cr B	< 0.01	ND	ND	ND	ND
Mercury (Hg)	mg/l	3112 B	< 0.0005	0.0111	0.0009	0.0018	0.0021

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

REFERENCE : US.EPA, 1983, Method for Chemical Analysis of Water and Waste, USEPA, EPA 600/4-79/020, Method 350.2.



(Miss Khemchuda Insorn)

Analyst

REG. NO. ๓-239-ก-0005



(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. ๓-239-ก-0004

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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REQUEST SERVICE No.	: 1138/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 06/06/2024	SAMPLING TIME	: 09.39-10:15
RECEIVED DATE	: 07/06/2024	ANALYTICAL DATE	: 07-14/06/2024
REPORT DATE	: 15/06/2024	SITE OPERATOR	: Miss Mareeyanee Hawae
SAMPLE CONDITION	: Normal	FILE CODE	: 224003_WW_June
SAMPLE DESCRIPTION	1 = API Separator Effluent 2 = IAF Unit Effluent 3 = Equalization Tank Effluent 4 = Biological Treatment Effluent		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION			
				1	2	3	4
Temperature	°C	2550 B	< 0.5	34.9	32.6	36.6	34.7
pH	-	4500-H ⁺ B	< 0.10	6.48	7.07	10.24	7.02
Total Dissolved Solids	mg/l	2540 C	< 50	900	701	1,100	1,084
Suspended Solids	mg/l	2540 D	< 5	13	8	35	< 5
Fat Oil & Grease	mg/l	5520 B	< 0.50	5.3	ND	ND	ND
Phenols	mg/l	5530 B,C* / B,D	< 0.001*, < 0.10	0.76	ND	0.22	ND*
Sulfide as H ₂ S	mg/l	4500-S ²⁻ F	< 0.20	ND	ND	ND	ND
BOD ₅	mg/l	5210 B	< 1.0	107	43.2	153	1.9
COD	mg/l	5220 D	< 40.00	267	< 40.00	367	< 40.00
Ammonia Nitrogen	mg/l	4500-NH ₃ B,C/Method 350.2*	< 0.02	3.9	3.3	3.8	0.10
Chromium Trivalent (Cr ³⁺)	mg/l	3113 B/Calculation	< 0.001	0.002	0.003	0.001	ND
Chromium Hexavalent (Cr ⁶⁺)	mg/l	3500-Cr B *	< 0.01	ND	ND	ND	ND
Mercury (Hg)	mg/l	3112 B	< 0.0005	0.0037	ND	0.0023	ND

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

REFERENCE : US EPA, 1983, Method for Chemical Analysis of Water and Waste, USEPA, EPA 600/4-79/020, Method 350.2.



(Miss Khemchuda Insorn)

Analyst

REG. NO. 3-239-ก-0005



(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 3-239-ก-0004

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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REQUEST SERVICE No.	: 0896/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Integrate
SAMPLING DATE	: 09/05/2024	SAMPLING TIME	: 09:42
RECEIVED DATE	: 10/05/2024	ANALYTICAL DATE	: 10-17/05/2024
REPORT DATE	: 18/05/2024	SITE OPERATOR	: Mr. Baworn Deechaiya
SAMPLE CONDITION	: Normal	FILE CODE	: 224003_CW_May

PARAMETER	UNITS	ANALYSIS METHODS	ND (non-detectable)	SATATION	STANDARD ^{1/}
				Ko Saket	
Depth	m.	Measurement	-	1.9	-
Temperature	°C	2550 B	< 0.5	32.3	$\Delta \leq 2$
pH	-	4500-H ⁺ B	< 0.10	8.09	7.0-8.5
Transparency	m.	Secchi Disc	-	1.5	$\Delta \leq 10$ %
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	-
Fat Oil & Grease	-	Visual Testing	-	NV	NV
Suspended Solid (SS)	mg/l	2540 D	2.5	6.12	^{2/}
Ammonia Nitrogen	µg/l	4500-NH ₃ F	< 10.0	ND	-
Phenols	mg/l	5530 B-C	< 0.001	ND	≤ 0.03
Dissolved Oxygen	mg/l	4500-O G	< 0.10	6.0	≥ 4
BOD ₅	mg/l	5210 B	< 1.0	< 1.0	-
Salinity	ppt	2520 B	< 0.10	30.4	$\Delta \leq 10$ %
Total Petroleum Hydrocarbon	µg/l	IOC/GGE(MSI)-III/3	< 0.10	ND	≤ 5
TOC [*]	µg/l	5310 B	< 0.01	1.82	-
Chromium Trivalent (Cr ³⁺)	µg/l	3113 B / Calculation	< 1.00	ND	-
Chromium Hexavalent (Cr ⁶⁺)	µg/l	3113 B	< 1.00	ND	≤ 50
Mercury (Hg)	µg/l	3112 B	< 0.05	ND	≤ 0.1

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

REFERENCE : Intergovernmental Oceanographic Commission of UNESCO (IOC), 1981

(Miss Khemchuda Insorn)

Analyst

(Mrs. Araya Tipparuk)

Technical Management Team

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3. ^{1/} Notification of the National Environmental Board B.E.2564 (2021) (Class 5).

Δ : Change from natural condition, \leq : Not more than, NV : Not visible, \geq : Not less than.

^{2/} The results should not be changed by more than the sum of daily average and the standard deviation.

Daily average was calculated from hourly measurement or at least 5 samples taken at equal time interval within one day.

4. *TOC analysis was performed by The Office of Public Health and Environmental Technology Services, Faculty of Public Health, Mahidol University.

5. - Not available .



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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	: Star Petroleum Refining Public Co., Ltd.	REQUEST SERVICE No.	: 0896/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Integrate
SAMPLING DATE	: 09/05/2024	SAMPLING TIME	: 10:12
RECEIVED DATE	: 10/05/2024	ANALYTICAL DATE	: 10-17/05/2024
REPORT DATE	: 18/05/2024	SITE OPERATOR	: Mr. Baworn Deechaiya
SAMPLE CONDITION	: Normal	FILE CODE	: 224003_CW_May

PARAMETER	UNITS	ANALYSIS METHODS	ND (non-detectable)	SATATION	STANDARD ^{1/}
				Had Sai Thong Beach	
Depth	m.	Measurement	-	2.2	-
Temperature	°C	2550 B	< 0.5	32.4	$\Delta \leq 1$
Transparency	m.	Secchi Disc	-	1.0	$\Delta \leq 10 \%$
pH	-	4500-H ⁺ B	< 0.10	7.93	7.0-8.5
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	-
Fat Oil & Grease	-	Visual Testing	-	NV	NV
Suspended Solid (SS)	mg/l	2540 D	2.5	6.65	^{2/}
Ammonia Nitrogen	µg/l	4500-NH ₃ F	< 10.0	ND	-
Phenols	mg/l	5530 B-C	< 0.001	ND	≤ 0.03
Dissolved Oxygen	mg/l	4500-O G	< 0.10	5.5	≥ 4
BOD ₅	mg/l	5210 B	< 1.0	1.4	-
Salinity	ppt	2520 B	< 0.10	29.8	$\Delta \leq 10 \%$
Total Petroleum Hydrocarbon	µg/l	IOC/GGE(MSI)-III/3	< 0.10	ND	≤ 0.5
TOC [*]	mg/l	5310 B	< 0.01	2.12	-
Chromium Trivalent (Cr ³⁺)	µg/l	3113 B / Calculation	< 1.00	ND	-
Chromium Hexavalent (Cr ⁶⁺)	µg/l	3113 B	< 1.00	ND	≤ 50
Mercury (Hg)	µg/l	3112 B	< 0.05	ND	≤ 0.1

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

REFERENCE : Intergovernmental Oceanographic Commission of UNESCO (IOC), 1981

Khemchuda Insorn

(Miss Khemchuda Insorn)

Analyst

Araya Tipparuk

(Mrs. Araya Tipparuk)

Technical Management Team

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

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3. ^{1/} Notification of the National Environmental Board B.E.2564 (2021) (Class 3).

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^{2/} The results should not be changed by more than the sum of daily average and the standard deviation.

Daily average was calculated from hourly measurement or at least 5 samples taken at equal time interval within one day.

4. *TOC analysis was performed by The Office of Public Health and Environmental Technology Services, Faculty of Public Health, Mahidol University.

5. - Not available.



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REQUEST SERVICE No.	: 0896/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Integrate
SAMPLING DATE	: 09/05/2024	SAMPLING TIME	: 09:32
RECEIVED DATE	: 10/05/2024	ANALYTICAL DATE	: 10-17/05/2024
REPORT DATE	: 18/05/2024	SITE OPERATOR	: Mr. Baworn Deechaiya
SAMPLE CONDITION	: Normal	FILE CODE	: 224003_CW_May

PARAMETER	UNITS	ANALYSIS METHODS	ND (non-detectable)	SATATION	STANDARD ^{1/}
				Wastewater Discharge Point of Refinery (IEAT)	
Depth	m.	Measurement	-	1.2	-
Temperature	°C	2550 B	< 0.5	32.7	$\Delta \leq 2$
Transparency	m.	Secchi Disc	-	0.5	$\Delta \leq 10 \%$
pH	-	4500-H ⁺ B	< 0.10	7.80	7.0-8.5
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	-
Fat Oil & Grease	-	Visual Testing	-	NV	NV
Suspended Solid (SS)	mg/l	2540 D	2.5	18.00	^{2/}
Ammonia Nitrogen	µg/l	4500-NH ₃ F	< 10.0	ND	-
Phenols	mg/l	5530 B-C	< 0.001	ND	≤ 0.03
Dissolved Oxygen	mg/l	4500-O G	< 0.10	6.2	≥ 4
BOD ₅	mg/l	5210 B	< 1.0	2.5	-
Salinity	ppt	2520 B	< 0.10	28.8	$\Delta \leq 10 \%$
Chromium Trivalent (Cr ³⁺)	µg/l	3113 B / Calculation	< 1.00	ND	-
Chromium Hexavalent (Cr ⁶⁺)	µg/l	3113 B	< 1.00	ND	≤ 50
Mercury (Hg)	µg/l	3112 B	< 0.05	ND	≤ 0.1

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

REFERENCE : Intergovernmental Oceanographic Commission of UNESCO (IOC), 1981

Khemchuda Insorn

(Miss Khemchuda Insorn)

Analyst

Araya Tipparuk

(Mrs. Araya Tipparuk)

Technical Management Team

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4. - Not available .



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REQUEST SERVICE No.	: 0896/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Integrate
SAMPLING DATE	: 09/05/2024	SAMPLING TIME	: 09:56
RECEIVED DATE	: 10/05/2024	ANALYTICAL DATE	: 10-17/05/2024
REPORT DATE	: 18/05/2024	SITE OPERATOR	: Mr. Baworn Deechaiya
SAMPLE CONDITION	: Normal	FILE CODE	: 224003_CW_May

PARAMETER	UNITS	ANALYSIS METHODS	ND (non-detectable)	SATATION	STANDARD ^{1/}
				Open Coastal Water	
Depth	m.	Measurement	-	3.5	-
Temperature	°C	2550 B	< 0.5	32.4	$\Delta \leq 2$
Transparency	m.	Secchi Disc	< 0.10	2.0	$\Delta \leq 10 \%$
pH	-	4500-H ⁺ B	-	8.04	7.0-8.5
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	-
Fat Oil & Grease	-	Visual Testing	-	NV	NV
Suspended Solid (SS)	mg/l	2540 D	2.5	9.73	^{2/}
Ammonia Nitrogen	µg/l	4500-NH ₃ F	< 10.0	ND	-
Phenols	mg/l	5530 B-C	< 0.001	ND	≤ 0.03
Dissolved Oxygen	mg/l	4500-O G	< 0.10	6.0	≥ 4
BOD ₅	mg/l	5210 B	< 1.0	< 1.0	-
Salinity	ppt	2520 B	< 0.10	30.5	$\Delta \leq 10 \%$
Total Petroleum Hydrocarbon	µg/l	IOC/GGE(MSI)-III/3	< 0.10	ND	≤ 5
TOC [*]	mg/l	5310 B	< 0.01	1.78	-
Chromium Trivalent (Cr ³⁺)	µg/l	3113 B / Calculation	< 1.00	ND	-
Chromium Hexavalent (Cr ⁶⁺)	µg/l	3113 B	< 1.00	ND	≤ 50
Mercury (Hg)	µg/l	3112 B	< 0.05	ND	≤ 0.1

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

REFERENCE : Intergovernmental Oceanographic Commission of UNESCO (IOC), 1981



(Miss Khemchuda Insorn)

Analyst



(Mrs. Araya Tipparuk)

Technical Management Team

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5. - Not available .

ใบรับรองผลการตรวจวัดระดับเสียง



Noise Monitoring Result : Community Noise

MTR-SPRC PLC-Refinery

Location : Main Office Complex

Monitor Period : 03-10 May 2024

SLM Model : Cirrus CR162B

Serial No : G302741

Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : 04 Sep 2023

SLM Reading / Adjust dB(A) : 93.0/0.7

Expire Date : 03 Sep 2024

Cal Sheet No.: CR-515-2024-115

Time	Equivalent Sound Pressure Level (dB(A))						
	03-04 May 2024	04-05 May 2024	05-06 May 2024	06-07 May 2024	07-08 May 2024	08-09 May 2024	09-10 May 2024
14:00 - 15:00	57.9	57.5	55.2	57.0	55.7	56.5	58.5
15:00 - 16:00	57.5	55.3	55.6	56.9	54.9	56.2	58.9
16:00 - 17:00	58.9	56.0	56.2	55.7	55.8	56.7	56.5
17:00 - 18:00	56.8	55.5	55.8	56.3	55.2	56.9	55.3
18:00 - 19:00	56.5	55.4	55.4	55.9	53.9	56.2	54.2
19:00 - 20:00	55.1	54.4	54.9	55.0	54.0	55.3	54.7
20:00 - 21:00	52.5	52.3	51.5	51.4	49.7	51.2	48.5
21:00 - 22:00	51.0	51.8	51.3	51.1	47.6	50.8	48.7
22:00 - 23:00	51.6	50.4	49.4	50.6	47.1	50.7	49.7
23:00 - 00:00	52.1	50.6	49.8	50.9	48.8	50.0	51.1
00:00 - 01:00	52.1	51.3	50.2	50.4	47.9	49.1	48.0
01:00 - 02:00	52.0	51.7	50.9	51.6	48.6	52.1	47.4
02:00 - 03:00	52.0	51.4	51.4	49.8	49.6	49.9	47.3
03:00 - 04:00	51.8	52.6	51.6	49.6	49.0	47.7	46.9
04:00 - 05:00	52.1	51.8	52.9	50.4	49.2	48.0	48.1
05:00 - 06:00	53.1	52.9	52.7	52.6	51.5	51.0	51.7
06:00 - 07:00	56.5	55.0	55.2	56.9	55.1	55.2	54.7
07:00 - 08:00	59.0	57.0	62.9	60.2	56.5	57.4	58.1
08:00 - 09:00	57.7	56.3	57.1	67.1	55.3	56.0	57.9
09:00 - 10:00	57.8	56.2	57.2	58.3	61.5	61.9	57.3
10:00 - 11:00	57.4	56.4	57.3	59.1	55.8	57.2	57.2
11:00 - 12:00	55.2	56.8	56.7	56.6	55.6	57.3	57.5
12:00 - 13:00	60.4	57.1	58.0	57.1	56.6	57.7	56.9
13:00 - 14:00	58.5	57.3	57.8	56.7	57.4	57.8	57.6
Leq(24)*	56.2	54.9	55.8	57.4	54.6	55.6	55.2
Ldn	60.3	59.4	59.6	60.4	58.2	59.0	58.4
Lmax **	81.9	79.3	93.8	89.7	80.6	84.9	80.6
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-SPRC PLC-Refinery

Location : Main Office Complex

Monitor Period : 03-10 May 2024

SLM Model : Cirrus CR162B

Serial No : G302741

Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : 04 Sep 2023

SLM Reading / Adjust dB(A) : 93.0/0.7

Expire Date : 03 Sep 2024

Cal Sheet No.: CR-515-2024-115

Time	L90 (dB(A))						
	03-04 May 2024	04-05 May 2024	05-06 May 2024	06-07 May 2024	07-08 May 2024	08-09 May 2024	09-10 May 2024
14:00 - 15:00	54.4	51.9	53.2	54.7	52.6	54.5	55.8
15:00 - 16:00	54.8	53.3	53.4	55.0	52.8	54.9	55.5
16:00 - 17:00	55.1	53.7	54.0	53.5	52.4	54.7	53.9
17:00 - 18:00	54.6	52.9	53.6	54.3	52.4	54.3	52.8
18:00 - 19:00	54.1	53.1	53.3	54.0	51.6	53.9	52.7
19:00 - 20:00	53.8	52.8	53.5	53.7	52.0	53.7	51.2
20:00 - 21:00	49.9	49.8	49.0	49.8	47.5	49.3	45.4
21:00 - 22:00	49.6	49.0	48.8	49.4	44.8	49.4	45.6
22:00 - 23:00	49.9	48.7	47.6	49.1	44.4	49.0	48.5
23:00 - 00:00	50.7	49.2	47.7	49.6	47.1	48.2	49.3
00:00 - 01:00	50.8	49.8	48.7	49.0	46.6	47.9	46.0
01:00 - 02:00	50.8	50.3	49.5	48.4	46.8	50.0	45.6
02:00 - 03:00	50.9	50.0	49.9	48.3	47.8	48.7	45.9
03:00 - 04:00	50.6	50.3	50.1	48.3	47.0	46.2	45.6
04:00 - 05:00	50.9	50.4	51.1	49.0	47.4	46.5	46.3
05:00 - 06:00	51.3	50.7	50.4	49.9	48.8	47.9	47.4
06:00 - 07:00	52.2	50.6	50.8	50.9	50.2	50.3	49.1
07:00 - 08:00	55.1	53.9	54.1	55.2	52.7	53.1	54.1
08:00 - 09:00	55.4	53.7	55.4	54.9	53.6	54.1	55.9
09:00 - 10:00	55.3	53.6	55.0	56.1	54.4	54.2	56.0
10:00 - 11:00	55.2	54.5	55.6	55.3	54.8	55.5	56.0
11:00 - 12:00	52.5	55.0	54.8	53.4	54.3	55.7	55.0
12:00 - 13:00	54.6	55.3	56.4	55.2	55.3	56.2	55.4
13:00 - 14:00	54.1	55.5	55.9	53.7	55.9	56.4	55.2
L90(avg)*	53.2	52.5	53.0	52.9	51.8	53.0	52.7

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-SPRC PLC-Refinery

Location : Central Control Building

Monitor Period : 03-10 May 2024

SLM Model : Cirrus CR162B

Serial No : G302743

Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : 04 Sep 2023

SLM Reading / Adjust dB(A) : 92.6/1.1

Expire Date : 03 Sep 2024

Cal Sheet No.: CR-515-2024-115

Time	Equivalent Sound Pressure Level (dB(A))						
	03-04 May 2024	04-05 May 2024	05-06 May 2024	06-07 May 2024	07-08 May 2024	08-09 May 2024	09-10 May 2024
14:00 - 15:00	65.8	66.3	64.8	65.3	67.8	65.5	67.2
15:00 - 16:00	65.2	65.2	65.0	65.1	67.3	65.5	66.9
16:00 - 17:00	65.3	64.9	65.1	65.0	66.7	65.4	66.3
17:00 - 18:00	65.0	65.0	65.1	65.0	65.9	65.4	67.2
18:00 - 19:00	65.3	65.3	65.5	65.4	66.5	65.6	65.6
19:00 - 20:00	65.0	64.9	65.1	65.0	66.1	65.4	65.1
20:00 - 21:00	65.0	64.9	65.0	65.2	65.7	65.5	65.2
21:00 - 22:00	65.2	64.9	65.1	65.2	65.9	65.4	65.3
22:00 - 23:00	65.2	64.9	65.2	65.2	65.9	65.2	65.3
23:00 - 00:00	65.3	65.2	65.0	65.3	66.0	65.2	65.4
00:00 - 01:00	65.1	65.3	64.8	65.0	66.0	65.0	65.4
01:00 - 02:00	65.0	65.4	64.8	65.0	65.9	65.4	65.3
02:00 - 03:00	65.0	65.1	64.9	65.0	65.9	65.3	65.3
03:00 - 04:00	65.0	65.0	65.0	65.0	66.0	65.2	65.5
04:00 - 05:00	65.2	65.2	65.3	65.2	66.2	65.4	65.7
05:00 - 06:00	65.3	65.3	65.2	65.2	66.0	65.4	65.6
06:00 - 07:00	65.1	65.0	64.9	65.3	65.8	65.2	65.1
07:00 - 08:00	67.7	67.1	66.2	67.3	65.4	67.9	64.6
08:00 - 09:00	65.4	65.0	65.2	68.0	65.2	66.2	64.6
09:00 - 10:00	65.6	64.9	65.1	67.8	64.7	66.7	64.6
10:00 - 11:00	65.7	65.1	65.1	67.6	64.7	66.8	64.6
11:00 - 12:00	65.3	65.1	65.3	67.4	65.2	66.7	64.6
12:00 - 13:00	65.3	65.1	65.4	67.5	65.1	66.5	64.6
13:00 - 14:00	68.0	64.9	65.1	67.4	68.7	66.5	64.6
Leq(24)*	65.5	65.2	65.1	66.0	66.1	65.8	65.5
Ldn	71.6	71.6	71.5	71.8	72.4	71.8	71.8
Lmax **	91.9	90.2	87.1	90.1	90.6	91.8	85.5
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-SPRC PLC-Refinery

Location : Central Control Building

Monitor Period : 03-10 May 2024

SLM Model : Cirrus CR162B

Serial No : G302743

Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : 04 Sep 2023

SLM Reading / Adjust dB(A) : 92.6/1.1

Expire Date : 03 Sep 2024

Cal Sheet No.: CR-515-2024-115

Time	L90 (dB(A))						
	03-04 May 2024	04-05 May 2024	05-06 May 2024	06-07 May 2024	07-08 May 2024	08-09 May 2024	09-10 May 2024
14:00 - 15:00	65.2	64.6	64.4	64.8	66.9	65.0	65.7
15:00 - 16:00	64.7	64.7	64.5	64.6	66.7	65.0	65.8
16:00 - 17:00	64.7	64.5	64.8	64.6	65.8	64.9	65.4
17:00 - 18:00	64.6	64.6	64.8	64.6	65.5	64.9	64.8
18:00 - 19:00	64.8	64.8	65.0	64.8	66.0	65.1	65.0
19:00 - 20:00	64.6	64.6	64.8	64.6	65.7	65.0	64.6
20:00 - 21:00	64.6	64.5	64.7	64.7	65.3	65.1	64.8
21:00 - 22:00	64.9	64.5	64.7	64.9	65.5	65.1	65.0
22:00 - 23:00	64.9	64.5	64.7	64.9	65.5	64.9	65.0
23:00 - 00:00	64.9	64.7	64.6	64.9	65.5	64.9	65.0
00:00 - 01:00	64.7	64.9	64.4	64.6	65.7	64.7	65.0
01:00 - 02:00	64.6	65.0	64.5	64.6	65.6	65.0	64.9
02:00 - 03:00	64.6	64.7	64.5	64.6	65.6	64.9	65.0
03:00 - 04:00	64.7	64.6	64.6	64.7	65.7	64.8	65.1
04:00 - 05:00	64.8	64.8	64.8	64.8	65.8	65.1	65.3
05:00 - 06:00	64.8	64.9	64.8	64.9	65.5	65.1	65.3
06:00 - 07:00	64.7	64.6	64.5	64.7	65.5	64.8	63.7
07:00 - 08:00	64.7	64.8	64.5	64.2	65.1	64.8	63.3
08:00 - 09:00	64.9	64.5	64.7	65.8	64.6	64.8	63.3
09:00 - 10:00	65.1	64.4	64.8	66.7	64.3	65.5	63.3
10:00 - 11:00	65.1	64.7	64.7	66.7	64.2	65.6	63.3
11:00 - 12:00	64.9	64.7	64.8	65.9	64.7	65.5	63.3
12:00 - 13:00	64.8	64.7	64.9	66.7	64.7	65.5	63.3
13:00 - 14:00	64.6	64.4	64.6	66.4	64.9	65.4	63.3
L90(avg)*	64.8	64.7	64.7	65.2	65.5	65.1	64.6

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-SPRC PLC-Refinery

Location : Northern Refinery Boundary Station 1

Monitor Period : 03-10 May 2024

SLM Model : Cirrus CR162B

Serial No : G300846

Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : 04 Sep 2023

SLM Reading / Adjust dB(A) : 93.5/0.2

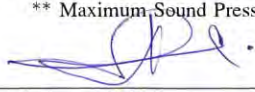
Expire Date : 03 Sep 2024


Cal Sheet No.: CR-515-2024-115

Time	Equivalent Sound Pressure Level (dB(A))						
	03-04 May 2024	04-05 May 2024	05-06 May 2024	06-07 May 2024	07-08 May 2024	08-09 May 2024	09-10 May 2024
12:00 - 13:00	55.8	54.2	52.2	51.3	58.6	54.2	62.4
13:00 - 14:00	61.9	52.7	52.6	53.3	57.6	54.0	61.4
14:00 - 15:00	58.0	58.0	55.3	54.4	61.2	60.2	57.4
15:00 - 16:00	56.4	55.7	54.5	55.7	58.4	60.3	55.2
16:00 - 17:00	52.2	55.1	54.1	56.3	57.8	59.1	54.2
17:00 - 18:00	53.5	52.9	54.6	52.8	56.2	56.5	56.1
18:00 - 19:00	50.0	53.5	52.1	50.8	52.3	53.4	52.7
19:00 - 20:00	50.8	51.7	52.0	49.7	48.5	51.7	50.8
20:00 - 21:00	50.3	49.0	48.9	48.8	48.9	51.6	51.1
21:00 - 22:00	50.0	49.7	49.0	49.0	48.8	50.6	53.5
22:00 - 23:00	49.8	50.1	51.2	48.4	47.6	49.5	48.6
23:00 - 00:00	50.0	50.3	53.6	47.8	48.4	52.3	48.8
00:00 - 01:00	49.6	50.3	53.4	47.6	50.9	50.6	47.6
01:00 - 02:00	50.4	51.6	55.8	48.1	48.7	49.5	47.0
02:00 - 03:00	53.6	50.4	54.1	49.0	49.5	49.8	47.7
03:00 - 04:00	58.0	51.3	51.4	51.9	51.7	52.0	55.7
04:00 - 05:00	58.2	57.4	58.0	60.0	58.6	58.5	59.1
05:00 - 06:00	54.2	57.3	57.5	63.1	60.5	60.9	60.6
06:00 - 07:00	55.5	53.3	53.8	65.3	57.1	56.8	56.3
07:00 - 08:00	55.3	52.6	52.6	58.4	53.5	55.2	54.1
08:00 - 09:00	57.8	54.2	55.3	59.7	52.6	55.9	52.6
09:00 - 10:00	56.2	52.8	54.0	59.3	55.7	57.3	55.0
10:00 - 11:00	54.1	51.3	52.1	58.4	54.7	56.1	54.6
11:00 - 12:00	55.2	51.0	52.8	58.5	55.3	57.1	54.2
Leq(24)*	55.4	53.5	53.9	57.3	55.8	56.1	56.1
Ldn	61.1	59.9	61.1	64.9	61.7	62.0	61.9
Lmax **	84.7	86.7	85.8	87.9	81.5	84.9	84.2
Standard-24Hr	70 dB(A)						
Standard-Max	115 dB(A)						

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

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


(Miss Katesarin Vorradetwittaya)
Environmental Scientist


(Miss Preeda Somjai)
Technical Management Team



Noise Monitoring Result : Background Noise

MTR-SPRC PLC-Refinery

Location : Northern Refinery Boundary Station 1

Monitor Period : 03-10 May 2024

SLM Model : Cirrus CR162B

Serial No : G300846

Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : 04 Sep 2023

SLM Reading / Adjust dB(A) : 93.5/0.2

Expire Date : 03 Sep 2024

Cal Sheet No.: CR-515-2024-115

Time	L90 (dB(A))						
	03-04 May 2024	04-05 May 2024	05-06 May 2024	06-07 May 2024	07-08 May 2024	08-09 May 2024	09-10 May 2024
12:00 - 13:00	49.3	49.0	46.8	48.1	52.3	50.5	52.6
13:00 - 14:00	51.2	48.1	47.6	47.3	52.2	50.7	52.1
14:00 - 15:00	50.4	49.2	48.3	46.3	51.7	51.1	49.4
15:00 - 16:00	48.9	49.1	48.2	48.9	51.2	52.1	48.2
16:00 - 17:00	48.2	49.1	47.6	48.8	49.1	51.3	48.1
17:00 - 18:00	48.0	48.2	47.9	48.2	50.0	50.2	45.7
18:00 - 19:00	47.7	48.1	47.1	48.1	47.6	49.4	44.3
19:00 - 20:00	48.0	47.0	46.6	47.5	44.6	49.4	45.0
20:00 - 21:00	48.6	46.8	45.4	47.1	44.3	48.9	48.7
21:00 - 22:00	48.8	47.4	45.4	47.5	47.2	48.2	50.3
22:00 - 23:00	48.6	48.1	46.6	46.9	46.4	47.8	46.2
23:00 - 00:00	49.0	48.9	47.6	46.2	46.6	50.5	44.9
00:00 - 01:00	48.7	48.7	47.8	45.9	47.8	49.4	44.9
01:00 - 02:00	49.2	49.2	48.3	46.2	47.1	46.8	45.0
02:00 - 03:00	49.6	49.0	49.5	47.2	47.5	47.0	45.4
03:00 - 04:00	51.7	49.3	48.4	47.9	48.5	48.5	47.0
04:00 - 05:00	50.7	49.5	49.5	50.0	50.7	51.1	49.0
05:00 - 06:00	49.5	49.5	48.4	52.7	49.6	50.4	49.0
06:00 - 07:00	51.1	48.3	48.3	54.4	45.9	47.9	46.5
07:00 - 08:00	51.3	47.4	48.0	54.2	45.1	47.8	47.2
08:00 - 09:00	50.6	47.9	47.7	53.8	45.6	48.5	46.9
09:00 - 10:00	49.9	47.5	47.5	53.5	47.7	50.1	47.4
10:00 - 11:00	49.7	47.2	48.1	53.6	47.8	51.1	47.3
11:00 - 12:00	49.4	47.4	48.3	51.7	49.9	50.6	47.6
L90(avg)*	49.7	48.4	47.8	50.3	48.8	49.8	48.0

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

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



Noise Monitoring Result : Community Noise

MTR-SPRC PLC-Refinery

Location : Northern Refinery Boundary Station 2

Monitor Period : 03-10 May 2024

SLM Model : Cirrus CR162B

Serial No : G302738

Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : 04 Sep 2023

SLM Reading / Adjust dB(A) : 93.1/0.6

Expire Date : 03 Sep 2024

Cal Sheet No.: CR-515-2024-115

Time	Equivalent Sound Pressure Level (dB(A))						
	03-04 May 2024	04-05 May 2024	05-06 May 2024	06-07 May 2024	07-08 May 2024	08-09 May 2024	09-10 May 2024
14:00 - 15:00	47.9	51.1	53.0	53.3	55.5	54.9	54.9
15:00 - 16:00	50.2	52.1	51.2	52.2	54.5	54.6	52.5
16:00 - 17:00	46.3	50.0	53.1	52.5	53.1	54.6	51.3
17:00 - 18:00	45.8	48.5	51.5	51.6	44.9	53.7	49.4
18:00 - 19:00	44.5	47.2	51.4	51.6	44.9	52.3	49.2
19:00 - 20:00	45.2	48.7	50.7	51.1	44.7	52.1	50.4
20:00 - 21:00	44.7	49.4	50.3	51.2	45.5	52.1	52.8
21:00 - 22:00	44.4	48.1	52.1	52.2	61.3	51.6	53.8
22:00 - 23:00	45.4	48.4	50.9	50.6	48.0	51.5	51.1
23:00 - 00:00	45.6	49.9	51.3	50.5	61.0	52.3	49.8
00:00 - 01:00	44.2	48.0	51.4	50.6	66.8	51.3	49.7
01:00 - 02:00	44.0	48.1	51.5	50.5	63.0	50.3	51.0
02:00 - 03:00	44.4	47.6	52.1	51.0	69.7	49.6	51.3
03:00 - 04:00	44.4	49.2	53.5	52.7	72.7	51.5	52.6
04:00 - 05:00	45.6	50.4	53.2	54.8	71.7	54.1	55.3
05:00 - 06:00	46.3	50.0	54.4	54.8	73.0	53.7	53.7
06:00 - 07:00	47.3	50.2	52.2	67.1	71.8	50.9	53.3
07:00 - 08:00	50.1	52.7	52.1	58.0	64.5	51.1	56.2
08:00 - 09:00	49.5	54.1	51.8	59.7	51.6	53.4	53.8
09:00 - 10:00	58.4	51.1	52.3	56.2	52.9	53.3	53.4
10:00 - 11:00	57.9	50.9	52.2	56.2	52.1	53.4	52.8
11:00 - 12:00	61.7	51.7	52.8	55.4	55.1	54.2	53.6
12:00 - 13:00	65.9	52.0	52.3	56.3	53.3	56.6	55.0
13:00 - 14:00	54.2	52.6	52.5	53.2	53.5	54.5	53.7
Leq(24)*	55.1	50.5	52.2	56.7	65.9	53.1	52.9
Ldn	56.5	55.9	58.8	64.6	75.6	58.6	58.9
Lmax **	81.9	68.6	78.1	87.8	77.6	81.0	79.6
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-SPRC PLC-Refinery

Location : Northern Refinery Boundary Station 2

Monitor Period : 03-10 May 2024

SLM Model : Cirrus CR162B

Serial No : G302738

Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : 04 Sep 2023

SLM Reading / Adjust dB(A) : 93.1/0.6

Expire Date : 03 Sep 2024

Cal Sheet No.: CR-515-2024-115

Time	L90 (dB(A))						
	03-04 May 2024	04-05 May 2024	05-06 May 2024	06-07 May 2024	07-08 May 2024	08-09 May 2024	09-10 May 2024
14:00 - 15:00	44.7	47.9	50.1	50.0	51.6	52.0	51.4
15:00 - 16:00	45.1	48.5	49.6	50.6	52.6	52.3	49.8
16:00 - 17:00	44.7	47.4	49.5	50.3	45.2	51.8	49.3
17:00 - 18:00	43.1	46.4	49.5	50.1	44.5	51.5	46.5
18:00 - 19:00	42.8	45.8	49.4	50.2	44.5	50.5	46.5
19:00 - 20:00	43.2	46.6	49.2	49.6	44.5	50.7	47.9
20:00 - 21:00	43.3	47.4	48.6	49.7	44.5	50.2	51.4
21:00 - 22:00	43.1	46.5	49.2	50.2	46.3	49.8	52.0
22:00 - 23:00	43.4	46.6	49.4	49.0	27.4	49.7	47.8
23:00 - 00:00	43.1	47.9	50.0	48.8	42.3	50.9	47.2
00:00 - 01:00	43.0	46.6	49.8	48.9	51.1	49.8	47.5
01:00 - 02:00	43.0	46.7	50.0	48.9	50.6	48.2	48.0
02:00 - 03:00	43.2	46.0	50.5	49.3	54.5	47.8	48.1
03:00 - 04:00	43.3	46.1	50.2	50.7	71.2	49.6	49.5
04:00 - 05:00	44.0	47.7	50.4	50.7	70.5	51.0	51.1
05:00 - 06:00	44.1	47.0	49.7	51.7	71.4	50.0	50.2
06:00 - 07:00	43.9	46.4	50.5	54.3	68.9	48.6	50.8
07:00 - 08:00	46.3	49.6	50.7	55.6	49.2	49.4	51.3
08:00 - 09:00	45.9	49.1	50.4	55.0	49.2	49.9	51.0
09:00 - 10:00	51.4	49.7	50.3	53.9	50.5	51.1	50.9
10:00 - 11:00	53.2	49.1	50.6	54.4	50.4	51.7	50.7
11:00 - 12:00	51.4	50.0	50.9	53.3	52.1	52.5	51.4
12:00 - 13:00	51.8	49.4	51.0	53.5	51.9	53.5	52.6
13:00 - 14:00	51.0	49.8	50.4	51.2	52.1	52.2	51.3
L90(avg)*	47.1	47.9	50.0	51.8	63.0	50.8	50.1

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-SPRC PLC-Refinery

Location : Northern Refinery Boundary Station 3

Monitor Period : 03-10 May 2024

SLM Model : Cirrus CR162B

Serial No : G300990

Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : 04 Sep 2023

SLM Reading / Adjust dB(A) : 92.5/1.2

Expire Date : 03 Sep 2024

Cal Sheet No.: CR-515-2024-115

Time	Equivalent Sound Pressure Level (dB(A))						
	03-04 May 2024	04-05 May 2024	05-06 May 2024	06-07 May 2024	07-08 May 2024	08-09 May 2024	09-10 May 2024
14:00 - 15:00	58.7	55.9	53.7	54.3	63.4	62.0	63.6
15:00 - 16:00	57.1	55.9	54.8	54.5	61.7	62.0	61.7
16:00 - 17:00	56.8	56.2	55.9	54.9	59.7	61.6	60.8
17:00 - 18:00	56.4	57.0	55.9	55.8	59.4	60.5	66.9
18:00 - 19:00	56.2	57.1	55.8	56.1	61.9	60.3	55.3
19:00 - 20:00	56.3	56.9	55.6	56.1	58.3	59.9	54.9
20:00 - 21:00	56.3	57.2	56.0	56.1	57.4	59.6	56.8
21:00 - 22:00	56.4	57.0	56.1	56.1	57.2	59.2	57.8
22:00 - 23:00	59.9	60.4	60.1	59.3	58.3	60.5	60.2
23:00 - 00:00	56.8	57.3	55.8	55.8	58.1	59.5	56.1
00:00 - 01:00	56.8	57.1	55.8	56.1	58.7	59.5	55.5
01:00 - 02:00	56.6	56.8	55.8	56.2	58.7	59.4	55.6
02:00 - 03:00	56.6	56.5	56.1	56.0	58.6	58.4	55.9
03:00 - 04:00	56.9	56.5	56.7	56.0	58.9	59.0	56.2
04:00 - 05:00	56.7	56.8	56.1	56.2	59.2	59.2	56.4
05:00 - 06:00	57.5	56.5	56.2	57.4	59.9	60.6	57.9
06:00 - 07:00	57.4	57.2	56.6	58.3	59.4	59.5	57.8
07:00 - 08:00	56.9	56.1	55.4	63.7	58.5	61.6	56.3
08:00 - 09:00	57.0	55.6	55.5	59.8	58.8	61.7	58.2
09:00 - 10:00	57.1	55.4	55.2	59.8	61.4	62.1	58.3
10:00 - 11:00	56.8	54.5	55.5	58.0	61.4	63.1	58.9
11:00 - 12:00	56.6	54.3	55.6	61.7	61.7	62.4	58.9
12:00 - 13:00	56.8	54.0	55.2	59.8	61.8	62.9	59.5
13:00 - 14:00	57.4	53.2	54.5	61.7	62.5	64.2	60.2
Leq(24)*	57.1	56.5	56.0	58.3	60.1	61.1	59.5
Ldn	63.7	63.6	63.0	63.7	65.6	66.4	64.2
Lmax **	83.0	81.4	74.9	86.3	76.5	81.1	78.4
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-SPRC PLC-Refinery

Location : Northern Refinery Boundary Station 3

Monitor Period : 03-10 May 2024

SLM Model : Cirrus CR162B

Serial No : G300990

Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : 04 Sep 2023

SLM Reading / Adjust dB(A) : 92.5/1.2

Expire Date : 03 Sep 2024

Cal Sheet No.: CR-515-2024-115

Time	L90 (dB(A))						
	03-04 May 2024	04-05 May 2024	05-06 May 2024	06-07 May 2024	07-08 May 2024	08-09 May 2024	09-10 May 2024
14:00 - 15:00	55.4	54.0	52.1	52.7	60.8	60.0	61.1
15:00 - 16:00	55.4	54.4	53.4	52.9	59.3	59.9	60.0
16:00 - 17:00	55.0	54.6	54.2	53.4	57.7	59.6	58.3
17:00 - 18:00	54.6	55.2	54.3	54.2	58.0	58.7	58.3
18:00 - 19:00	54.6	55.6	54.4	54.6	59.9	58.7	52.2
19:00 - 20:00	54.6	55.4	54.2	54.5	56.6	58.5	52.8
20:00 - 21:00	54.6	55.6	54.6	54.5	55.6	58.1	54.6
21:00 - 22:00	54.8	55.4	54.7	54.6	55.5	57.6	56.3
22:00 - 23:00	55.3	55.8	55.0	55.0	56.3	57.8	56.0
23:00 - 00:00	55.1	55.7	54.4	54.4	56.8	58.0	54.5
00:00 - 01:00	55.2	55.5	54.4	54.6	57.4	57.8	53.9
01:00 - 02:00	55.0	55.3	54.4	54.7	57.5	56.9	54.2
02:00 - 03:00	54.8	54.9	54.5	54.7	57.3	56.5	53.6
03:00 - 04:00	55.2	54.8	55.1	54.6	57.6	57.0	54.5
04:00 - 05:00	55.2	55.1	54.5	54.7	57.6	57.3	55.0
05:00 - 06:00	55.5	54.8	54.6	54.9	58.2	58.2	56.0
06:00 - 07:00	55.4	54.4	54.3	55.4	57.3	57.3	54.7
07:00 - 08:00	54.9	54.4	53.9	56.7	56.3	59.6	54.0
08:00 - 09:00	55.4	54.0	53.9	57.4	56.1	59.6	55.5
09:00 - 10:00	55.3	53.7	53.6	56.3	59.3	59.8	55.7
10:00 - 11:00	55.1	52.9	53.8	55.8	59.6	60.3	56.6
11:00 - 12:00	55.1	52.7	53.8	59.2	59.5	60.1	56.6
12:00 - 13:00	54.8	52.4	52.9	57.6	60.1	60.6	57.2
13:00 - 14:00	54.9	51.6	52.8	58.5	60.3	61.8	57.1
L90(avg)*	55.1	54.6	54.1	55.6	58.2	58.9	56.3

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-SPRC PLC-Refinery

Location : Eastern Refinery Boundary
SLM Model : Cirrus CR162B
Site Operator : Mr. Siwanon Kulawong

Monitor Period : 03-10 May 2024
Serial No : G300892

Calibrator Model : Cirrus CR:515
Calibration Ref dB(A) : 94.0
SLM Reading / Adjust dB(A) : 93.2/0.5
Cal Sheet No.: CR-515-2024-115

Serial No : 97097
Certified Date : 04 Sep 2023
Expire Date : 03 Sep 2024

Time	Equivalent Sound Pressure Level (dB(A))						
	03-04 May 2024	04-05 May 2024	05-06 May 2024	06-07 May 2024	07-08 May 2024	08-09 May 2024	09-10 May 2024
14:00 - 15:00	59.0	58.9	58.9	59.0	61.4	58.7	63.4
15:00 - 16:00	59.1	59.8	60.0	60.5	60.6	60.2	62.8
16:00 - 17:00	62.1	62.1	62.1	61.3	61.7	60.9	62.2
17:00 - 18:00	64.2	64.3	63.7	63.5	63.6	64.0	61.9
18:00 - 19:00	62.7	63.5	63.7	62.4	61.1	62.4	59.3
19:00 - 20:00	61.3	60.9	60.7	61.4	59.3	60.5	61.3
20:00 - 21:00	60.1	60.8	61.1	60.1	59.2	60.4	57.2
21:00 - 22:00	58.6	58.9	57.8	60.3	58.4	60.7	55.2
22:00 - 23:00	59.3	56.0	56.8	56.7	56.8	58.1	56.3
23:00 - 00:00	55.0	56.2	54.0	55.9	52.5	56.9	55.6
00:00 - 01:00	54.7	57.9	56.1	55.3	54.6	54.3	56.3
01:00 - 02:00	54.7	57.7	51.0	52.3	48.4	52.6	49.5
02:00 - 03:00	53.9	55.1	51.2	54.3	51.2	53.6	48.0
03:00 - 04:00	52.2	54.1	50.3	52.9	50.6	51.1	47.8
04:00 - 05:00	53.3	52.6	52.4	52.8	53.6	52.5	50.9
05:00 - 06:00	55.6	55.1	55.4	55.6	56.9	55.0	56.3
06:00 - 07:00	61.9	60.0	61.7	62.4	63.1	61.4	61.1
07:00 - 08:00	64.4	61.6	63.7	65.7	64.0	63.9	63.6
08:00 - 09:00	61.0	60.4	59.8	65.8	61.6	60.8	59.4
09:00 - 10:00	60.5	58.6	59.8	62.0	59.4	60.2	58.6
10:00 - 11:00	60.6	58.8	58.2	62.1	58.2	59.4	60.2
11:00 - 12:00	60.3	59.0	61.2	63.5	60.3	61.7	60.2
12:00 - 13:00	61.0	59.8	58.9	62.7	59.6	62.0	59.6
13:00 - 14:00	60.7	60.1	59.3	61.9	60.2	61.2	58.8
Leq(24)*	60.2	59.7	59.7	61.1	59.7	60.1	59.5
Ldn	64.2	63.9	63.5	64.5	63.9	63.9	63.2
Lmax **	87.4	86.1	85.5	86.3	88.3	86.6	89.1
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-SPRC PLC-Refinery

Location : Eastern Refinery Boundary

Monitor Period : 03-10 May 2024

SLM Model : Cirrus CR162B

Serial No : G300892

Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : 04 Sep 2023

SLM Reading / Adjust dB(A) : 93.2/0.5

Expire Date : 03 Sep 2024

Cal Sheet No.: CR-515-2024-115

Time	L90 (dB(A))						
	03-04 May 2024	04-05 May 2024	05-06 May 2024	06-07 May 2024	07-08 May 2024	08-09 May 2024	09-10 May 2024
14:00 - 15:00	49.8	49.7	47.6	48.6	50.8	48.7	52.6
15:00 - 16:00	50.4	50.1	49.7	47.7	50.5	47.9	55.2
16:00 - 17:00	51.7	52.9	52.1	49.9	53.5	50.4	49.3
17:00 - 18:00	56.4	54.6	53.7	53.2	56.8	55.7	49.3
18:00 - 19:00	54.2	53.9	52.9	52.8	51.3	52.8	49.5
19:00 - 20:00	51.5	50.3	49.6	49.4	49.6	50.5	48.4
20:00 - 21:00	49.7	48.5	48.7	47.6	46.6	47.4	44.0
21:00 - 22:00	46.8	47.0	45.3	45.0	43.4	44.9	42.4
22:00 - 23:00	47.1	45.4	44.3	43.9	41.7	43.9	44.5
23:00 - 00:00	45.6	45.9	42.7	43.8	41.5	42.3	43.4
00:00 - 01:00	45.2	46.0	42.7	42.5	41.4	42.2	41.4
01:00 - 02:00	44.8	45.3	41.8	40.1	41.0	41.6	40.9
02:00 - 03:00	43.9	45.1	42.0	39.0	41.7	42.1	40.6
03:00 - 04:00	44.2	44.5	42.5	39.8	41.5	41.7	40.7
04:00 - 05:00	44.7	45.1	43.5	41.4	42.7	41.6	41.6
05:00 - 06:00	46.6	45.7	44.5	44.1	44.8	44.4	44.0
06:00 - 07:00	52.9	50.4	51.7	53.0	52.2	51.2	50.7
07:00 - 08:00	54.1	49.8	53.0	56.5	55.1	53.3	53.6
08:00 - 09:00	50.4	49.7	49.8	54.7	49.3	51.9	49.7
09:00 - 10:00	50.2	48.7	48.1	51.9	46.1	48.8	47.9
10:00 - 11:00	49.9	49.2	47.7	52.0	47.0	48.8	46.8
11:00 - 12:00	51.2	50.7	49.5	54.0	48.6	50.7	48.1
12:00 - 13:00	51.5	49.3	48.6	53.3	50.1	52.2	49.4
13:00 - 14:00	50.5	48.6	49.0	51.7	48.3	49.4	47.9
L90(avg)*	50.6	49.5	49.0	50.7	49.8	49.6	48.7

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-SPRC PLC-Refinery

Location : Southern Refinery Boundary Station 1

Monitor Period : 03-10 May 2024

SLM Model : Cirrus CR162B

Serial No : G300833

Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : 04 Sep 2023

SLM Reading / Adjust dB(A) : 92.6/1.1

Expire Date : 03 Sep 2024

Cal Sheet No.: CR-515-2024-115

Time	Equivalent Sound Pressure Level (dB(A))						
	03-04 May 2024	04-05 May 2024	05-06 May 2024	06-07 May 2024	07-08 May 2024	08-09 May 2024	09-10 May 2024
14:00 - 15:00	60.5	59.9	59.8	56.4	59.7	63.8	60.3
15:00 - 16:00	60.2	60.2	58.3	56.2	59.3	58.0	61.4
16:00 - 17:00	61.2	61.5	61.1	58.5	60.5	58.0	60.2
17:00 - 18:00	60.7	61.5	60.7	59.9	60.7	59.8	58.3
18:00 - 19:00	61.7	61.8	59.9	60.6	59.4	59.5	58.7
19:00 - 20:00	61.2	60.6	59.4	60.3	61.5	58.4	59.2
20:00 - 21:00	59.2	60.0	59.1	58.8	59.9	58.1	57.5
21:00 - 22:00	56.6	57.6	55.6	55.7	57.1	55.9	57.8
22:00 - 23:00	56.4	55.3	54.8	55.1	55.5	55.7	57.3
23:00 - 00:00	55.1	55.1	55.1	55.0	56.2	54.6	58.0
00:00 - 01:00	55.6	57.0	56.0	55.4	57.4	55.2	60.0
01:00 - 02:00	53.5	53.5	52.7	52.5	55.1	54.4	57.8
02:00 - 03:00	52.5	54.0	52.5	51.9	54.9	53.7	57.9
03:00 - 04:00	52.6	54.3	52.6	53.3	55.2	53.4	59.3
04:00 - 05:00	53.9	54.4	53.9	54.8	55.3	54.6	59.8
05:00 - 06:00	55.8	56.3	56.0	55.4	56.6	56.3	57.7
06:00 - 07:00	59.5	61.5	60.9	59.8	60.1	57.8	57.2
07:00 - 08:00	61.1	62.4	62.0	63.1	60.5	58.8	57.1
08:00 - 09:00	61.1	61.2	60.1	65.2	60.0	58.4	56.4
09:00 - 10:00	58.5	59.4	58.7	60.7	58.6	58.3	55.9
10:00 - 11:00	58.3	59.0	57.4	60.1	57.1	58.1	56.1
11:00 - 12:00	58.6	59.2	58.8	59.9	58.6	59.3	55.7
12:00 - 13:00	57.6	58.2	56.8	59.7	57.7	58.9	55.7
13:00 - 14:00	60.1	57.3	58.0	59.8	58.8	58.6	56.3
Leq(24)*	58.8	59.2	58.3	59.1	58.6	58.1	58.3
Ldn	62.9	63.7	62.9	63.0	63.5	62.5	64.8
Lmax **	82.9	78.1	87.5	88.1	82.1	79.3	82.8
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-SPRC PLC-Refinery

Location : Southern Refinery Boundary Station 1

Monitor Period : 03-10 May 2024

SLM Model : Cirrus CR162B

Serial No : G300833

Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : 04 Sep 2023

SLM Reading / Adjust dB(A) : 92.6/1.1

Expire Date : 03 Sep 2024

Cal Sheet No.: CR-515-2024-115

Time	L90 (dB(A))						
	03-04 May 2024	04-05 May 2024	05-06 May 2024	06-07 May 2024	07-08 May 2024	08-09 May 2024	09-10 May 2024
14:00 - 15:00	56.0	53.8	49.5	51.9	55.6	54.7	54.5
15:00 - 16:00	55.3	53.7	51.1	51.5	55.0	53.9	55.0
16:00 - 17:00	57.4	55.7	54.2	54.0	56.6	54.5	51.5
17:00 - 18:00	55.7	55.6	53.9	55.3	55.9	54.8	51.7
18:00 - 19:00	57.7	56.2	54.0	55.5	55.9	56.2	52.6
19:00 - 20:00	56.0	54.2	52.2	55.3	56.8	54.4	52.7
20:00 - 21:00	53.6	51.8	51.0	53.2	53.9	54.1	54.8
21:00 - 22:00	51.3	50.8	50.2	50.2	52.1	52.8	55.2
22:00 - 23:00	50.4	50.2	50.0	49.9	51.5	52.1	53.9
23:00 - 00:00	50.9	50.1	49.6	51.1	52.7	52.2	54.5
00:00 - 01:00	50.3	52.3	50.4	51.7	53.2	52.7	55.6
01:00 - 02:00	49.8	49.9	50.1	49.5	53.1	53.2	55.2
02:00 - 03:00	49.9	50.0	49.3	49.7	53.3	52.3	55.0
03:00 - 04:00	50.0	50.1	49.6	49.9	53.3	52.2	55.6
04:00 - 05:00	50.8	50.5	51.6	51.4	53.4	52.9	56.5
05:00 - 06:00	51.3	51.6	51.3	50.9	54.0	54.7	54.0
06:00 - 07:00	55.2	55.3	55.5	54.5	56.2	55.2	54.1
07:00 - 08:00	57.0	57.2	57.4	57.1	56.9	55.3	53.9
08:00 - 09:00	54.8	54.3	54.8	57.9	55.4	54.2	53.7
09:00 - 10:00	54.5	51.7	54.0	56.3	53.2	53.1	54.0
10:00 - 11:00	54.4	51.9	51.9	56.6	52.3	52.6	54.4
11:00 - 12:00	54.8	52.0	52.6	57.0	54.2	54.1	54.0
12:00 - 13:00	53.3	51.1	51.0	57.0	53.0	54.7	54.0
13:00 - 14:00	55.4	49.3	53.0	56.6	54.4	54.2	54.4
L90(avg)*	54.3	53.1	52.6	54.4	54.5	53.9	54.3

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-SPRC PLC-Refinery

Location : Southern Refinery Boundary Station 2

Monitor Period : 03-10 May 2024

SLM Model : Cirrus CR162B

Serial No : G301027

Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : 04 Sep 2023

SLM Reading / Adjust dB(A) : 92.7/1.0

Expire Date : 03 Sep 2024

Cal Sheet No.: CR-515-2024-115

Time	Equivalent Sound Pressure Level (dB(A))						
	03-04 May 2024	04-05 May 2024	05-06 May 2024	06-07 May 2024	07-08 May 2024	08-09 May 2024	09-10 May 2024
13:00 - 14:00	64.1	62.0	60.2	60.8	63.4	60.8	63.2
14:00 - 15:00	62.3	61.6	60.6	60.9	63.5	61.2	63.8
15:00 - 16:00	63.0	62.6	61.8	60.7	62.9	61.9	65.5
16:00 - 17:00	64.7	64.6	64.1	62.9	65.2	63.2	63.2
17:00 - 18:00	65.5	65.2	63.6	65.0	63.7	63.1	61.8
18:00 - 19:00	65.2	64.8	62.6	64.8	62.3	65.2	61.8
19:00 - 20:00	64.6	63.6	62.5	64.2	63.8	64.9	62.4
20:00 - 21:00	63.4	62.9	62.2	62.7	62.8	64.0	59.6
21:00 - 22:00	60.4	60.4	59.2	60.2	59.6	62.6	57.6
22:00 - 23:00	60.7	58.6	58.2	58.8	59.0	60.4	57.2
23:00 - 00:00	59.2	58.3	57.8	57.6	59.3	59.6	56.8
00:00 - 01:00	60.2	59.7	59.3	58.6	60.1	60.6	57.4
01:00 - 02:00	57.1	57.1	55.4	54.9	58.0	59.1	56.6
02:00 - 03:00	56.8	57.1	56.0	55.8	57.3	56.6	56.7
03:00 - 04:00	56.6	56.7	56.1	56.7	57.5	56.1	56.2
04:00 - 05:00	57.3	56.5	56.7	58.9	57.6	57.0	56.7
05:00 - 06:00	59.2	59.1	58.8	59.6	58.9	59.4	58.8
06:00 - 07:00	63.9	64.1	63.7	65.2	63.4	63.2	62.8
07:00 - 08:00	65.7	66.1	65.0	66.8	64.3	64.6	63.5
08:00 - 09:00	64.1	64.4	63.4	69.7	63.4	63.7	62.1
09:00 - 10:00	62.5	61.9	62.0	64.1	60.3	63.2	60.2
10:00 - 11:00	63.0	61.4	61.6	65.0	60.4	63.1	60.6
11:00 - 12:00	63.8	61.8	62.8	63.6	61.3	64.0	61.6
12:00 - 13:00	63.5	60.7	61.2	63.8	60.4	63.8	60.7
Leq(24)*	62.8	62.2	61.4	63.2	61.8	62.4	61.1
Ldn	67.0	66.5	66.0	67.1	66.5	66.8	65.5
Lmax **	80.9	80.3	83.0	92.1	82.8	83.0	82.8
Standard-24Hr	70 dB(A)						
Standard-Max	115 dB(A)						

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

** Maximum Sound Pressure Level between 13:00-13:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



Noise Monitoring Result : Background Noise

MTR-SPRC PLC-Refinery

Location : Southern Refinery Boundary Station 2

Monitor Period : 03-10 May 2024

SLM Model : Cirrus CR162B

Serial No : G301027

Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : 04 Sep 2023

SLM Reading / Adjust dB(A) : 92.7/1.0

Expire Date : 03 Sep 2024

Cal Sheet No.: CR-515-2024-115

Time	L90 (dB(A))						
	03-04 May 2024	04-05 May 2024	05-06 May 2024	06-07 May 2024	07-08 May 2024	08-09 May 2024	09-10 May 2024
13:00 - 14:00	57.5	55.7	54.0	54.9	60.2	55.4	58.2
14:00 - 15:00	56.0	55.4	53.9	53.6	59.3	55.3	59.0
15:00 - 16:00	56.6	56.5	56.5	54.6	58.4	56.0	60.6
16:00 - 17:00	59.7	58.9	57.7	56.9	60.3	58.1	57.6
17:00 - 18:00	60.8	59.1	57.0	58.5	58.1	57.9	57.0
18:00 - 19:00	60.4	58.8	56.0	58.7	58.2	61.7	55.7
19:00 - 20:00	59.2	56.8	55.2	57.5	58.9	60.8	57.4
20:00 - 21:00	56.1	55.6	54.5	55.5	57.6	58.6	55.7
21:00 - 22:00	54.5	55.3	53.5	53.9	56.3	58.4	55.0
22:00 - 23:00	54.3	54.8	53.4	53.6	56.3	56.7	55.1
23:00 - 00:00	54.6	54.7	53.4	53.5	56.7	56.5	54.6
00:00 - 01:00	54.4	54.8	53.5	53.3	56.4	57.7	55.5
01:00 - 02:00	53.9	54.2	53.3	52.8	56.1	56.5	55.7
02:00 - 03:00	53.8	53.9	53.3	52.8	55.9	54.2	55.7
03:00 - 04:00	53.5	53.6	53.3	52.8	55.8	54.5	55.4
04:00 - 05:00	53.8	53.7	53.8	53.2	55.7	55.1	55.6
05:00 - 06:00	54.7	54.5	54.3	55.1	56.4	56.4	56.0
06:00 - 07:00	58.7	59.7	58.9	59.4	59.4	59.3	58.7
07:00 - 08:00	61.5	63.2	60.8	62.5	61.1	61.1	60.5
08:00 - 09:00	58.1	59.2	57.5	61.2	58.0	59.0	57.4
09:00 - 10:00	56.3	55.9	55.7	58.8	55.6	57.3	55.1
10:00 - 11:00	56.3	55.0	55.2	60.7	55.2	57.1	55.4
11:00 - 12:00	56.7	55.0	55.7	60.5	56.0	57.7	56.9
12:00 - 13:00	57.1	54.7	54.9	60.8	54.9	58.7	55.2
L90(avg)*	57.3	57.0	55.7	57.6	57.7	58.0	57.0

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

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



Noise Monitoring Result : Community Noise

MTR-SPRC PLC-Refinery

Location : Map Ta Phut New Town

Monitor Period : 03-10 May 2024

SLM Model : Cirrus CR162B

Serial No : G302237

Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : 04 Sep 2023

SLM Reading / Adjust dB(A) : 93.1/0.6

Expire Date : 03 Sep 2024

Cal Sheet No.: CR-515-2024-115

Time	Equivalent Sound Pressure Level (dB(A))						
	03-04 May 2024	04-05 May 2024	05-06 May 2024	06-07 May 2024	07-08 May 2024	08-09 May 2024	09-10 May 2024
16:00 - 17:00	49.6	48.3	57.0	49.4	54.1	50.1	47.9
17:00 - 18:00	50.5	49.0	58.4	49.3	49.2	49.5	48.5
18:00 - 19:00	49.7	48.5	58.8	55.0	50.6	47.9	47.3
19:00 - 20:00	49.2	47.1	58.9	51.3	46.8	46.0	44.6
20:00 - 21:00	48.1	48.9	59.0	47.4	47.4	46.8	45.1
21:00 - 22:00	50.2	46.8	60.1	48.6	50.0	44.9	43.7
22:00 - 23:00	46.5	53.8	59.0	44.1	55.7	44.4	43.8
23:00 - 00:00	44.7	44.5	54.5	46.6	58.2	43.5	42.0
00:00 - 01:00	46.3	47.5	45.8	42.8	58.8	44.6	42.9
01:00 - 02:00	46.8	44.8	43.6	42.3	45.2	44.7	42.5
02:00 - 03:00	44.5	44.7	43.3	42.0	45.4	43.5	54.9
03:00 - 04:00	44.5	44.4	44.6	43.0	51.4	48.6	43.2
04:00 - 05:00	47.1	44.4	45.8	46.8	48.8	46.7	49.6
05:00 - 06:00	48.7	57.4	48.0	48.5	49.9	49.8	50.5
06:00 - 07:00	51.9	52.1	50.2	51.8	51.1	51.5	51.7
07:00 - 08:00	51.8	48.8	50.9	63.7	53.4	50.6	50.0
08:00 - 09:00	50.5	49.3	49.9	74.7	49.7	47.7	50.5
09:00 - 10:00	52.0	48.0	49.3	62.1	52.7	49.1	49.9
10:00 - 11:00	50.0	51.4	49.4	68.4	47.7	49.4	50.3
11:00 - 12:00	49.9	48.9	50.6	60.0	48.0	51.0	50.0
12:00 - 13:00	49.6	54.1	49.9	63.0	49.6	49.1	49.7
13:00 - 14:00	51.4	56.4	49.8	64.3	49.5	50.6	50.5
14:00 - 15:00	48.4	55.9	49.6	64.9	48.9	50.8	50.1
15:00 - 16:00	50.6	56.0	50.9	50.5	49.7	48.0	49.4
Leq(24)*	49.4	51.6	54.6	63.2	52.1	48.5	49.1
Ldn	54.4	57.6	59.1	63.5	60.1	54.0	55.6
Lmax **	79.7	83.8	78.9	90.6	83.1	75.5	77.8
Standard-24Hr	70 dB(A)						
Standard-Max	115 dB(A)						

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

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

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



Noise Monitoring Result : Background Noise

MTR-SPRC PLC-Refinery

Location : Map Ta Phut New Town

Monitor Period : 03-10 May 2024

SLM Model : Cirrus CR162B

Serial No : G302237

Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : 04 Sep 2023

SLM Reading / Adjust dB(A) : 93.1/0.6

Expire Date : 03 Sep 2024

Cal Sheet No.: CR-515-2024-115

Time	L90 (dB(A))						
	03-04 May 2024	04-05 May 2024	05-06 May 2024	06-07 May 2024	07-08 May 2024	08-09 May 2024	09-10 May 2024
16:00 - 17:00	45.3	44.0	54.5	42.7	45.8	45.9	42.7
17:00 - 18:00	45.0	44.3	56.5	44.6	44.1	44.9	43.1
18:00 - 19:00	44.4	44.2	57.0	44.1	45.8	45.3	42.1
19:00 - 20:00	44.6	44.9	56.8	44.1	42.8	43.6	41.8
20:00 - 21:00	43.7	44.1	55.8	43.4	42.2	43.6	41.6
21:00 - 22:00	43.5	43.4	53.9	42.9	43.9	42.6	42.3
22:00 - 23:00	43.4	42.7	42.7	42.5	45.0	42.6	42.1
23:00 - 00:00	43.4	42.5	41.7	42.2	44.3	42.3	40.3
00:00 - 01:00	43.6	43.1	42.0	41.6	43.9	43.4	39.9
01:00 - 02:00	43.4	43.5	42.7	41.3	44.3	43.3	39.8
02:00 - 03:00	43.5	43.3	42.2	40.7	43.7	41.6	40.7
03:00 - 04:00	43.2	43.2	42.7	41.0	44.5	41.7	41.8
04:00 - 05:00	43.6	43.3	43.5	41.7	45.0	43.2	44.3
05:00 - 06:00	44.3	44.0	42.9	42.8	45.9	45.9	44.7
06:00 - 07:00	45.3	45.0	44.5	44.7	44.9	45.6	44.4
07:00 - 08:00	46.3	45.1	44.8	46.5	45.4	45.1	43.9
08:00 - 09:00	45.1	44.0	44.8	56.9	43.9	43.7	43.7
09:00 - 10:00	45.3	43.7	44.6	55.2	43.1	43.1	43.3
10:00 - 11:00	45.3	44.1	43.8	61.9	42.9	44.5	42.9
11:00 - 12:00	44.5	44.0	44.2	57.3	44.7	44.5	41.5
12:00 - 13:00	46.0	46.0	44.7	61.0	44.8	44.1	42.3
13:00 - 14:00	44.8	50.6	43.9	60.7	45.2	45.3	42.6
14:00 - 15:00	44.3	52.6	43.6	61.4	45.5	44.6	43.4
15:00 - 16:00	43.6	53.1	42.7	46.8	46.3	43.3	43.8
L90(avg)*	44.5	46.3	50.6	54.7	44.6	44.1	42.7

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

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



Noise Monitoring Result : Community Noise

MTR-SPRC PLC-Refinery

Location : Soi Ruam Patana Community

Monitor Period : 03-10 May 2024

SLM Model : Cirrus CR162C

Serial No : G300838

Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : 04 Sep 2023

SLM Reading / Adjust dB(A) : 93.5/0.2

Expire Date : 03 Sep 2024

Cal Sheet No.: CR-515-2024-115

Time	Equivalent Sound Pressure Level (dB(A))						
	03-04 May 2024	04-05 May 2024	05-06 May 2024	06-07 May 2024	07-08 May 2024	08-09 May 2024	09-10 May 2024
15:00 - 16:00	56.4	63.2	55.0	54.2	55.9	55.1	54.3
16:00 - 17:00	57.1	54.8	55.8	54.5	53.8	56.0	54.0
17:00 - 18:00	56.9	56.1	57.3	62.3	53.2	54.6	54.4
18:00 - 19:00	57.2	61.0	59.4	61.3	51.7	54.6	52.0
19:00 - 20:00	54.4	57.5	57.9	54.6	50.1	55.4	49.5
20:00 - 21:00	54.3	58.1	58.8	56.0	48.3	53.1	49.2
21:00 - 22:00	50.1	59.4	52.2	54.3	47.4	50.9	49.2
22:00 - 23:00	49.5	50.5	56.4	53.6	47.0	49.3	47.5
23:00 - 00:00	46.9	51.8	49.7	51.1	46.1	48.3	46.8
00:00 - 01:00	45.7	49.1	50.5	46.9	46.1	49.3	45.4
01:00 - 02:00	52.1	50.6	46.5	48.4	46.0	49.9	45.8
02:00 - 03:00	43.8	48.1	48.5	40.7	47.0	47.4	46.6
03:00 - 04:00	48.3	48.4	45.3	39.7	50.5	51.2	49.5
04:00 - 05:00	50.0	46.6	42.0	48.6	53.2	53.3	52.4
05:00 - 06:00	54.1	55.5	59.0	57.6	54.4	53.9	53.8
06:00 - 07:00	56.8	56.9	57.7	58.9	53.5	54.6	53.9
07:00 - 08:00	58.2	60.0	58.5	64.4	51.0	52.7	51.6
08:00 - 09:00	53.8	59.3	54.7	68.5	52.5	55.6	51.8
09:00 - 10:00	54.3	58.5	59.1	58.3	51.4	56.4	53.2
10:00 - 11:00	52.6	61.3	56.5	58.8	54.5	55.3	52.4
11:00 - 12:00	51.8	58.4	53.7	56.8	55.5	58.6	52.3
12:00 - 13:00	53.0	53.9	58.2	60.5	55.3	54.9	52.5
13:00 - 14:00	54.3	58.0	54.1	62.8	53.6	56.6	54.1
14:00 - 15:00	57.8	58.3	56.8	58.0	55.3	54.7	52.9
Leq(24)*	54.3	57.6	56.1	59.6	52.5	54.2	51.8
Ldn	58.7	60.5	60.9	62.1	57.5	58.7	57.1
Lmax **	85.4	93.4	91.3	97.0	85.9	84.1	85.7
Standard-24Hr	70 dB(A)						
Standard-Max	115 dB(A)						

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

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

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



Noise Monitoring Result : Background Noise

MTR-SPRC PLC-Refinery

Location : Soi Ruam Patana Community

Monitor Period : 03-10 May 2024

SLM Model : Cirrus CR162C

Serial No : G300838

Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : 04 Sep 2023

SLM Reading / Adjust dB(A) : 93.5/0.2

Expire Date : 03 Sep 2024

Cal Sheet No.: CR-515-2024-115

Time	L90 (dB(A))						
	03-04 May 2024	04-05 May 2024	05-06 May 2024	06-07 May 2024	07-08 May 2024	08-09 May 2024	09-10 May 2024
15:00 - 16:00	39.2	39.8	39.3	37.7	53.0	51.4	48.8
16:00 - 17:00	39.3	39.6	40.3	40.3	50.4	51.0	49.4
17:00 - 18:00	40.5	42.9	42.4	42.8	49.8	50.6	49.6
18:00 - 19:00	42.4	44.7	42.3	43.4	47.1	49.2	46.5
19:00 - 20:00	42.9	45.8	43.0	43.1	45.1	48.5	44.7
20:00 - 21:00	43.5	45.5	42.0	42.7	44.5	48.3	44.9
21:00 - 22:00	42.4	45.3	40.6	50.5	44.6	46.8	45.4
22:00 - 23:00	41.1	44.2	45.0	49.2	44.1	45.4	44.2
23:00 - 00:00	42.0	42.3	42.1	42.1	44.1	45.8	43.6
00:00 - 01:00	40.0	44.1	44.2	42.7	44.0	45.9	43.2
01:00 - 02:00	37.9	40.0	43.0	39.3	43.7	45.7	43.0
02:00 - 03:00	37.5	38.2	44.5	37.1	44.5	45.0	43.4
03:00 - 04:00	36.7	37.3	36.2	36.3	46.2	45.9	44.6
04:00 - 05:00	37.2	37.0	36.5	36.0	48.7	49.2	48.0
05:00 - 06:00	39.5	39.4	39.4	39.1	50.8	50.9	50.4
06:00 - 07:00	41.9	40.9	41.1	43.0	48.8	50.7	48.7
07:00 - 08:00	40.4	39.8	40.0	43.6	46.6	48.8	47.1
08:00 - 09:00	39.5	40.0	38.3	47.3	46.7	49.0	47.4
09:00 - 10:00	39.2	40.4	39.3	47.3	47.1	50.0	48.1
10:00 - 11:00	41.0	39.7	38.8	52.3	49.8	50.5	48.8
11:00 - 12:00	40.6	39.3	37.5	47.5	50.1	49.9	48.6
12:00 - 13:00	40.0	38.7	39.5	51.3	50.3	49.7	48.3
13:00 - 14:00	40.4	39.8	38.3	50.7	50.4	51.1	48.3
14:00 - 15:00	41.4	40.3	39.0	56.1	50.9	49.5	48.4
L90(avg)*	40.6	41.9	41.2	47.6	48.4	49.1	47.4

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

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



Noise Monitoring Result : Community Noise

MTR-SPRC PLC-Refinery

Location : Wat Sophon Community

Monitor Period : 03-10 May 2024

SLM Model : Cirrus CR162B

Serial No : G300769

Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : 04 Sep 2023

SLM Reading / Adjust dB(A) : 93.1/0.6

Expire Date : 03 Sep 2024

Cal Sheet No.: CR-515-2024-115

Time	Equivalent Sound Pressure Level (dB(A))						
	03-04 May 2024	04-05 May 2024	05-06 May 2024	06-07 May 2024	07-08 May 2024	08-09 May 2024	09-10 May 2024
15:00 - 16:00	49.3	56.2	54.1	54.0	49.5	47.9	48.8
16:00 - 17:00	59.5	56.0	53.7	54.1	49.3	48.4	49.4
17:00 - 18:00	46.9	54.4	54.6	53.5	48.1	48.6	49.2
18:00 - 19:00	45.2	55.5	52.6	52.3	47.6	50.4	52.2
19:00 - 20:00	50.5	52.3	51.2	52.4	50.6	47.3	45.7
20:00 - 21:00	46.8	51.0	51.7	50.4	48.9	47.4	44.6
21:00 - 22:00	47.2	51.1	49.3	49.3	49.6	46.9	45.7
22:00 - 23:00	48.5	50.8	50.4	49.2	52.3	46.1	44.4
23:00 - 00:00	45.6	49.9	48.4	48.8	48.5	46.7	48.5
00:00 - 01:00	45.4	50.0	48.3	48.8	49.1	46.2	49.0
01:00 - 02:00	45.6	49.4	47.8	49.8	44.8	43.9	49.5
02:00 - 03:00	59.4	49.5	48.7	47.5	40.4	45.5	46.1
03:00 - 04:00	47.9	52.3	52.5	51.0	45.2	43.5	44.9
04:00 - 05:00	49.6	52.9	54.0	54.7	53.9	48.1	48.0
05:00 - 06:00	50.0	54.0	55.7	61.6	52.0	50.3	50.5
06:00 - 07:00	52.3	53.2	54.8	75.7	47.5	50.4	53.4
07:00 - 08:00	49.6	52.0	55.7	64.9	48.9	46.7	45.6
08:00 - 09:00	51.7	53.0	52.6	68.8	50.6	48.2	46.8
09:00 - 10:00	50.2	52.4	55.1	64.4	49.3	47.6	46.5
10:00 - 11:00	51.7	52.5	52.3	65.5	47.8	51.3	45.1
11:00 - 12:00	49.4	52.4	52.9	66.6	45.0	50.3	46.9
12:00 - 13:00	52.7	52.1	54.1	66.8	47.8	49.1	43.7
13:00 - 14:00	52.9	54.8	54.0	60.3	44.4	46.1	45.8
14:00 - 15:00	54.5	55.1	52.2	52.2	49.2	50.9	53.6
Leq(24)*	52.2	53.1	52.9	64.5	49.2	48.3	48.6
Ldn	58.6	58.4	58.8	72.5	56.1	54.0	55.4
Lmax **	80.1	79.0	79.5	93.1	79.0	81.7	83.8
Standard-24Hr	70 dB(A)						
Standard-Max	115 dB(A)						

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

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

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



Noise Monitoring Result : Background Noise

MTR-SPRC PLC-Refinery

Location : Wat Sophon Community

Monitor Period : 03-10 May 2024

SLM Model : Cirrus CR162B

Serial No : G300769

Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : 04 Sep 2023

SLM Reading / Adjust dB(A) : 93.1/0.6

Expire Date : 03 Sep 2024

Cal Sheet No.: CR-515-2024-115

Time	L90 (dB(A))						
	03-04 May 2024	04-05 May 2024	05-06 May 2024	06-07 May 2024	07-08 May 2024	08-09 May 2024	09-10 May 2024
15:00 - 16:00	45.6	51.4	50.3	49.9	37.8	32.9	34.7
16:00 - 17:00	45.5	50.9	50.1	49.8	38.2	33.1	33.2
17:00 - 18:00	44.1	50.2	49.3	48.9	37.6	35.2	33.6
18:00 - 19:00	43.8	49.9	48.4	47.2	38.2	41.6	37.1
19:00 - 20:00	43.8	48.4	47.3	46.0	42.8	42.6	38.5
20:00 - 21:00	43.4	48.1	47.2	45.3	44.4	42.8	41.0
21:00 - 22:00	44.2	48.3	46.8	45.3	46.8	44.9	41.2
22:00 - 23:00	44.9	47.8	46.7	44.3	49.0	43.8	41.8
23:00 - 00:00	44.5	47.2	45.9	43.7	44.8	44.8	46.0
00:00 - 01:00	44.4	46.9	46.0	43.0	47.7	45.0	46.5
01:00 - 02:00	44.6	46.7	45.9	43.0	41.7	42.8	46.2
02:00 - 03:00	44.7	46.8	46.5	43.7	34.3	43.6	42.7
03:00 - 04:00	45.1	47.7	47.2	45.3	35.4	40.2	41.5
04:00 - 05:00	45.3	49.7	50.5	50.2	38.3	35.3	39.8
05:00 - 06:00	46.6	50.2	51.4	51.8	37.5	37.6	37.6
06:00 - 07:00	46.4	49.2	51.0	62.1	35.7	36.4	35.8
07:00 - 08:00	45.7	48.7	50.3	60.7	34.7	33.8	34.9
08:00 - 09:00	45.7	49.4	48.4	66.1	33.1	34.2	32.4
09:00 - 10:00	45.2	49.0	47.8	62.7	32.4	34.0	31.5
10:00 - 11:00	46.1	49.1	48.4	63.9	33.0	33.2	32.7
11:00 - 12:00	46.1	48.9	48.9	63.6	31.4	32.4	32.1
12:00 - 13:00	49.4	48.4	48.7	64.7	35.5	32.5	31.2
13:00 - 14:00	49.2	48.9	48.2	59.2	33.8	32.5	32.6
14:00 - 15:00	50.3	49.8	47.9	37.5	33.0	34.0	32.6
L90(avg)*	46.0	49.0	48.6	58.8	41.6	40.3	40.2

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

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team

ใบรับรองผลการตรวจวัดทรัพยากรทางน้ำ



สถานีวิจัยประมงศรีราชา
101/12 หมู่ 9 ต.บางพระ
อ.ศรีราชา จ.ชลบุรี 20110
โทร./โทรสาร. (038) 311379

รายงานผลการวิเคราะห์แพลงก์ตอนพืชและแพลงก์ตอนสัตว์

ตาราง ผลการวิเคราะห์แพลงก์ตอนพืชและแพลงก์ตอนสัตว์ (เก็บตัวอย่างวันที่ 9 พฤษภาคม 2567)

กลุ่ม/สกุลของแพลงก์ตอน	ปริมาณแพลงก์ตอน (หน่วยต่อลูกบาศก์เมตร)			
	S1	S2	S3	S4
แพลงก์ตอนพืช				
Division Cyanophyta				
Class Cyanophyceae				
Order Nostocales				
Family Oscillatoriaceae				
<i>Oscillatoria agardhii</i>	8,000	9,000	-	159,000
<i>Oscillatoria brevis</i>	-	-	19,000	-
<i>Oscillatoria</i> sp.	8,000	9,000	47,000	-
<i>Oscillatoria tenuis</i>	8,000	9,000	38,000	-
Family Nostocaceae				
<i>Pseudanabaena</i> sp.	76,000	82,000	19,000	376,000
Division Chlorophyta				
Class Chlorophyceae				
Order Chlorococcales				
Family Coelastraceae				
<i>Coelastrum microporum</i>	-	-	28,000	-
Family Scenedesmaceae				
<i>Scenedesmus armatus</i>	-	9,000	19,000	-

ตาราง ผลการวิเคราะห์แพลงก์ตอนพืชและแพลงก์ตอนสัตว์ (เก็บตัวอย่างวันที่ 9 พฤษภาคม 2567)
(ต่อ)

กลุ่ม/สกุลของแพลงก์ตอน	ปริมาณแพลงก์ตอน (หน่วยต่อลูกบาศก์เมตร)			
	S1	S2	S3	S4
<i>Scenedesmus dimorphus</i>	-	9,000	19,000	-
<i>Scenedesmus opoliensis</i>	-	9,000	28,000	-
<i>Scenedesmus</i> sp.	-	-	19,000	-
Order Ulotrichales				
Family Ulotrichaceae				
<i>Ulothrix</i> sp.	-	27,000	-	-
Order Zygnematales				
Family Zygnemataceae				
<i>Spirogyra</i> sp.	-	-	19,000	-
Family Desmidiaceae				
<i>Staurastrum gracile</i>	-	-	28,000	-
Class Euglenophyceae				
Order Euglenales				
Family Euglenaceae				
<i>Euglena oxyuris</i>	-	-	9,000	-
<i>Phacus platalea</i>	-	-	-	8,000
Division Chromophyta				
Class Bacillariophyceae				
Order Biddulphales				
Suborder Coscinodiscineae				
Family Thalassiosiraceae				
<i>Cyclotella meneghiniana</i>	972,000	4,941,000	115,930,000	2,505,000
<i>Lauderia annulata</i>	-	9,000	-	-
<i>Stephanodiscus rotula</i>	34,000	46,000	19,000	25,000
<i>Thalassiosira subtilis</i>	68,000	732,000	752,000	-

ตาราง ผลการวิเคราะห์แพลงก์ตอนพืชและแพลงก์ตอนสัตว์ (เก็บตัวอย่างวันที่ 9 พฤษภาคม 2567)
(ต่อ)

กลุ่ม/สกุลของแพลงก์ตอน	ปริมาณแพลงก์ตอน (หน่วยต่อลูกบาศก์เมตร)			
	S1	S2	S3	S4
Family Melosiraceae				
<i>Melosira dulbia</i>	-	-	19,000	-
<i>Paralia sulcata</i>	8,000	18,000	-	-
Family Coscinodiscaceae				
<i>Coscinodiscus</i> sp.	17,000	27,000	-	25,000
Family Heliopeltaceae				
<i>Actinoptychus</i> sp.	17,000	18,000	-	33,000
Suborder Rhizosoleniineae				
Family Rhizosoleniaceae				
<i>Guinardia striata</i>	-	-	-	25,000
<i>Rhizosolenia pungens</i>	11,661,000	17,687,000	19,000	26,887,000
<i>Rhizosolenia setigera</i>	3,634,000	6,103,000	9,000	3,006,000
Suborder Biddulphiineae				
Family Hemiaulaceae				
<i>Cerataulina pelagica</i>	2,028,000	4,877,000	564,000	585,000
Family Chaetoceraceae				
<i>Bacteriastrum furcatum</i>	-	-	-	8,000
<i>Chaetoceros affinis</i>	507,000	37,000	-	-
<i>Chaetoceros compressus</i>	1,437,000	622,000	-	8,350,000
<i>Chaetoceros costatus</i>	25,000	18,000	-	626,000
<i>Chaetoceros curvisetus</i>	80,951,000	20,743,000	940,000	241,039,000
<i>Chaetoceros didymus</i>	3,211,000	549,000	-	4,509,000
<i>Chaetoceros furcellatus</i>	-	190,320,000	2,613,200,000	501,000
<i>Chaetoceros lacinosus</i>	1,014,000	458,000	-	1,503,000
<i>Chaetoceros lorenzianus</i>	34,000	-	-	-
<i>Chaetoceros mitra</i>	25,000	9,000	-	610,000
<i>Chaetoceros peruvianus</i>	8,000	-	-	8,000

ตาราง ผลการวิเคราะห์แพลงก์ตอนพืชและแพลงก์ตอนสัตว์ (เก็บตัวอย่างวันที่ 9 พฤษภาคม 2567)

(ต่อ)

กลุ่ม/สกุลของแพลงก์ตอน	ปริมาณแพลงก์ตอน (หน่วยต่อลูกบาศก์เมตร)			
	S1	S2	S3	S4
<i>Chaetoceros pseudocurvisetus</i>	8,619,000	778,000	94,000	11,690,000
<i>Chaetoceros radicans</i>	676,000	732,000	56,000	1,712,000
<i>Chaetoceros</i> sp.	1,859,000	641,000	19,000	1,670,000
<i>Chaetoceros subtilis</i>	-	522,000	-	-
<i>Chaetoceros teres</i>	845,000	686,000	85,000	1,420,000
Family Lithodesmaceae				
<i>Odontella aurita</i>	25,000	9,000	-	8,000
<i>Triceratium favus</i>	-	-	-	8,000
Order Bacillariales				
Suborder Fragilariineae				
Family Tabellariaceae				
<i>Tabellaria fenestrata</i>	8,000	-	-	-
Family Licmophoriaceae				
<i>Licmophora ehrenbergii</i>	-	9,000	-	-
<i>Licmophora flabellata</i>	8,000	-	-	-
Suborder Bacillariineae				
Family Eunotiaceae				
<i>Eunotia pectinalis</i>	-	-	9,000	-
Family Lyrellaceae				
<i>Lyrella lyra</i>	17,000	-	-	-
Family Naviculaceae				
<i>Amphora</i> sp.	51,000	18,000	19,000	84,000
<i>Diploneis bombus</i>	8,000	9,000	-	8,000
<i>Diploneis smithii</i>	17,000	9,000	-	67,000
<i>Gyrosigma attenuatum</i>	-	-	9,000	-
<i>Gyrosigma balticum</i>	-	9,000	-	-
<i>Gyrosigma</i> sp.	-	-	9,000	-

ตาราง ผลการวิเคราะห์แพลงก์ตอนพืชและแพลงก์ตอนสัตว์ (เก็บตัวอย่างวันที่ 9 พฤษภาคม 2567)
(ต่อ)

กลุ่ม/สกุลของแพลงก์ตอน	ปริมาณแพลงก์ตอน (หน่วยต่อลูกบาศก์เมตร)			
	S1	S2	S3	S4
<i>Navicula lanceolata</i>	-	-	19,000	8,000
<i>Navicula</i> sp.	-	-	9,000	-
<i>Pinnularia gibba</i>	-	-	-	8,000
<i>Pinnularia viridis</i>	-	-	9,000	-
<i>Pleurosigma angulatum</i>	17,000	18,000	9,000	33,000
<i>Pleurosigma</i> sp.	-	37,000	-	17,000
<i>Trachyneis</i> sp.	8,000	-	19,000	17,000
Family Bacillariaceae				
<i>Cylindrotheca closterium</i>	8,000	-	-	8,000
<i>Nitzschia lorenziana</i>	-	-	-	50,000
<i>Nitzschia</i> sp.	-	9,000	-	8,000
<i>Pseudo-nitzschia</i> sp.	-	18,000	-	17,000
<i>Tryblionella hungarica</i>	-	-	9,000	8,000
<i>Tryblionella victoriae</i>	-	-	-	8,000
Family Surirellaceae				
<i>Entomoneis robusta</i>	-	-	-	8,000
Class Dinophyceae				
Order Prorocentrales				
Family Prorocentraceae				
<i>Prorocentrum mexicanum</i>	-	-	-	17,000
Order Peridiniales				
Family Calciodinellaceae				
<i>Scrippsiella trochoidea</i>	25,000	256,000	1,504,000	33,000
Family Peridiniaceae				
<i>Peridinium quinquecorne</i>	-	55,000	-	-
Family Protoperidiniaceae				
<i>Protoperidinium angustum</i>	-	55,000	1,410,000	17,000

ตาราง ผลการวิเคราะห์แพลงก์ตอนพืชและแพลงก์ตอนสัตว์ (เก็บตัวอย่างวันที่ 9 พฤษภาคม 2567)

(ต่อ)

กลุ่ม/สกุลของแพลงก์ตอน	ปริมาณแพลงก์ตอน (หน่วยต่อลูกบาศก์เมตร)			
	S1	S2	S3	S4
<i>Protoperidinium conicum</i>	-	18,000	19,000	25,000
<i>Protoperidinium curtipes</i>	25,000	46,000	-	-
<i>Protoperidinium pellucidum</i>	-	37,000	-	-
<i>Protoperidinium</i> sp.	25,000	92,000	846,000	17,000
<i>Protoperidinium spinulosum</i>	17,000	9,000	-	17,000
แพลงก์ตอนสัตว์				
Phylum Protozoa				
Subphylum Plasmodroma				
Class Sarcodina				
Subclass Rhizopoda				
Order Testacida				
Family Euglyphidae				
<i>Euglypha acanthophora</i>	-	-	19,000	-
Subphylum Ciliophora				
Class Ciliata				
Subclass Spirotricha				
Order Tintinnida				
Family Codonellidae				
<i>Tintinnopsis loricata</i>	-	9,000	-	-
Order Hypotrichida				
<i>Euplotes</i> sp.	-	-	19,000	-
Subclass Peritricha				
Order Peritrichida				
<i>Vorticella</i> sp.	135,000	-	19,000	150,000

ตาราง ผลการวิเคราะห์แพลงก์ตอนพืชและแพลงก์ตอนสัตว์ (เก็บตัวอย่างวันที่ 9 พฤษภาคม 2567)
(ต่อ)

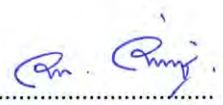
กลุ่ม/สกุลของแพลงก์ตอน	ปริมาณแพลงก์ตอน (หน่วยต่อลูกบาศก์เมตร)			
	S1	S2	S3	S4
Phylum Rotifera				
Class Monogononta				
Order Ploima				
Family Brachionidae				
<i>Keratella valga</i>	8,000	-	-	-
Family Lecanidae				
<i>Lecane harringi</i>	-	-	-	8,000
Family Asplanchnidae				
<i>Asplanchna priodonta</i>	8,000	-	-	-
Phylum Annelida				
Class Polychaeta				
Polychaete larvae	42,000	18,000	-	33,000
Phylum Arthropoda				
Class Crustacea				
Subclass Copepoda				
Copepod nautilus	490,000	256,000	160,000	635,000
Order Calanoida				
Calanoid copepod	17,000	-	-	-
Order Cyclopoida				
Cyclopoid copepod	25,000	18,000	9,000	8,000
Subclass Cirripedia				
Cirripede nauplius	17,000	-	-	-
Phylum Mollusca				
Class Bivalvia				
Pelecypod larvae	-	9,000	19,000	-

ตาราง ผลการวิเคราะห์แพลงก์ตอนพืชและแพลงก์ตอนสัตว์ (เก็บตัวอย่างวันที่ 9 พฤษภาคม 2567)
(ต่อ)

กลุ่ม/สกุลของแพลงก์ตอน	ปริมาณแพลงก์ตอน (หน่วยต่อลูกบาศก์เมตร)			
	S1	S2	S3	S4
Phylum Chordata				
Subphylum Urochordata				
Class Larvacea				
Family Oikopleuridae				
<i>Oikopleura</i> sp.	-	-	-	17,000
ชนิดของแพลงก์ตอนพืช	40	49	39	47
ชนิดของแพลงก์ตอนสัตว์	8	5	6	6
ชนิดแพลงก์ตอนรวม	48	54	45	53
ปริมาณแพลงก์ตอนพืช	118,009,000	251,449,000	2,735,897,000	307,771,000
ปริมาณแพลงก์ตอนสัตว์	742,000	310,000	245,000	851,000
ปริมาณแพลงก์ตอนรวม	118,751,000	251,759,000	2,736,142,000	308,622,000
ค่าดัชนีความหลากหลายแพลงก์ตอนพืช	1.2833	1.0185	0.1982	0.9589
ค่าดัชนีความหลากหลายแพลงก์ตอนสัตว์	1.1316	0.6941	1.1928	0.8164
ค่าดัชนีความสม่ำเสมอแพลงก์ตอนพืช	0.3479	0.2617	0.0541	0.2491
ค่าดัชนีความสม่ำเสมอแพลงก์ตอนสัตว์	0.5442	0.4313	0.6657	0.4556

- หมายเหตุ :
1. สถานี S1 : เกาะสะเก็ด
 2. สถานี S2 : หาดทรายทอง
 3. สถานี S3 : จุดระบายน้ำทิ้งของโรงกลั่นน้ำมันลงทะเล
 4. สถานี S4 : ทะเลเปิด


.....
(นางสาวกนกวรรณ ขาวค่อน)
ผู้วิเคราะห์


.....
(นายอลงกต อินทรชาติ)
หัวหน้าสถานีวิจัยประมงศรีราชา



สถานีวิจัยประมงศรีราชา
101/12 หมู่ 9 ต. บางพระ
อ. ศรีราชา จ. ชลบุรี 20110
โทร./โทรสาร. (038) 311379

รายงานผลการวิเคราะห์สัตว์หน้าดิน

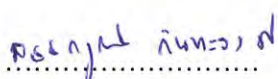
ตาราง ผลการวิเคราะห์สัตว์หน้าดิน (เก็บตัวอย่างวันที่ 9 พฤษภาคม 2567)

ชนิดสัตว์หน้าดิน	ปริมาณสัตว์หน้าดิน (ตัวต่อตารางเมตร)			
	S1	S2	S3	S4
Phylum Annelida				
Class Sipuncula				
Order Golfingiida				
Family Sipunculidae				
<i>Sipunculus</i> sp. (หนอนถั่ว)	-	-	-	15
Class Polychaeta				
Order Eunicida				
Family Eunicidae				
<i>Marphysa</i> sp. (ไส้เดือนทะเล)	15	-	15	45
Order Terebellida				
Family Cirratulidae				
<i>Chaetozone</i> sp. (ไส้เดือนทะเล)	-	45	-	15
Phylum Mollusca				
Class Bivalvia				
Order Cardiida				
Family Psammobiidae				
<i>Soletellina</i> sp. (หอยสองฝาชนิดหนึ่ง)	-	30	-	-

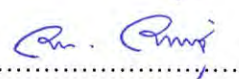
ตาราง ผลการวิเคราะห์สัตว์หน้าดิน (เก็บตัวอย่างวันที่ 9 พฤษภาคม 2567)(ต่อ)

ชนิดสัตว์หน้าดิน	ปริมาณสัตว์หน้าดิน (ตัวต่อตารางเมตร)			
	S1	S2	S3	S4
Family Tellinidae <i>Tellina</i> sp. (หอยสองฝาชนิดหนึ่ง) Order Lucinida Family Lucinidae <i>Lucina</i> sp. (หอยสองฝาชนิดหนึ่ง)	-	15	15	-
Phylum Chordata Class Leptocardii Order Amphioxiformes Family Branchiostomidae <i>Branchiostoma</i> sp. (แอมฟิออกซัส)	-	-	-	15
ชนิดสัตว์หน้าดิน	2	3	2	4
ปริมาณสัตว์หน้าดิน	30	90	30	90
ค่าดัชนีความหลากหลายสัตว์หน้าดิน	0.6931	1.0114	0.6931	1.2425

- หมายเหตุ :
1. สถานี S1 : เกาะสะเก็ด
 2. สถานี S2 : หาดทรายทอง
 3. สถานี S3 : จุดระบายน้ำทิ้งของโรงกลั่นน้ำมันลงทะเล
 4. สถานี S4 : ทะเลเปิด



 (นายอรรถวุฒิ กันทะวงศ์)
 ผู้วิเคราะห์



 (นายอลงกต อินทรชาติ)
 หัวหน้าสถานีวิจัยประมงศรีราชา

ใบรับรองผลการตรวจวัดคุณภาพน้ำใต้ดิน



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

GROUND WATER ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REQUEST SERVICE No	: 0429/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 04, 06/03/2024	SAMPLING TIME	: 09:19-09:33, 11:36-11:40
RECEIVED DATE	: 07/03/2024	ANALYTICAL DATE	: 07-12/03/2024
REPORT DATE	: 16/03/2024	SITE OPERATOR	: Mr. Aniwat Pimwhanna
SAMPLE CONDITION	: Normal	FILE CODE	: 224003_GW_March

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^{1/}
				MW-101B	MW-102A	
Chromium (Cr)	mg/l	3120 B	< 0.001	ND	ND	≤ 6.0
Manganese (Mn)	mg/l	3120 B	< 0.001	< 0.01	0.02	≤ 33
Mercury (Hg)	mg/l	3112 B	< 0.0001	ND	ND	≤ 0.7
Nickel (Ni)	mg/l	3120 B	< 0.002	ND	ND	≤ 5.0

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


.....
(Miss Krisana Chanthoom)

Analyst

REG. NO. ๖-239-๖-0017


.....
(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. ๖-239-๖-0004

- 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.2559 (2016).



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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REQUEST SERVICE No. :	0429/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 04, 06/03/2024	SAMPLING TIME	: 09:19-09:33, 11:36-11:40
RECEIVED DATE	: 07/03/2024	ANALYTICAL DATE	: 12-13/03/2024
REPORT DATE	: 16/03/2024	SITE OPERATOR	: Mr. Aniwat Pimwhanna
SAMPLE CONDITION	: Normal	FILE CODE	: 224003_GW_March

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^{1/}
				MW-101B	MW-102A	
Benzene	mg/l	6200 B	< 0.0002	ND	ND	< 0.2
Ethylbenzene	mg/l	6200 B	< 0.0002	ND	ND	< 2.0
Toluene	mg/l	6200 B	< 0.0002	ND	ND	< 5.0
m-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
o-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
p-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
Total Xylenes	mg/l	6200 B	< 0.0006	ND	ND	≤ 24

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

Jutarat Jaemruen

(Miss Jutarat Jaemruen)

Analyst

REG. NO. ว-239-จ-0022

Araya Tipparuk

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. ว-239-ท-0004

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GROUND WATER ANALYSIS REPORT

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SAMPLE CONDITION	: Normal	FILE CODE	: 224003_GW_March

PARAMETER	UNIT	ANALYSIS	ND	STATION		STANDARD ^{1/}
		METHODS	(non-detectable)	MW-101B	MW-102A	
<u>Total Petroleum Hydrocarbon</u>						
- TPH (C ₅ - C ₈)	mg/l	5030 C/8260 D	< 0.003	ND	ND	≤ 1.4
- Pentane						
- Benzene						
- Toluene						
- m,p-Xylene						
- o-Xylene						
- Ethylbenzene						
- TPH (C _{> 8} - C ₁₆)	mg/l	3510 C/8015 D	< 0.025	ND	ND	≤ 1.7
- n-Nonane						
- n-Decane						
- n-Dodecane						
- n-Tetradecane						
- n-Hexadecane						
- TPH (C _{> 16} - C ₃₅)	mg/l	3510 C/8015 D	< 0.050	ND	ND	≤ 0.1
- n-Octadecane						
- n-Eicosane						
- n-Docosane						
- n-Tetracosane						
- n-Hexacosane						
- n-Octacosane						
- n-Triacontane						
- n-Dotriacontane						
- n-Tetratriacontane						
- Pentatriacontane						

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

Sudaporn S.
(Miss Sudaporn Soonthorn)

Analyst

REG. NO. ๖-239-๖-0001

NT
(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. ๖-239-๖-0004

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REQUEST SERVICE No	: 0429/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 04/03/2024	SAMPLING TIME	: 14:50-14:55, 10:57-11:03
RECEIVED DATE	: 07/03/2024	ANALYTICAL DATE	: 07-12/03/2024
REPORT DATE	: 16/03/2024	SITE OPERATOR	: Mr. Aniwat Pimwhanna
SAMPLE CONDITION	: Normal	FILE CODE	: 224003_GW_March

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^{1/}
				MW-103A	MW-104A	
Chromium (Cr)	mg/l	3120 B	< 0.001	ND	ND	≤ 6.0
Manganese (Mn)	mg/l	3120 B	< 0.001	< 0.01	0.03	≤ 33
Mercury (Hg)	mg/l	3112 B	< 0.0001	ND	ND	≤ 0.7
Nickel (Ni)	mg/l	3120 B	< 0.002	ND	ND	≤ 5.0

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



(Miss Krisana Chanthoom)

Analyst

REG. NO. ๖-239-๓-0017



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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REQUEST SERVICE No. :	0429/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 04/03/2024	SAMPLING TIME	: 14:50-14:55, 10:57-11:03
RECEIVED DATE	: 07/03/2024	ANALYTICAL DATE	: 12-13/03/2024
REPORT DATE	: 16/03/2024	SITE OPERATOR	: Mr. Aniwat Pimwhanna
SAMPLE CONDITION	: Normal	FILE CODE	: 224003_GW_March

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^{1/}
				MW-103A	MW-104A	
Benzene	mg/l	6200 B	< 0.0002	ND	ND	< 0.2
Ethylbenzene	mg/l	6200 B	< 0.0002	ND	ND	< 2.0
Toluene	mg/l	6200 B	< 0.0002	ND	ND	< 5.0
m-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
o-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
p-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
Total Xylenes	mg/l	6200 B	< 0.0006	ND	ND	≤ 24

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

Jutarat Jaemruen

(Miss Jutarat Jaemruen)

Analyst

REG. NO. จ-239-จ-0022

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REQUEST SERVICE No	: 0429/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 04/03/2024	SAMPLING TIME	: 14:50-14:55, 10:57-11:03
RECEIVED DATE	: 07/03/2024	ANALYTICAL DATE	: 11-13/03/2024
REPORT DATE	: 16/03/2024	SITE OPERATOR	: Mr. Aniwat Pimwhanna
SAMPLE CONDITION	: Normal	FILE CODE	: 224003_GW_March

PARAMETER	UNIT	ANALYSIS	ND	STATION		STANDARD ^{1/}
		METHODS	(non-detectable)	MW-103A	MW-104A	
<u>Total Petroleum Hydrocarbon</u>						
- TPH (C ₅ - C ₈)	mg/l	5030 C/8260 D	< 0.003	0.004	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	ND	≤ 1.7
- n-Nonane						
- n-Decane						
- n-Dodecane						
- n-Tetradecane						
- n-Hexadecane						
- TPH (C _{>16} - C ₃₅)	mg/l	3510 C/8015 D	< 0.050	ND	ND	≤ 0.1
- n-Octadecane						
- n-Eicosane						
- n-Docosane						
- n-Tetracosane						
- n-Hexacosane						
- n-Octacosane						
- n-Triacontane						
- n-Dotriacontane						
- n-Tetratriacontane						
- Pentatriacontane						

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

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

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(Mrs. Araya Tipparuk)

Technical Management Team

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REQUEST SERVICE No	: 0429/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 05/03/2024	SAMPLING TIME	: 10:08-10:15, 10:35-10:57
RECEIVED DATE	: 07/03/2024	ANALYTICAL DATE	: 07-12/03/2024
REPORT DATE	: 16/03/2024	SITE OPERATOR	: Mr. Aniwat Pimwhanna
SAMPLE CONDITION	: Normal	FILE CODE	: 224003_GW_March

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^{1/}
				MW-105B	MW-106B	
Chromium (Cr)	mg/l	3120 B	< 0.001	ND	ND	≤ 6.0
Manganese (Mn)	mg/l	3120 B	< 0.001	1.61	1.79	≤ 33
Mercury (Hg)	mg/l	3112 B	< 0.0001	ND	ND	≤ 0.7
Nickel (Ni)	mg/l	3120 B	< 0.002	< 0.01	ND	≤ 5.0

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


(Miss Krisana Chanthoom)

Analyst

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REQUEST SERVICE No. :	0429/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 05/03/2024	SAMPLING TIME	: 10:08-10:15, 10:35-10:57
RECEIVED DATE	: 07/03/2024	ANALYTICAL DATE	: 12-13/03/2024
REPORT DATE	: 16/03/2024	SITE OPERATOR	: Mr. Aniwat Pimwhanna
SAMPLE CONDITION	: Normal	FILE CODE	: 224003_GW_March

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^{1/}
				MW-105B	MW-106B	
Benzene	mg/l	6200 B	< 0.0002	ND	ND	< 0.2
Ethylbenzene	mg/l	6200 B	< 0.0002	ND	ND	< 2.0
Toluene	mg/l	6200 B	< 0.0002	ND	ND	< 5.0
m-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
o-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
p-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
Total Xylenes	mg/l	6200 B	< 0.0006	ND	ND	≤ 24

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

Jutarat Jaemruen

(Miss Jutarat Jaemruen)

Analyst

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GROUND WATER ANALYSIS REPORT

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SAMPLING DATE	: 05/03/2024	SAMPLING TIME	: 10:08-10:15, 10:35-10:57
RECEIVED DATE	: 07/03/2024	ANALYTICAL DATE	: 11-13/03/2024
REPORT DATE	: 16/03/2024	SITE OPERATOR	: Mr. Aniwat Pimwhanna
SAMPLE CONDITION	: Normal	FILE CODE	: 224003_GW_March

PARAMETER	UNIT	ANALYSIS	ND	STATION		STANDARD ^{1/}
		METHODS	(non-detectable)	MW-105B	MW-106B	
<u>Total Petroleum Hydrocarbon</u>						
- TPH (C ₅ - C ₈)	mg/l	5030 C/8260 D	< 0.003	ND	ND	≤ 1.4
- Pentane						
- Benzene						
- Toluene						
- m,p-Xylene						
- o-Xylene						
- Ethylbenzene						
- TPH (C _{>8} - C ₁₆)	mg/l	3510 C/8015 D	< 0.025	ND	ND	≤ 1.7
- n-Nonane						
- n-Decane						
- n-Dodecane						
- n-Tetradecane						
- n-Hexadecane						
- TPH (C _{>16} - C ₃₅)	mg/l	3510 C/8015 D	< 0.050	ND	ND	≤ 0.1
- n-Octadecane						
- n-Eicosane						
- n-Docosane						
- n-Tetracosane						
- n-Hexacosane						
- n-Octacosane						
- n-Triacontane						
- n-Dotriacontane						
- n-Tetratriacontane						
- Pentatriacontane						

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

Sudaporn S.

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REQUEST SERVICE No	: 0429/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 05-06/03/2024	SAMPLING TIME	: 14:52-15:10, 15:01-15:14
RECEIVED DATE	: 07/03/2024	ANALYTICAL DATE	: 07-12/03/2024
REPORT DATE	: 16/03/2024	SITE OPERATOR	: Mr. Aniwat Pimwhanna
SAMPLE CONDITION	: Normal	FILE CODE	: 224003_GW_March

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^{1/}
				MW-107C	MW-108B	
Chromium (Cr)	mg/l	3120 B	< 0.001	< 0.01	ND	≤ 6.0
Manganese (Mn)	mg/l	3120 B	< 0.001	2.04	0.17	≤ 33
Mercury (Hg)	mg/l	3112 B	< 0.0001	ND	ND	≤ 0.7
Nickel (Ni)	mg/l	3120 B	< 0.002	< 0.01	ND	≤ 5.0

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


(Miss Krisana Chanthoom)
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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REQUEST SERVICE No.	: 0429/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 05-06/03/2024	SAMPLING TIME	: 14:52-15:10, 15:01-15:14
RECEIVED DATE	: 07/03/2024	ANALYTICAL DATE	: 12-13/03/2024
REPORT DATE	: 16/03/2024	SITE OPERATOR	: Mr. Aniwat Pimwhanna
SAMPLE CONDITION	: Normal	FILE CODE	: 224003_GW_March

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^{1/}
				MW-107C	MW-108B	
Benzene	mg/l	6200 B	< 0.0002	ND	ND	< 0.2
Ethylbenzene	mg/l	6200 B	< 0.0002	ND	ND	< 2.0
Toluene	mg/l	6200 B	< 0.0002	ND	ND	< 5.0
m-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
o-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
p-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
Total Xylenes	mg/l	6200 B	< 0.0006	ND	ND	≤ 24

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

Jutarat Jaemruen
(Miss Jutarat Jaemruen)

Analyst

REG. NO. ๖-239-๓-0022

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GROUND WATER ANALYSIS REPORT

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SAMPLING DATE	: 05-06/03/2024	SAMPLING TIME	: 14:52-15:10, 15:01-15:14
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REPORT DATE	: 16/03/2024	SITE OPERATOR	: Mr. Aniwat Pimwhanna
SAMPLE CONDITION	: Normal	FILE CODE	: 224003_GW_March

PARAMETER	UNIT	ANALYSIS	ND	STATION		STANDARD ^{1/}
		METHODS	(non-detectable)	MW-107C	MW-108B	
<u>Total Petroleum Hydrocarbon</u>						
- TPH (C ₅ - C ₈)	mg/l	5030 C/8260 D	< 0.003	ND	ND	≤ 1.4
- Pentane						
- Benzene						
- Toluene						
- m,p-Xylene						
- o-Xylene						
- Ethylbenzene						
- TPH (C _{> 8} - C ₁₆)	mg/l	3510 C/8015 D	< 0.025	ND	ND	≤ 1.7
- n-Nonane						
- n-Decane						
- n-Dodecane						
- n-Tetradecane						
- n-Hexadecane						
- TPH (C _{> 16} - C ₃₅)	mg/l	3510 C/8015 D	< 0.050	ND	ND	≤ 0.1
- n-Octadecane						
- n-Eicosane						
- n-Docosane						
- n-Tetracosane						
- n-Hexacosane						
- n-Octacosane						
- n-Triacontane						
- n-Dotriacontane						
- n-Tetratriacontane						
- Pentatriacontane						

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

Sudaporn S.

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Analyst

REG. NO. ๖-239-๓-0001

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REQUEST SERVICE No	: 0429/67, 0453/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 06, 08/03/2024	SAMPLING TIME	: 09:49-10:00, 10:21-10:30
RECEIVED DATE	: 07, 09/03/2024	ANALYTICAL DATE	: 07-14/03/2024
REPORT DATE	: 16/03/2024	SITE OPERATOR	: Mr. Aniwat Pimwhanna
SAMPLE CONDITION	: Normal	FILE CODE	: 224003_GW_March

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^{1/}
				MW-109A	MW-111A	
Chromium (Cr)	mg/l	3120 B	< 0.001	< 0.01	ND	≤ 6.0
Manganese (Mn)	mg/l	3120 B	< 0.001	0.84	0.05	≤ 33
Mercury (Hg)	mg/l	3112 B	< 0.0001	ND	ND	≤ 0.7
Nickel (Ni)	mg/l	3120 B	< 0.002	< 0.01	ND	≤ 5.0

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

(Miss Krisana Chanthoom)

Analyst

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REQUEST SERVICE No. :	0429/67, 0453/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 06, 08/03/2024	SAMPLING TIME	: 09:49-10:00, 10:21-10:30
RECEIVED DATE	: 07, 09/03/2024	ANALYTICAL DATE	: 12-13/03/2024
REPORT DATE	: 16/03/2024	SITE OPERATOR	: Mr. Aniwat Pimwhanna
SAMPLE CONDITION	: Normal	FILE CODE	: 224003_GW_March

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^{1/}
				MW-109A	MW-111A	
Benzene	mg/l	6200 B	< 0.0002	ND	ND	< 0.2
Ethylbenzene	mg/l	6200 B	< 0.0002	ND	ND	< 2.0
Toluene	mg/l	6200 B	< 0.0002	ND	ND	< 5.0
m-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
o-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
p-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
Total Xylenes	mg/l	6200 B	< 0.0006	ND	ND	≤ 24

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

Jutarat Jaemruen

(Miss Jutarat Jaemruen)

Analyst

REG. NO. จ-239-จ-0022

Araya Tippasuk

(Mrs. Araya Tippasuk)

Technical Management Team

REG. NO. จ-239-ท-0004

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REQUEST SERVICE No	: 0429/67, 0453/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 06, 08/03/2024	SAMPLING TIME	: 09:49-10:00, 10:21-10:30
RECEIVED DATE	: 07, 09/03/2024	ANALYTICAL DATE	: 11-13/03/2024
REPORT DATE	: 16/03/2024	SITE OPERATOR	: Mr. Aniwat Pimwhanna
SAMPLE CONDITION	: Normal	FILE CODE	: 224003_GW_March

PARAMETER	UNIT	ANALYSIS	ND	STATION		STANDARD ^{1/}
		METHODS	(non-detectable)	MW-109A	MW-111A	
<u>Total Petroleum Hydrocarbon</u>						
- TPH (C ₅ - C ₈)	mg/l	5030 C/8260 D	< 0.003	ND	ND	≤ 1.4
- Pentane						
- Benzene						
- Toluene						
- m,p-Xylene						
- o-Xylene						
- Ethylbenzene						
- TPH (C _{>8} - C ₁₆)	mg/l	3510 C/8015 D	< 0.025	ND	ND	≤ 1.7
- n-Nonane						
- n-Decane						
- n-Dodecane						
- n-Tetradecane						
- n-Hexadecane						
- TPH (C _{>16} - C ₃₅)	mg/l	3510 C/8015 D	< 0.050	ND	ND	≤ 0.1
- n-Octadecane						
- n-Eicosane						
- n-Docosane						
- n-Tetracosane						
- n-Hexacosane						
- n-Octacosane						
- n-Triacontane						
- n-Dotriacontane						
- n-Tetratriacontane						
- Pentatriacontane						

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

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

REG. NO. ๖-239-๓-0001

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(Mrs. Araya Tipparuk)

Technical Management Team

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REQUEST SERVICE No	: 0429/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 06/03/2024	SAMPLING TIME	: 09:56-10:00, 10:49-10:58
RECEIVED DATE	: 07/03/2024	ANALYTICAL DATE	: 07-12/03/2024
REPORT DATE	: 16/03/2024	SITE OPERATOR	: Mr. Aniwat Pimwhanna
SAMPLE CONDITION	: Normal	FILE CODE	: 224003_GW_March

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^{1/}
				MW-112A	MW-113A	
Chromium (Cr)	mg/l	3120 B	< 0.001	ND	< 0.01	≤ 6.0
Manganese (Mn)	mg/l	3120 B	< 0.001	0.03	0.02	≤ 33
Mercury (Hg)	mg/l	3112 B	< 0.0001	ND	ND	≤ 0.7
Nickel (Ni)	mg/l	3120 B	< 0.002	ND	ND	≤ 5.0

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

(Miss Krisana Chanthoom)

Analyst

REG. NO. ๓-239-๓-0017

(Mrs. Araya Tipparuk)

Technical Management Team

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REQUEST SERVICE No.	: 0429/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 06/03/2024	SAMPLING TIME	: 09:56-10:00, 10:49-10:58
RECEIVED DATE	: 07/03/2024	ANALYTICAL DATE	: 12-13/03/2024
REPORT DATE	: 16/03/2024	SITE OPERATOR	: Mr. Aniwat Pimwhanna
SAMPLE CONDITION	: Normal	FILE CODE	: 224003_GW_March

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^{1/}
				MW-112A	MW-113A	
Benzene	mg/l	6200 B	< 0.0002	ND	ND	< 0.2
Ethylbenzene	mg/l	6200 B	< 0.0002	ND	ND	< 2.0
Toluene	mg/l	6200 B	< 0.0002	ND	ND	< 5.0
m-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
o-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
p-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
Total Xylenes	mg/l	6200 B	< 0.0006	ND	ND	≤ 24

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

Jutarat Jaemruen
(Miss Jutarat Jaemruen)

Analyst

REG. NO. ๖-239-๓-0022

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Technical Management Team

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REQUEST SERVICE No	: 0429/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 06/03/2024	SAMPLING TIME	: 09:56-10:00, 10:49-10:58
RECEIVED DATE	: 07/03/2024	ANALYTICAL DATE	: 11-13/03/2024
REPORT DATE	: 16/03/2024	SITE OPERATOR	: Mr. Aniwat Pimwhanna
SAMPLE CONDITION	: Normal	FILE CODE	: 224003_GW_March

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^{1/}
				MW-112A	MW-113A	
<u>Total Petroleum Hydrocarbon</u>						
- TPH (C ₅ - C ₈)	mg/l	5030 C/8260 D	< 0.003	ND	ND	≤ 1.4
- Pentane						
- Benzene						
- Toluene						
- m,p-Xylene						
- o-Xylene						
- Ethylbenzene						
- TPH (C _{> 8} - C ₁₆)	mg/l	3510 C/8015 D	< 0.025	ND	ND	≤ 1.7
- n-Nonane						
- n-Decane						
- n-Dodecane						
- n-Tetradecane						
- n-Hexadecane						
- TPH (C _{> 16} - C ₃₅)	mg/l	3510 C/8015 D	< 0.050	ND	ND	≤ 0.1
- n-Octadecane						
- n-Eicosane						
- n-Docosane						
- n-Tetracosane						
- n-Hexacosane						
- n-Octacosane						
- n-Triacontane						
- n-Dotriacontane						
- n-Tetratriacontane						
- Pentatriacontane						

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

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

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Araya Tipparuk

(Mrs. Araya Tipparuk)

Technical Management Team

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REQUEST SERVICE No	: 0429/67, 0453/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 05, 08/03/2024	SAMPLING TIME	: 09:19-09:25, 09:33-09:38
RECEIVED DATE	: 07, 09/03/2024	ANALYTICAL DATE	: 07-14/03/2024
REPORT DATE	: 16/03/2024	SITE OPERATOR	: Mr. Aniwat Pimwhanna
SAMPLE CONDITION	: Normal	FILE CODE	: 224003_GW_March

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^{1/}
				MW-114A	MW-115A	
Chromium (Cr)	mg/l	3120 B	< 0.001	ND	< 0.01	≤ 6.0
Manganese (Mn)	mg/l	3120 B	< 0.001	0.05	0.16	≤ 33
Mercury (Hg)	mg/l	3112 B	< 0.0001	ND	ND	≤ 0.7
Nickel (Ni)	mg/l	3120 B	< 0.002	ND	< 0.01	≤ 5.0

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


(Miss Krisana Chanthoom)

Analyst

REG. NO. ๖-239-๖-0017


(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. ๖-239-๖-0004

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REQUEST SERVICE No.	: 0429/67, 0453/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 05, 08/03/2024	SAMPLING TIME	: 09:19-09:25, 09:33-09:38
RECEIVED DATE	: 07, 09/03/2024	ANALYTICAL DATE	: 12-13/03/2024
REPORT DATE	: 16/03/2024	SITE OPERATOR	: Mr. Aniwat Pimwhanna
SAMPLE CONDITION	: Normal	FILE CODE	: 224003_GW_March

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^{1/}
				MW-114A	MW-115A	
Benzene	mg/l	6200 B	< 0.0002	ND	ND	< 0.2
Ethylbenzene	mg/l	6200 B	< 0.0002	ND	ND	< 2.0
Toluene	mg/l	6200 B	< 0.0002	ND	ND	< 5.0
m-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
o-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
p-Xylene	mg/l	6200 B	< 0.0002	ND	ND	≤ 24
Total Xylenes	mg/l	6200 B	< 0.0006	ND	ND	≤ 24

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

Jutarat Jaemruen

(Miss Jutarat Jaemruen)

Analyst

REG. NO. ๖-239-๖-0022

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REQUEST SERVICE No	: 0429/67, 0453/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 05, 08/03/2024	SAMPLING TIME	: 09:19-09:25, 09:33-09:38
RECEIVED DATE	: 07, 09/03/2024	ANALYTICAL DATE	: 11-13/03/2024
REPORT DATE	: 16/03/2024	SITE OPERATOR	: Mr. Aniwat Pimwhanna
SAMPLE CONDITION	: Normal	FILE CODE	: 224003_GW_March

PARAMETER	UNIT	ANALYSIS	ND	STATION		STANDARD ^{1/}
		METHODS	(non-detectable)	MW-114A	MW-115A	
<u>Total Petroleum Hydrocarbon</u>						
- TPH (C ₅ - C ₈)	mg/l	5030 C/8260 D	< 0.003	ND	ND	≤ 1.4
- Pentane						
- Benzene						
- Toluene						
- m,p-Xylene						
- o-Xylene						
- Ethylbenzene						
- TPH (C _{> 8} - C ₁₆)	mg/l	3510 C/8015 D	< 0.025	ND	ND	≤ 1.7
- n-Nonane						
- n-Decane						
- n-Dodecane						
- n-Tetradecane						
- n-Hexadecane						
- TPH (C _{> 16} - C ₃₅)	mg/l	3510 C/8015 D	< 0.050	ND	ND	≤ 0.1
- n-Octadecane						
- n-Eicosane						
- n-Docosane						
- n-Tetracosane						
- n-Hexacosane						
- n-Octacosane						
- n-Triacontane						
- n-Dotriacontane						
- n-Tetratriacontane						
- Pentatriacontane						

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

Sudaporn S.
(Miss Sudaporn Soonthorn)

Analyst

REG. NO. ๖-239-๖-0001

Araya Tipparuk
(Mrs. Araya Tipparuk)

Technical Management Team

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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REQUEST SERVICE No.	: 0585/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger
SAMPLING DATE	: 25-26/03/2024	SAMPLING TIME	: 09:41-09:53, 10:15-10:27
RECEIVED DATE	: 27/03/2024	ANALYTICAL DATE	: 27-28/03/2024, 04-06/04/2024
REPORT DATE	: 17/04/2024	SITE OPERATOR	: Mr. Baworn Deechaiya
SAMPLE CONDITION	: Normal	FILE CODE	: 224003_Soil_March

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^{1/}
				MW-101 B	MW-102 A	
Naphthalene	mg/kg	3540 C / 8270 E	< 0.005	ND	ND	≤ 1,000
Hexane	mg/kg	5035 A / 8260 D	< 0.001	ND	ND	≤ 1,000
Benzene	mg/kg	5035 A / 8260 D	< 0.00025	ND	ND	≤ 15
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. ๓-239-๓-0022

Araya Tippiaruk

(Mrs. Araya Tippiaruk)

Technical Management Team

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 4. - Not available.



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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REQUEST SERVICE No.	: 0585/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger
SAMPLING DATE	: 26/03/2024	SAMPLING TIME	: 10:34-10:47, 10:55-11:09
RECEIVED DATE	: 27/03/2024	ANALYTICAL DATE	: 27-28/03/2024, 04-06/04/2024
REPORT DATE	: 17/04/2024	SITE OPERATOR	: Mr. Baworn Deechaiya
SAMPLE CONDITION	: Normal	FILE CODE	: 224003_Soil_March

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^{1/}
				MW-103 A	MW-104 A	
Naphthalene	mg/kg	3540 C / 8270 E	< 0.005	ND	ND	≤ 1,000
Hexane	mg/kg	5035 A / 8260 D	< 0.001	ND	ND	≤ 1,000
Benzene	mg/kg	5035 A / 8260 D	< 0.00025	ND	ND	≤ 15
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. ๖-239-๓-0022

Araya Tipparuk

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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REQUEST SERVICE No.	: 0585/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger
SAMPLING DATE	: 26/03/2024	SAMPLING TIME	: 09:10-09:24, 09:31-09:43
RECEIVED DATE	: 27/03/2024	ANALYTICAL DATE	: 27-28/03/2024, 04-06/04/2024
REPORT DATE	: 17/04/2024	SITE OPERATOR	: Mr. Baworn Deechaiya
SAMPLE CONDITION	: Normal	FILE CODE	: 224003_Soil_March

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^{1/}
				MW-105 B	MW-106 B	
Naphthalene	mg/kg	3540 C / 8270 E	< 0.005	ND	ND	≤ 1,000
Hexane	mg/kg	5035 A / 8260 D	< 0.001	ND	ND	≤ 1,000
Benzene	mg/kg	5035 A / 8260 D	< 0.00025	ND	ND	≤ 15
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. ๖-239-๖-0022

Araya Tipparuk

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. ๖-239-๓-0004

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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REQUEST SERVICE No.	: 0585/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger
SAMPLING DATE	: 25-26/03/2024	SAMPLING TIME	: 09:50-10:03, 11:03-11:18
RECEIVED DATE	: 27/03/2024	ANALYTICAL DATE	: 27-28/03/2024, 04-06/04/2024
REPORT DATE	: 17/04/2024	SITE OPERATOR	: Mr. Baworn Deechaiya
SAMPLE CONDITION	: Normal	FILE CODE	: 224003_Soil_March

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^{1/}
				MW-108 B	MW-109 A	
Naphthalene	mg/kg	3540 C / 8270 E	< 0.005	ND	ND	≤ 1,000
Hexane	mg/kg	5035 A / 8260 D	< 0.001	ND	ND	≤ 1,000
Benzene	mg/kg	5035 A / 8260 D	< 0.00025	ND	ND	≤ 15
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	: Star Petroleum Refining Public Co., Ltd.	REQUEST SERVICE No.	: 0585/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger
SAMPLING DATE	: 25/03/2024	SAMPLING TIME	: 11:03-11:18, 10:22-10:32
RECEIVED DATE	: 27/03/2024	ANALYTICAL DATE	: 27-28/03/2024, 04-06/04/2024
REPORT DATE	: 17/04/2024	SITE OPERATOR	: Mr. Baworn Deechaiya
SAMPLE CONDITION	: Normal	FILE CODE	: 224003_Soil_March

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD ^{1/}
				MW-112 A	MW-113 A	
Naphthalene	mg/kg	3540 C / 8270 E	< 0.005	ND	ND	≤ 1,000
Hexane	mg/kg	5035 A / 8260 D	< 0.001	ND	ND	≤ 1,000
Benzene	mg/kg	5035 A / 8260 D	< 0.00025	ND	ND	≤ 15
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	: Star Petroleum Refining Public Co., Ltd.	REQUEST SERVICE No.	: 0794/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger
SAMPLING DATE	: 23-24/04/2024	SAMPLING TIME	: 14:18-14:39, 14:37-14:50
RECEIVED DATE	: 25/04/2024	ANALYTICAL DATE	: 29/04/2024-12/05/2024
REPORT DATE	: 14/05/2024	SITE OPERATOR	: Mr. Aniwat Pimwanna
SAMPLE CONDITION	: Normal	FILE CODE	: 224003_Soil_April

PARAMETER	UNIT	ANALYSIS	ND (non-detectable)	STATION		STANDARD ^{1/}
		METHODS		MW-101 B	MW-102 A	
Total Petroleum Hydrocarbons						
- TPH (C ₅ - C ₈)	mg/kg	5035A /8260 D	< 0.003	ND	ND	≤ 25
- Pentane						
- Benzene						
- Toluene						
- m,p-Xylene						
- o-Xylene						
- Ethylbenzene						
- TPH (C _{>8} - C ₁₆)	mg/kg	3540C/8015 D	< 0.25	ND	ND	≤ 25
- n-Nonane						
- n-Decane						
- n-Dodecane						
- n-Tetradecane						
- n-Hexadecane						
- TPH (C _{>16} - C ₃₅)	mg/kg	3540C/8015 D	< 1.85	ND	6.99	≤ 8
- n-Octadecane						
- n-Eicosane						
- n-Docosane						
- n-Tetracosane						
- n-Hexacosane						
- n-Octacosane						
- n-Triacontane						
- Dotriacontane						
- Tetracontane						
- Pentatriacontane						

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

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(Miss Sudaporn Soonthorn)

Analyst

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(Mrs. Araya Tipparuk)

Technical Management Team

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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REQUEST SERVICE No.	: 0585/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger
SAMPLING DATE	: 26/03/2024	SAMPLING TIME	: 10:34-10:47
RECEIVED DATE	: 27/03/2024	ANALYTICAL DATE	: 27/03/2024-04/04/2024
REPORT DATE	: 17/04/2024	SITE OPERATOR	: Mr. Baworn Deechaiya
SAMPLE CONDITION	: Normal	FILE CODE	: 224003_Soil_March

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-103 A	STANDARD ^{1/}
<u>Total Petroleum Hydrocarbons</u>					
- TPH (C ₅ - C ₈)	mg/kg	5035A /8260 D	< 0.003	ND	≤ 25
- Pentane	mg/kg				-
- Benzene	mg/kg				-
- Toluene	mg/kg				-
- m,p-Xylene	mg/kg				-
- o-Xylene	mg/kg				-
- Ethylbenzene	mg/kg				-
- TPH (C ₈ - C ₁₆)	mg/kg	3540C/8015 D	< 0.25	ND	≤ 25
- n-Nonane	mg/kg				-
- n-Decane	mg/kg				-
- n-Dodecane	mg/kg				-
- n-Tetradecane	mg/kg				-
- n-Hexadecane	mg/kg				-
- TPH (C ₁₆ - C ₃₅)	mg/kg	3540C/8015 D	< 1.85	ND	≤ 8
- n-Octadecane	mg/kg				-
- n-Eicosane	mg/kg				-
- n-Docosane	mg/kg				-
- n-Tetracosane	mg/kg				-
- n-Hexacosane	mg/kg				-
- n-Octacosane	mg/kg				-
- n-Triacontane	mg/kg				-
- n-Dotriacontane	mg/kg				-
- n-Tetratriacontane	mg/kg				-
- Pentatriacontane	mg/kg				-

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

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(Miss Sudaporn Soonthorn)

Analyst

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Technical Management Team

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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REQUEST SERVICE No.	: 0794/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger
SAMPLING DATE	: 24/04/2024	SAMPLING TIME	: 13:52-14:10, 10:24-11:00
RECEIVED DATE	: 25/04/2024	ANALYTICAL DATE	: 29/04/2024-12/05/2024
REPORT DATE	: 14/05/2024	SITE OPERATOR	: Mr. Aniwat Pimwanna
SAMPLE CONDITION	: Normal	FILE CODE	: 224003_Soil_April

PARAMETER	UNIT	ANALYSIS	ND	STATION		STANDARD ^{1/}
		METHODS	(non-detectable)	MW-104 A	MW-105 B	
Total Petroleum Hydrocarbons						
- TPH (C ₅ - C ₈)	mg/kg	5035A /8260 D	< 0.003	ND	ND	≤ 25
- Pentane						
- Benzene						
- Toluene						
- m,p-Xylene						
- o-Xylene						
- Ethylbenzene						
- TPH (C _{>8} - C ₁₆)	mg/kg	3540C/8015 D	< 0.25	ND	0.66	≤ 25
- n-Nonane						
- n-Decane						
- n-Dodecane						
- n-Tetradecane						
- n-Hexadecane						
- TPH (C _{>16} - C ₃₅)	mg/kg	3540C/8015 D	< 1.85	ND	ND	≤ 8
- n-Octadecane						
- n-Eicosane						
- n-Docosane						
- n-Tetracosane						
- n-Hexacosane						
- n-Octacosane						
- n-Triacontane						
- Dotriacontane						
- n-Tetratriacontane						
- 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	: Star Petroleum Refining Public Co., Ltd.	REQUEST SERVICE No.	: 0585/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger
SAMPLING DATE	: 26/03/2024	SAMPLING TIME	: 09:31-09:43
RECEIVED DATE	: 27/03/2024	ANALYTICAL DATE	: 27/03/2024-04/04/2024
REPORT DATE	: 17/04/2024	SITE OPERATOR	: Mr. Baworn Deechaiya
SAMPLE CONDITION	: Normal	FILE CODE	: 224003_Soil_March

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW-106 B	STANDARD ^{1/}
<u>Total Petroleum Hydrocarbons</u>					
- TPH (C ₅ - C ₈)	mg/kg	5035A /8260 D	< 0.003	ND	≤ 25
- Pentane					
- Benzene					
- Toluene					
- m,p-Xylene					
- o-Xylene					
- Ethylbenzene					
- TPH (C ₉ - C ₁₆)	mg/kg	3540C/8015 D	< 0.25	ND	≤ 25
- n-Nonane					
- n-Decane					
- n-Dodecane					
- n-Tetradecane					
- n-Hexadecane					
- TPH (C ₁₇ - C ₃₅)	mg/kg	3540C/8015 D	< 1.85	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	: Star Petroleum Refining Public Co., Ltd.	REQUEST SERVICE No.	: 0794/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger
SAMPLING DATE	: 23-24/04/2024	SAMPLING TIME	: 09:28-09:42, 09:17-09:30
RECEIVED DATE	: 25/04/2024	ANALYTICAL DATE	: 29/04/2024-12/05/2024
REPORT DATE	: 14/05/2024	SITE OPERATOR	: Mr. Aniwat Pimwanna
SAMPLE CONDITION	: Normal	FILE CODE	: 224003_Soil_April

PARAMETER	UNIT	ANALYSIS	ND	STATION		STANDARD ^{1/}
		METHODS	(non-detectable)	MW-108 B	MW-109 A	
Total Petroleum Hydrocarbons						
- TPH (C ₅ - C ₈)	mg/kg	5035A / 8260 D	< 0.003	ND	ND	≤ 25
- Pentane						
- Benzene						
- Toluene						
- m,p-Xylene						
- o-Xylene						
- Ethylbenzene						
- TPH (C _{> 8} - C ₁₆)	mg/kg	3540C/8015 D	< 0.25	ND	ND	≤ 25
- n-Nonane						
- n-Decane						
- n-Dodecane						
- n-Tetradecane						
- n-Hexadecane						
- TPH (C _{> 16} - C ₃₅)	mg/kg	3540C/8015 D	< 1.85	3.42	6.75	≤ 8
- n-Octadecane						
- n-Eicosane						
- n-Docosane						
- n-Tetracosane						
- n-Hexacosane						
- n-Octacosane						
- n-Triacontane						
- n-Dotriacontane						
- n-Tetratriacontane						
- Pentatriacontane						

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

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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REQUEST SERVICE No.	: 0794/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger
SAMPLING DATE	: 23/04/2024	SAMPLING TIME	: 15:25-15:48, 10:29-10:43
RECEIVED DATE	: 25/04/2024	ANALYTICAL DATE	: 29/04/2024-12/05/2024
REPORT DATE	: 14/05/2024	SITE OPERATOR	: Mr. Aniwat Pimwanna
SAMPLE CONDITION	: Normal	FILE CODE	: 224003_Soil_April

PARAMETER	UNIT	ANALYSIS	ND	STATION		STANDARD ^{1/}
		METHODS	(non-detectable)	MW-112 A	MW-113 A	
Total Petroleum Hydrocarbons						
- TPH (C ₅ - C ₈)	mg/kg	5035A /8260 D	< 0.003	ND	ND	≤ 25
- Pentane						
- Benzene						
- Toluene						
- m,p-Xylene						
- o-Xylene						
- Ethylbenzene						
- TPH (C ₈ - C ₁₆)	mg/kg	3540C/8015 D	< 0.25	ND	ND	≤ 25
- n-Nonane						
- n-Decane						
- n-Dodecane						
- n-Tetradecane						
- n-Hexadecane						
- TPH (C ₁₆ - C ₃₅)	mg/kg	3540C/8015 D	< 1.85	1.85	3.49	≤ 8
- n-Octadecane						
- n-Eicosane						
- n-Docosane						
- n-Tetracosane						
- n-Hexacosane						
- n-Octacosane						
- n-Triacontane						
- n-Dotriacontane						
- n-Tetratriacontane						
- Pentatriacontane						

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

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 3. ^{1/} Notification of the Ministry of Industry, B.E.2559 (2016).
 4. - Not available.

ใบรับรองผลการตรวจวัดระดับเสียงภายในสถานประกอบการ



Noise Monitoring Result : Working Noise

MTR-SPRC PLC-Refinery

Location : CDU (Near 02GM102A)

Monitor Period : Feb 28, 2024

SLM Model : SCARLET ST-21D

Serial No : 820727

Site Operator : Miss Salisa Ainree

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : Sep 04, 2023

SLM Reading / Adjust dB(A) : 94.0/-0.2

Expire Date : Sep 03, 2024

Cal Sheet No.: CR-515-2024-054

Time	Equivalent Sound Pressure Level (dB(A))
	Feb 28, 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	89.2
09:00 - 10:00	89.2
10:00 - 11:00	89.0
11:00 - 12:00	89.0
12:00 - 13:00	89.0
13:00 - 14:00	89.1
14:00 - 15:00	89.0
15:00 - 16:00	89.0
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)*	89.1
Lmax **	93.9
Standard-8Hr	90 dB(A)
Standard-Max	140 dB(A)

Remark : * Average time between 08:00-16:00

** Maximum Sound Pressure Level between 08:00-16:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Sununta Sirawuttinanon)
Technical Management Team



Noise Monitoring Result : Working Noise MTR-SPRC PLC-Refinery

Location : NHTU (Near 08G102A-B)

Monitor Period : Feb 28, 2024

SLM Model : SCARLET ST-21D

Serial No : 820728

Site Operator : Miss Salisa Ainree

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : Sep 04, 2023

SLM Reading / Adjust dB(A) : 93.7/0.1


Expire Date : Sep 03, 2024


Cal Sheet No.: CR-515-2024-054

Time	Equivalent Sound Pressure Level (dB(A))	
	Feb 28, 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	89.4	
09:00 - 10:00	89.2	
10:00 - 11:00	89.2	
11:00 - 12:00	88.8	
12:00 - 13:00	88.7	
13:00 - 14:00	88.8	
14:00 - 15:00	88.7	
15:00 - 16:00	88.8	
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)*	89.0	
Lmax **	102.8	
Standard-8Hr	90 dB(A)	
Standard-Max	140 dB(A)	

Remark : * Average time between 08:00-16:00

** Maximum Sound Pressure Level between 08:00-16:00


(Miss Katesarin Vorradetwittaya)
Environmental Scientist


(Miss Sununta Sirawuttinanon)
Technical Management Team



Noise Monitoring Result : Working Noise

MTR-SPRC PLC-Refinery

Location : RFCCU (Near 17GM102A-B)

Monitor Period : Feb 28, 2024

SLM Model : SCARLET ST-21D

Serial No : 820723

Site Operator : Miss Salisa Ainree

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : Sep 04, 2023

SLM Reading / Adjust dB(A) : 93.7/0.1

Expire Date : Sep 03, 2024

Cal Sheet No.: CR-515-2024-054

Time	Equivalent Sound Pressure Level (dB(A))	
	Feb 28, 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	86.3	
09:00 - 10:00	86.4	
10:00 - 11:00	86.6	
11:00 - 12:00	87.0	
12:00 - 13:00	87.1	
13:00 - 14:00	86.6	
14:00 - 15:00	86.4	
15:00 - 16:00	86.6	
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)*	86.6	
Lmax **	101.8	
Standard-8Hr	90 dB(A)	
Standard-Max	140 dB(A)	

Remark : * Average time between 08:00-16:00

** Maximum Sound Pressure Level between 08:00-16:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Sununta Sirawuttinanon)
Technical Management Team



Noise Monitoring Result : Working Noise

MTR-SPRC PLC-Refinery

Location : Utility (Near 50C101)

Monitor Period : Feb 28, 2024

SLM Model : SCARLET ST-21D

Serial No : 820725

Site Operator : Miss Salisa Ainree

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : Sep 04, 2023

SLM Reading / Adjust dB(A) : 93.7/0.1

Expire Date : Sep 03, 2024

Cal Sheet No.: CR-515-2024-054

Time	Equivalent Sound Pressure Level (dB(A))
	Feb 28, 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	91.1
09:00 - 10:00	91.3
10:00 - 11:00	91.5
11:00 - 12:00	91.6
12:00 - 13:00	91.6
13:00 - 14:00	91.8
14:00 - 15:00	91.4
15:00 - 16:00	91.3
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)*	91.5
Lmax **	93.9
Standard-8Hr	90 dB(A)
Standard-Max	140 dB(A)

Remark : * Average time between 08:00-16:00

** Maximum Sound Pressure Level between 08:00-16:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Sununta Sirawuttinanon)
Technical Management Team



Noise Monitoring Result : Working Noise

MTR-SPRC PLC-Refinery

Location : CDU (Near 02GM102A)

Monitor Period : May 28, 2024

SLM Model : Cirrus CR162C

Serial No : G301065

Site Operator : Miss Wiraya Patchimboon

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : Sep 04, 2023

SLM Reading / Adjust dB(A) : 93.6/0.1

Expire Date : Sep 03, 2024

Cal Sheet No.: CR-515-2024-148

Time	Equivalent Sound Pressure Level (dB(A))	
	May 28, 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	86.6	
09:00 - 10:00	86.4	
10:00 - 11:00	86.3	
11:00 - 12:00	86.3	
12:00 - 13:00	86.4	
13:00 - 14:00	86.5	
14:00 - 15:00	86.6	
15:00 - 16:00	86.4	
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)*	86.4	
Lmax **	87.9	
Standard-8Hr	90 dB(A)	
Standard-Max	140 dB(A)	

Remark : * Average time between 08:00-16:00

** Maximum Sound Pressure Level between 08:00-16:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Sununta Sirawuttinanon)
Technical Management Team



Noise Monitoring Result : Working Noise

MTR-SPRC PLC-Refinery

Location : NHTU (Near 08G102A-B)

Monitor Period : May 28, 2024

SLM Model : Cirrus CR162B

Serial No : G302743

Site Operator : Miss Wiraya Patchimboon

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : Sep 04, 2023

SLM Reading / Adjust dB(A) : 93.7/0.0

Expire Date : Sep 03, 2024

Cal Sheet No.: CR-515-2024-148

Time	Equivalent Sound Pressure Level (dB(A))	
	May 28, 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	84.3	
09:00 - 10:00	83.1	
10:00 - 11:00	83.1	
11:00 - 12:00	83.1	
12:00 - 13:00	83.1	
13:00 - 14:00	83.0	
14:00 - 15:00	82.8	
15:00 - 16:00	82.6	
16:00 - 17:00		
17:00 - 18:00		
18:00 - 19:00		
19:00 - 20:00		
20:00 - 21:00		
21:00 - 22:00		
22:00 - 23:00		
23:00 - 24:00		
Leq(8)*	83.2	
Lmax **	95.2	
Standard-8Hr	90 dB(A)	
Standard-Max	140 dB(A)	

Remark : * Average time between 08:00-16:00

** Maximum Sound Pressure Level between 08:00-16:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Sununta Sirawuttinanon)
Technical Management Team



Noise Monitoring Result : Working Noise

MTR-SPRC PLC-Refinery

Location : Amine SRU (Near 33K101)

Monitor Period : Jun 20, 2024

SLM Model : Cirrus CR162B

Serial No : G301014

Site Operator : Miss Mareeyanee Hawae

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : Sep 04, 2023

SLM Reading / Adjust dB(A) : 93.8/-0.1

Expire Date : Sep 03, 2024

Cal Sheet No.: CR-515-2024-181

Time	Equivalent Sound Pressure Level (dB(A))	
	Jun 20, 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	87.0	
09:00 - 10:00	86.6	
10:00 - 11:00	86.4	
11:00 - 12:00	86.2	
12:00 - 13:00	86.4	
13:00 - 14:00	86.4	
14:00 - 15:00	86.2	
15:00 - 16:00	86.3	
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)*	86.4	
Lmax **	98.3	
Standard-8Hr	90 dB(A)	
Standard-Max	140 dB(A)	

Remark : * Average time between 08:00-16:00

** Maximum Sound Pressure Level between 08:00-16:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Sununta Sirawuttinanon)
Technical Management Team



Noise Monitoring Result : Working Noise

MTR-SPRC PLC-Refinery

Location : RFCCU (Near 17GM102A-B)

Monitor Period : May 28, 2024

SLM Model : Cirrus CR162B

Serial No : G300892

Site Operator : Miss Wiraya Patchimboon

Calibrator Model : Cirrus CR:515

Serial No : 97097

Calibration Ref dB(A) : 94.0

Certified Date : Sep 04, 2023

SLM Reading / Adjust dB(A) : 93.7/0.0

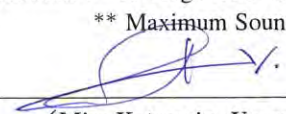
Expire Date : Sep 03, 2024


Cal Sheet No.: CR-515-2024-148

Time	Equivalent Sound Pressure Level (dB(A))	
	May 28, 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	88.5	
09:00 - 10:00	88.4	
10:00 - 11:00	88.3	
11:00 - 12:00	88.4	
12:00 - 13:00	88.4	
13:00 - 14:00	88.5	
14:00 - 15:00	88.5	
15:00 - 16:00	88.4	
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)*	88.4	
Lmax **	90.7	
Standard-8Hr	90 dB(A)	
Standard-Max	140 dB(A)	

Remark : * Average time between 08:00-16:00

** Maximum Sound Pressure Level between 08:00-16:00


 (Miss Katesarin Vorradetwittaya)
 Environmental Scientist


 (Miss Sununta Sirawuttinanon)
 Technical Management Team



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SECOT CO., LTD.

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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

NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REFERENCE NO.	: SPRC IH-224005_Ns Dose (Cert)
MEASUREMENT BY	: SECOT Co., Ltd.	INSTRUMENT	: Noise Dosimeter
MEASUREMENT DATE	: 28/02/2024	CALIBRATOR TYPE	: Cirrus RC 110A
MEASUREMENT LOCATION	: Process area	SERIAL NO.	: 95168
SITE OPERATOR	: Miss Salisa Ainree	CALIBRATOR REF.	: 1,000 Hz, 114 dB

USER NAME	AREA/PLANT	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (12-hr)	STANDARD*
Operator ID#110789	Area 1	07.15-19.15	37.3	79.0	83.0
(CDU/VDU)					

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

(Miss Sununta Sirawuttinanon)

Technical Management Team

- Remark :**
1. Reported analysis refers to submitted sample only.
 2. This report shall not be reproduced, except in full, without official approval.
 3. *Notification of the Department of Labour Protection and Welfare, B.E.2561 (2018).
 4. TWA means Time Weighted Average.



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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REFERENCE NO.	: SPRC IH-224005_Ns Dose (Cert)
MEASUREMENT BY	: SECOT Co., Ltd.	INSTRUMENT	: Noise Dosimeter
MEASUREMENT DATE	: 28/03/2024	CALIBRATOR TYPE	: Pulsar 22R
MEASUREMENT LOCATION	: Process area	SERIAL NO.	: 79781
SITE OPERATOR	: Miss Wiraya Patchimboon	CALIBRATOR REF.	: 1,000 Hz, 114 dB

USER NAME	AREA/PLANT	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (12-hr)	STANDARD*
Operator ID#110855	Area 2	07.09-19.01	10.5	73.5	83.0
(NHTU, DHTU, WCN, BSU)					
Operator ID#110793	Area 3	07.17-19.03	82.6	82.4	83.0
(SRU, Utility)					

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

(Miss Sununta Sirawuttinanon)

Technical Management Team

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

NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REFERENCE NO.	: SPRC IH-224005_Ns Dose (Cert)
MEASUREMENT BY	: SECOT Co., Ltd.	INSTRUMENT	: Noise Dosimeter
MEASUREMENT DATE	: 28/03/2024	CALIBRATOR TYPE	: Pulsar 22R
MEASUREMENT LOCATION	: Process area	SERIAL NO.	: 79781
SITE OPERATOR	: Miss Wiraya Patchimboon .	CALIBRATOR REF.	: 1,000 Hz, 114 dB

USER NAME	AREA/PLANT	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (12-hr)	STANDARD*
Operator ID#110841	Area 4 (RFCCU)	07.09-19.02	163.4	85.4	83.0

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

(Miss Sununta Sirawuttinanon)

Technical Management Team

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

NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME	: Star Petroleum Refining Public Co., Ltd.	REFERENCE NO.	: SPRC IH-224005_Ns Dose (Cert)
MEASUREMENT BY	: SECOT Co., Ltd.	INSTRUMENT	: Noise Dosimeter
MEASUREMENT DATE	: 28/05/2024	CALIBRATOR TYPE	: Cirrus RC 110A
MEASUREMENT LOCATION	: Process Area	SERIAL NO.	: 95167
SITE OPERATOR	: Miss Wiraya Patchimboon	CALIBRATOR REF.	: 1,000 Hz, 114 dB

OPERATOR ID	AREA/PLANT	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (12-hr)	STANDARD*
Operator ID#110779	Area 1	07.30-19.30	85.0	82.5	83.0
	(CDU/VDU)				
Operator ID#110845	Area 2	07.25-19.25	78.2	82.2	83.0
	(NHTU, DHTU, WCN, BSU)				
Operator ID#110847	Area 3	07.29-19.29	73.7	81.9	83.0
	(SRU, Utility)				
Operator ID#110788	Area 4	07.27-19.27	72.2	81.8	83.0
	(RFCCU)				

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

(Miss Sununta Sirawuttinanon)

Technical Management Team

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 3. *Notification of the Department of Labour Protection and Welfare, B.E.2561 (2018).
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