

ภาคผนวก ญ
ใบรายงานผลการวิเคราะห์



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ANALYSIS REPORT

CUSTOMER NAME : PAN ORIENT ENERGY (SIAM) LIMITED

ADDRESS : 555 RASA TOWER II 17TH FLOOR UNIT 1702 PHAHONYOTHIN ROAD, CHATUCHAK CHATUCHAK BANGKOK 10900

CONTACT INFORMATION : TEL : 0 2937 1138-40 e-mail : prakaipruek@poesiam.com

MEASURING PLACE : L53-A : PRODUCTION SITE (UTM WGS 84 ZONE 47P 598500E 1553010N)

MEASURING TYPE : AMBIENT (AIR) **RECEIVED DATE** : FEBRUARY 16-19, 2022

MEASURING DATE : FEBRUARY 16-19, 2022 **ANALYTICAL DATE** : FEBRUARY 16-19, 2022

MEASURING TIME : * **REPORT NO.** : 2022-U015154

MEASURING METHOD : CHEMILUMINESCENCE **WORK NO.** : 2022-000521

MEASURED BY : MR SIRAPAT JONGPHADUNGKIET **ANALYSIS NO.** : T22AD067-0001 - T22AD067-0003

TIME *	RESULT (ppm)		
	NITROGEN DIOXIDE		
	L53-A : PRODUCTION SITE (UTM WGS 84 ZONE 47P 598500E 1553010N)		
	FEBRUARY 16 - 17, 2022 T22AD067-0001	FEBRUARY 17 - 18, 2022 T22AD067-0002	FEBRUARY 18 - 19, 2022 T22AD067-0003
07:00-08:00 HOUR	0.0074	0.0091	0.0079
08:00-09:00 HOUR	0.0081	0.0073	0.0088
09:00-10:00 HOUR	0.0077	0.0101	0.0099
10:00-11:00 HOUR	0.0099	0.0103	0.0063
11:00-12:00 HOUR	0.0085	0.0095	0.0078
12:00-13:00 HOUR	0.0079	0.0092	0.0078
13:00-14:00 HOUR	0.0107	0.0081	0.0100
14:00-15:00 HOUR	0.0072	0.0095	0.0073
15:00-16:00 HOUR	0.0097	0.0085	0.0083
16:00-17:00 HOUR	0.0077	0.0084	0.0088
17:00-18:00 HOUR	0.0099	0.0099	0.0110
18:00-19:00 HOUR	0.0085	0.0100	0.0086
19:00-20:00 HOUR	0.0068	0.0087	0.0084
20:00-21:00 HOUR	0.0048	0.0092	0.0089
21:00-22:00 HOUR	0.0044	0.0078	0.0068
22:00-23:00 HOUR	0.0064	0.0055	0.0077
23:00-00:00 HOUR	0.0044	0.0026	0.0050
00:00-01:00 HOUR	0.0050	0.0049	0.0046
01:00-02:00 HOUR	0.0044	0.0058	0.0057
02:00-03:00 HOUR	0.0081	0.0057	0.0043
03:00-04:00 HOUR	0.0067	0.0041	0.0063
04:00-05:00 HOUR	0.0089	0.0056	0.0073
05:00-06:00 HOUR	0.0088	0.0056	0.0067
06:00-07:00 HOUR	0.0090	0.0062	0.0087
AVERAGE 24 HOUR	0.0075	0.0076	0.0076



(MR SILA BANJONGJAIRUK)
LABORATORY SUPERVISOR

MARCH 6, 2022



ANALYSIS REPORT

CUSTOMER NAME : PAN ORIENT ENERGY (SIAM) LIMITED
ADDRESS : 555 RASA TOWER II 17TH FLOOR UNIT 1702 PHAHONYOTHIN ROAD, CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 2937 1138-40 e-mail : prakairuek@poesiam.com
MEASURING PLACE : L53-A : PRODUCTION SITE (UTM WGS 84 ZONE 47P 598500E 1553010N)
MEASURING TYPE : AMBIENT (AIR) **RECEIVED DATE** : FEBRUARY 16-19, 2022
MEASURING DATE : FEBRUARY 16-19, 2022 **ANALYTICAL DATE** : FEBRUARY 16-19, 2022
MEASURING TIME : * **REPORT NO.** : 2022-U015155
MEASURING METHOD : UV FLUORESCENCE **WORK NO.** : 2022-000521
MEASURED BY : MR SIRAPAT JONGPHADUNGKIET **ANALYSIS NO.** : T22AD067-0001 - T22AD067-0003

TIME *	RESULT (ppm)		
	SULPHUR DIOXIDE		
	L53-A : PRODUCTION SITE (UTM WGS 84 ZONE 47P 598500E 1553010N)		
	FEBRUARY 16 - 17, 2022 T22AD067-0001	FEBRUARY 17 - 18, 2022 T22AD067-0002	FEBRUARY 18 - 19, 2022 T22AD067-0003
07:00-08:00 HOUR	0.0030	0.0029	0.0029
08:00-09:00 HOUR	0.0031	0.0031	0.0031
09:00-10:00 HOUR	0.0033	0.0032	0.0033
10:00-11:00 HOUR	0.0034	0.0032	0.0033
11:00-12:00 HOUR	0.0035	0.0033	0.0035
12:00-13:00 HOUR	0.0035	0.0034	0.0035
13:00-14:00 HOUR	0.0033	0.0037	0.0034
14:00-15:00 HOUR	0.0030	0.0036	0.0033
15:00-16:00 HOUR	0.0028	0.0035	0.0033
16:00-17:00 HOUR	0.0028	0.0033	0.0033
17:00-18:00 HOUR	0.0026	0.0031	0.0031
18:00-19:00 HOUR	0.0028	0.0030	0.0030
19:00-20:00 HOUR	0.0026	0.0029	0.0029
20:00-21:00 HOUR	0.0028	0.0029	0.0028
21:00-22:00 HOUR	0.0023	0.0026	0.0027
22:00-23:00 HOUR	0.0029	0.0024	0.0028
23:00-00:00 HOUR	0.0026	0.0026	0.0027
00:00-01:00 HOUR	0.0026	0.0026	0.0026
01:00-02:00 HOUR	0.0024	0.0025	0.0026
02:00-03:00 HOUR	0.0025	0.0025	0.0027
03:00-04:00 HOUR	0.0027	0.0026	0.0026
04:00-05:00 HOUR	0.0027	0.0026	0.0027
05:00-06:00 HOUR	0.0027	0.0028	0.0027
06:00-07:00 HOUR	0.0029	0.0028	0.0029
AVERAGE 24 HOUR	0.0029	0.0030	0.0030



(MR SILA BANJONGJAIRUK)
LABORATORY SUPERVISOR

MARCH 6, 2022



ANALYSIS REPORT

CUSTOMER NAME : PAN ORIENT ENERGY (SIAM) LIMITED
ADDRESS : 555 RASA TOWER II 17TH FLOOR UNIT 1702 PHAHONYOTHIN ROAD, CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 2937 1138-40 e-mail : prakaipruek@poesiam.com
MEASURING PLACE : L53-A : PRODUCTION SITE (UTM WGS 84 ZONE 47P 598500E 1553010N)
MEASURING TYPE : AMBIENT (AIR) **RECEIVED DATE** : FEBRUARY 16-19, 2022
MEASURING DATE : FEBRUARY 16-19, 2022 **ANALYTICAL DATE** : FEBRUARY 16-19, 2022
MEASURING TIME : * **REPORT NO.** : 2022-U015156
MEASURING METHOD : WIND SPEED & WIND DIRECTION EQUIPMENT **WORK NO.** : 2022-000521
MEASURED BY : MR SIRAPAT JONGPHADUNGKIET **ANALYSIS NO.** : T22AD067-0001 - T22AD067-0003

TIME *	RESULT (m/s)					
	L53-A : PRODUCTION SITE (UTM WGS 84 ZONE 47P 598500E 1553010N)					
	FEBRUARY 16 - 17, 2022 T22AD067-0001		FEBRUARY 17 - 18, 2022 T22AD067-0002		FEBRUARY 18 - 19, 2022 T22AD067-0003	
	WIND SPEED	WIND DIRECTION	WIND SPEED	WIND DIRECTION	WIND SPEED	WIND DIRECTION
07:00-08:00 HOUR	0.9	NNW	3.1	SE	1.5	SE
08:00-09:00 HOUR	1.3	NNW	2.9	SSE	1.3	S
09:00-10:00 HOUR	1.2	NW	2.5	S	1.6	S
10:00-11:00 HOUR	0.6	NW	2.8	SSE	0.4	S
11:00-12:00 HOUR	0.5	NNW	1.6	S	1.2	SE
12:00-13:00 HOUR	2.0	NW	1.9	SSE	1.1	S
13:00-14:00 HOUR	1.3	NW	3.0	SSE	0.7	SSE
14:00-15:00 HOUR	1.4	NW	1.2	SSE	1.2	S
15:00-16:00 HOUR	0.4	NW	1.6	SE	1.3	SSE
16:00-17:00 HOUR	0.3	NNW	1.4	S	0.6	SE
17:00-18:00 HOUR	1.1	NW	2.3	SSE	0.5	SE
18:00-19:00 HOUR	1.9	WNW	2.4	SSE	0.4	SE
19:00-20:00 HOUR	1.8	W	1.9	SE	1.6	SE
20:00-21:00 HOUR	1.1	W	1.8	S	1.4	SE
21:00-22:00 HOUR	1.0	W	1.1	SSE	1.9	SE
22:00-23:00 HOUR	3.0	W	1.4	SE	2.2	S
23:00-00:00 HOUR	1.5	SW	0.7	SSE	1.9	SSE
00:00-01:00 HOUR	0.3	WSW	0.9	SSE	1.3	SE
01:00-02:00 HOUR	0.6	SW	1.8	S	2.0	S
02:00-03:00 HOUR	0.3	SW	2.3	SSE	1.7	S
03:00-04:00 HOUR	1.3	S	2.8	SSE	2.1	S
04:00-05:00 HOUR	2.4	S	3.2	SSE	2.4	S
05:00-06:00 HOUR	2.7	S	3.0	SSE	2.1	SSE
06:00-07:00 HOUR	3.4	SSE	2.6	SE	2.7	SSE



(MR SILA BANJONGJAIKUK)
LABORATORY SUPERVISOR

MARCH 6, 2022



ANALYSIS REPORT

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ADDRESS : 555 RASA TOWER II 17TH FLOOR UNIT 1702 PHAHONYOTHIN ROAD, CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 2937 1138-40 e-mail : prakaipruek@poesiam.com
SAMPLING SOURCE : L53-A : PRODUCTION SITE (UTM WGS84 ZONE 47P 598500E 1153010N)
SAMPLE TYPE : AMBIENT
SAMPLING DATE : *, **, ***
SAMPLING TIME : *, **, ***
SAMPLING BY : MR SIRAPAT JONGPHADUNGKIET
ANALYZED BY : MISS WORAKON PADSONGCHAN
RECEIVED DATE : FEBRUARY 21, 2022
ANALYTICAL DATE : FEBRUARY 21-28, 2022
REPORT NO. : 2022-U014909
WORK NO. : 2022-000521
ANALYSIS NO. : T22AD067-0001 - T22AD067-0003

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT		
			L53-A : PRODUCTION SITE		
			* T22AD067-0001	** T22AD067-0002	*** T22AD067-0003
BENZENE	µg/m ³	US EPA METHOD TO-15	0.93	0.92	0.73
ETHYLBENZENE	µg/m ³	US EPA METHOD TO-15	0.35	0.75	< 0.17
TOLUENE	µg/m ³	US EPA METHOD TO-15	2.46	4.34	3.28
TOTAL XYLENES	µg/m ³	US EPA METHOD TO-15	< 0.52	1.07	< 0.52
SAMPLE CONDITION			COMPLETE	COMPLETE	COMPLETE

REMARK

RESULT : REFERENCE CONDITION IS 25 DEGREE CELSIUS AT 1 ATMOSPHERE.

* : SAMPLING FROM 09:00 HOUR ON FEBRUARY 16, 2022 TO 09:00 HOUR ON FEBRUARY 17, 2022.
** : SAMPLING FROM 09:00 HOUR ON FEBRUARY 17, 2022 TO 09:00 HOUR ON FEBRUARY 18, 2022.
*** : SAMPLING FROM 09:00 HOUR ON FEBRUARY 18, 2022 TO 09:00 HOUR ON FEBRUARY 19, 2022.

Benjawan V.

(MISS BENJAWAN VIRIYOTHAI)
LABORATORY SUPERVISOR

MARCH 14, 2022



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ANALYSIS REPORT

CUSTOMER NAME	: PAN ORIENT ENERGY (SIAM) LIMITED		
ADDRESS	: 555 RASA TOWER II 17TH FLOOR UNIT 1702 PHAHONYOTHIN ROAD, CHATUCHAK CHATUCHAK BANGKOK 10900		
CONTACT INFORMATION	: TEL : 0 2937 1138-40 e-mail : prakaipruek@poesiam.com		
SAMPLING SOURCE	: L53-A-SW1 (UTM WGS 84 ZONE 47P 598483E 1553403N)		
SAMPLE TYPE	: SURFACE WATER	RECEIVED DATE	: FEBRUARY 17, 2022
SAMPLING DATE	: FEBRUARY 16, 2022	ANALYTICAL DATE	: FEBRUARY 17 - MARCH 3, 2022
SAMPLING TIME	: 11:55 HOUR	REPORT NO.	: 2022-U015593
SAMPLING METHOD °	: GRAB	WORK NO.	: 2022-000521
SAMPLING BY °	: MR KRIDSANAPONG NAMTHIP	ANALYSIS NO.	: T22AC813-0001
ANALYZED BY	: MISS NADNAPA KAMOLBOON		

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			L53-A-SW1 T22AC813-0001	
pH °	-	ELECTROMETRIC METHOD AT SITE (SM:4500-H° B)	8.3 (28°C)	-
ELECTRICAL CONDUCTIVITY °	µmhos/cm	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: 2510 B)	169 (28°C)	0.1
CHLORIDE °	mg/L Cl ⁻	ARGENTOMETRIC METHOD (SM: 4500-Cl° B)	ND	2.0
SULPHATE °	mg/L SO ₄ ²⁻	TURBIDIMETRIC METHOD (SM: 4500-SO ₄ ²⁻ E)	ND	0.3
TOTAL PETROLEUM HYDROCARBONS °	mg/L	SOXHLET EXTRACTION METHOD (SM: 5520 D AND 5520 F)	ND	3
METALS				
ARSENIC °	mg/L As	HYDRIDE GENERATION AAS METHOD (SM: 3114 C)	0.0043	0.0003
CADMIUM °	mg/L Cd	IN-HOUSE METHOD: UAE.TP.SW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	ND	0.002
COPPER °	mg/L Cu	IN-HOUSE METHOD: UAE.TP.SW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	ND	0.002
IRON °	mg/L Fe	IN-HOUSE METHOD: UAE.TP.SW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	0.614	0.005
LEAD °	mg/L Pb	IN-HOUSE METHOD: UAE.TP.SW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	ND	0.003
MANGANESE °	mg/L Mn	IN-HOUSE METHOD: UAE.TP.SW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	0.050	0.002
NICKEL °	mg/L Ni	IN-HOUSE METHOD: UAE.TP.SW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	ND	0.005
TOTAL CHROMIUM °	mg/L Cr	IN-HOUSE METHOD: UAE.TP.SW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	ND	0.005
TOTAL MERCURY °	mg/L Hg	COLD VAPOUR AAS METHOD (SM: 3112 B)	0.0002	0.0002



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			L53-A-SW1 T22AC813-0001	
ZINC ^c	mg/L Zn	IN-HOUSE METHOD: UAE.TP.SW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	ND	0.003
SAMPLE CONDITION				
WATER'S COLOUR/TURBID			YELLOW/CLEAR	
SEDIMENT			BROWN	

^a : ISO/IEC 17025 ACCREDITED BY THAI INDUSTRIAL STANDARDS INSTITUTE (TISI)

^b : ISO/IEC 17025 ACCREDITED BY DEPARTMENT OF SCIENCE SERVICE (DSS)

^c : VERIFIED BY OWN LABORATORY QUALITY SYSTEM, BUT STILL NOT ACCREDITED

IN-HOUSE : BASED ON STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

ND : NON-DETECTABLE.

Benjawan V.

(MISS BENJAWAN VIRIYOTHAI)
LABORATORY SUPERVISOR

MARCH 4, 2022

ANALYSIS REPORT

CUSTOMER NAME	: PAN ORIENT ENERGY (SIAM) LIMITED		
ADDRESS	: 555 RASA TOWER II 17TH FLOOR UNIT 1702 PHAHONYOTHIN ROAD, CHATUCHAK CHATUCHAK BANGKOK 10900		
CONTACT INFORMATION	: TEL : 0 2937 1138-40 e-mail : prakaipruek@poesiam.com		
SAMPLING SOURCE	: L53-A-SW2 (UTM WGS 84 ZONE 47P 599118E 1552826N)		
SAMPLE TYPE	: SURFACE WATER	RECEIVED DATE	: FEBRUARY 17, 2022
SAMPLING DATE	: FEBRUARY 16, 2022	ANALYTICAL DATE	: FEBRUARY 17 - MARCH 3, 2022
SAMPLING TIME	: 11:40 HOUR	REPORT NO.	: 2022-U015594
SAMPLING METHOD °	: GRAB	WORK NO.	: 2022-000521
SAMPLING BY °	: MR KRIDSANAPONG NAMTHIP	ANALYSIS NO.	: T22AC813-0002
ANALYZED BY	: MISS NADNAPA KAMOLBOON		

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			L53-A-SW2 T22AC813-0002	
pH °	-	ELECTROMETRIC METHOD AT SITE (SM:4500-H° B)	8.4 (28°C)	-
ELECTRICAL CONDUCTIVITY °	µmhos/cm	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: 2510 B)	182 (28°C)	0.1
CHLORIDE °	mg/L Cl ⁻	ARGENTOMETRIC METHOD (SM: 4500-Cl° B)	2.9	2.0
SULPHATE °	mg/L SO ₄ ²⁻	TURBIDIMETRIC METHOD (SM: 4500-SO ₄ ²⁻ E)	ND	0.3
TOTAL PETROLEUM HYDROCARBONS °	mg/L	SOXHLET EXTRACTION METHOD (SM: 5520 D AND 5520 F)	ND	3
METALS				
ARSENIC °	mg/L As	HYDRIDE GENERATION AAS METHOD (SM: 3114 C)	0.0043	0.0003
CADMIUM °	mg/L Cd	IN-HOUSE METHOD: UAE.TP.SW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	ND	0.002
COPPER °	mg/L Cu	IN-HOUSE METHOD: UAE.TP.SW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	ND	0.002
IRON °	mg/L Fe	IN-HOUSE METHOD: UAE.TP.SW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	0.714	0.005
LEAD °	mg/L Pb	IN-HOUSE METHOD: UAE.TP.SW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	ND	0.003
MANGANESE °	mg/L Mn	IN-HOUSE METHOD: UAE.TP.SW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	0.051	0.002
NICKEL °	mg/L Ni	IN-HOUSE METHOD: UAE.TP.SW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	ND	0.005
TOTAL CHROMIUM °	mg/L Cr	IN-HOUSE METHOD: UAE.TP.SW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	ND	0.005
TOTAL MERCURY °	mg/L Hg	COLD VAPOUR AAS METHOD (SM: 3112 B)	ND	0.0002



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			L53-A-SW2 T22AC813-0002	
ZINC ^c	mg/L Zn	IN-HOUSE METHOD: UAE.TP.SW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	ND	0.003
SAMPLE CONDITION				
WATER'S COLOUR/TURBID			YELLOW/CLEAR	
SEDIMENT			BROWN	

^a : ISO/IEC 17025 ACCREDITED BY THAI INDUSTRIAL STANDARDS INSTITUTE (TISI)

^b : ISO/IEC 17025 ACCREDITED BY DEPARTMENT OF SCIENCE SERVICE (DSS)

^c : VERIFIED BY OWN LABORATORY QUALITY SYSTEM, BUT STILL NOT ACCREDITED

IN-HOUSE : BASED ON STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

ND : NON-DETECTABLE.

Benjawan V.

(MISS BENJAWAN VIRIYOTHAI)
LABORATORY SUPERVISOR

MARCH 4, 2022

ANALYSIS REPORT

CUSTOMER NAME : PAN ORIENT ENERGY (SIAM) LIMITED
ADDRESS : 555 RASA TOWER II 17TH FLOOR UNIT 1702 PHAHONYOTHIN ROAD, CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 2937 1138-40 e-mail : prakaipruek@poesiam.com
SAMPLING SOURCE : L53-A-SW3 (UTM WGS 84 ZONE 47P 599316E 1552559N)
SAMPLE TYPE : SURFACE WATER
SAMPLING DATE : FEBRUARY 16, 2022
SAMPLING TIME : 11:30 HOUR
SAMPLING METHOD ° : GRAB
SAMPLING BY ° : MR KRIDSANAPONG NAMTHIP
ANALYZED BY : MISS NADNAPA KAMOLBOON

RECEIVED DATE : FEBRUARY 17, 2022
ANALYTICAL DATE : FEBRUARY 17 - MARCH 3, 2022
REPORT NO. : 2022-U015596
WORK NO. : 2022-000521
ANALYSIS NO. : T22AC813-0003

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			L53-A-SW3 T22AC813-0003	
pH °	-	ELECTROMETRIC METHOD AT SITE (SM:4500-H ⁺ B)	8.4 (27°C)	-
ELECTRICAL CONDUCTIVITY °	µmhos/cm	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: 2510 B)	548 (27°C)	0.1
CHLORIDE °	mg/L Cl ⁻	ARGENTOMETRIC METHOD (SM: 4500-Cl ⁻ B)	80.2	2.0
SULPHATE °	mg/L SO ₄ ²⁻	TURBIDIMETRIC METHOD (SM: 4500-SO ₄ ²⁻ E)	2.8	0.3
TOTAL PETROLEUM HYDROCARBONS °	mg/L	SOXHLET EXTRACTION METHOD (SM: 5520 D AND 5520 F)	ND	3
METALS				
ARSENIC °	mg/L As	HYDRIDE GENERATION AAS METHOD (SM: 3114 C)	0.0070	0.0003
CADMIUM °	mg/L Cd	IN-HOUSE METHOD: UAE.TP.SW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	ND	0.002
COPPER °	mg/L Cu	IN-HOUSE METHOD: UAE.TP.SW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	ND	0.002
IRON °	mg/L Fe	IN-HOUSE METHOD: UAE.TP.SW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	0.244	0.005
LEAD °	mg/L Pb	IN-HOUSE METHOD: UAE.TP.SW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	ND	0.003
MANGANESE °	mg/L Mn	IN-HOUSE METHOD: UAE.TP.SW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	0.266	0.002
NICKEL °	mg/L Ni	IN-HOUSE METHOD: UAE.TP.SW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	ND	0.005
TOTAL CHROMIUM °	mg/L Cr	IN-HOUSE METHOD: UAE.TP.SW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	ND	0.005
TOTAL MERCURY °	mg/L Hg	COLD VAPOUR AAS METHOD (SM: 3112 B)	0.0002	0.0002



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			L53-A-SW3 T22AC813-0003	
ZINC ^c	mg/L Zn	IN-HOUSE METHOD: UAE.TP.SW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	ND	0.003
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			YELLOW/CLEAR BROWN	

^a : ISO/IEC 17025 ACCREDITED BY THAI INDUSTRIAL STANDARDS INSTITUTE (TISI)

^b : ISO/IEC 17025 ACCREDITED BY DEPARTMENT OF SCIENCE SERVICE (DSS)

^c : VERIFIED BY OWN LABORATORY QUALITY SYSTEM, BUT STILL NOT ACCREDITED

IN-HOUSE : BASED ON STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

ND : NON-DETECTABLE.

Benjawan V.

(MISS BENJAWAN VIRIYOTHAI)
LABORATORY SUPERVISOR

MARCH 4, 2022

น้ำใต้ดิน



ANALYSIS REPORT

CUSTOMER NAME : PAN ORIENT ENERGY (SIAM) LIMITED
ADDRESS : 555 RASA TOWER II 17TH FLOOR UNIT 1702 PHAHONYOTHIN ROAD, CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 2937 1138-40 e-mail : prakaipruek@poesiam.com
SAMPLING SOURCE : L53-A-GW1 (UTM WGS 84 ZONE 47P 600635E 1552177N)
SAMPLE TYPE : GROUNDWATER
SAMPLING DATE : FEBRUARY 16, 2022
SAMPLING TIME : 14:20 HOUR
SAMPLING METHOD : GRAB
SAMPLING BY : MR KRIDSANAPONG NAMTHIP
ANALYZED BY : MISS NADNAPA KAMOLBOON

RECEIVED DATE : FEBRUARY 17, 2022
ANALYTICAL DATE : FEBRUARY 17 - MARCH 3, 2022
REPORT NO. : 2022-U015574
WORK NO. : 2022-000521
ANALYSIS NO. : T22AC812-0001

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			L53-A-GW1 T22AC812-0001	
pH ^c	-	ELECTROMETRIC METHOD AT SITE (SM:4500-H ⁺ B)	8.0 (29°C)	-
ELECTRICAL CONDUCTIVITY ^c	µmhos/cm	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: 2510 B)	1,213 (29°C)	0.1
CHLORIDE ^a	mg/L Cl ⁻	ARGENTOMETRIC METHOD (SM: 4500-Cl ⁻ B)	301	2.0
SULPHATE ^c	mg/L SO ₄ ²⁻	TURBIDIMETRIC METHOD (SM: 4500-SO ₄ ²⁻ E)	22.9	0.3
TOTAL PETROLEUM HYDROCARBONS ^c	mg/L	SOXHLET EXTRACTION METHOD (SM: 5520 D AND 5520 F)	ND	3
METALS				
ARSENIC ^c	mg/L As	HYDRIDE GENERATION AAS METHOD (SM: 3114 C)	0.0010	0.0003
CADMIUM ^c	mg/L Cd	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	ND	0.002
COPPER ^c	mg/L Cu	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	ND	0.002
IRON ^c	mg/L Fe	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	< LOQ	0.005
LEAD ^c	mg/L Pb	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	ND	0.003
MANGANESE ^c	mg/L Mn	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	ND	0.002
NICKEL ^c	mg/L Ni	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	ND	0.005
TOTAL CHROMIUM ^c	mg/L Cr	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	ND	0.005
TOTAL MERCURY ^b	mg/L Hg	IN-HOUSE METHOD: UAE.TP.HEM.002 (COLD VAPOUR ATOMIC ABSORPTION SPECTROMETRIC METHOD); SM: 3112 B	< LOQ	0.0001



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			L53-A-GW1 T22AC812-0001	
ZINC ^c	mg/L Zn	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	0.113	0.003
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			COLOURLESS/CLEAR -	

^a : ISO/IEC 17025 ACCREDITED BY THAI INDUSTRIAL STANDARDS INSTITUTE (TISI)

^b : ISO/IEC 17025 ACCREDITED BY DEPARTMENT OF SCIENCE SERVICE (DSS)

^c : VERIFIED BY OWN LABORATORY QUALITY SYSTEM, BUT STILL NOT ACCREDITED

IN-HOUSE : BASED ON STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

ND : NON-DETECTABLE.

< LOQ : < LEVEL OF QUANTITATION (IRON ≥ 0.005 AND < 0.050 mg/L, TOTAL MERCURY ≥ 0.0001 AND < 0.0005 mg/L).

Benjawan V.

(MISS BENJAWAN VIRIYOTHAJ)
LABORATORY SUPERVISOR

MARCH 4, 2022

ANALYSIS REPORT

CUSTOMER NAME	: PAN ORIENT ENERGY (SIAM) LIMITED	RECEIVED DATE	: FEBRUARY 17, 2022
ADDRESS	: 555 RASA TOWER II 17TH FLOOR UNIT 1702 PHAHONYOTHIN ROAD, CHATUCHAK CHATUCHAK BANGKOK 10900	ANALYTICAL DATE	: FEBRUARY 17-24, 2022
CONTACT INFORMATION	: TEL : 0 2937 1138-40 e-mail : prakaipruek@poesiam.com	REPORT NO.	: 2022-U015575
SAMPLING SOURCE	: L53-A-GW2 (UTM WGS 84 ZONE 47P 597561E 1553592N)	WORK NO.	: 2022-000521
SAMPLE TYPE	: GROUNDWATER	ANALYSIS NO.	: T22AC812-0002
SAMPLING DATE	: FEBRUARY 16, 2022		
SAMPLING TIME	: 13:20 HOUR		
SAMPLING METHOD °	: GRAB		
SAMPLING BY °	: MR KRIDSANAPONG NAMTHIP		
ANALYZED BY	: MISS NADNAPA KAMOLBOON		

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			L53-A-GW2 T22AC812-0002	
pH °	-	ELECTROMETRIC METHOD AT SITE (SM:4500-H° B)	7.6 (28°C)	-
ELECTRICAL CONDUCTIVITY °	µmhos/cm	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: 2510 B)	938 (28°C)	0.1
CHLORIDE °	mg/L Cl ⁻	ARGENTOMETRIC METHOD (SM: 4500-Cl° B)	181	2.0
SULPHATE °	mg/L SO ₄ ²⁻	TURBIDIMETRIC METHOD (SM: 4500-SO ₄ ²⁻ E)	26.4	0.3
TOTAL PETROLEUM HYDROCARBONS °	mg/L	SOXHLET EXTRACTION METHOD (SM: 5520 D AND 5520 F)	ND	3
METALS				
ARSENIC °	mg/L As	HYDRIDE GENERATION AAS METHOD (SM: 3114 C)	ND	0.0003
CADMIUM °	mg/L Cd	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	ND	0.002
COPPER °	mg/L Cu	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	ND	0.002
IRON °	mg/L Fe	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	0.112	0.005
LEAD °	mg/L Pb	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	ND	0.003
MANGANESE °	mg/L Mn	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	ND	0.002
NICKEL °	mg/L Ni	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	ND	0.005
TOTAL CHROMIUM °	mg/L Cr	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	ND	0.005
TOTAL MERCURY °	mg/L Hg	IN-HOUSE METHOD: UAE.TP.HEM.002 (COLD VAPOUR ATOMIC ABSORPTION SPECTROMETRIC METHOD); SM: 3112 B	< LOQ	0.0001



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			L53-A-GW2 T22AC812-0002	
ZINC ^c	mg/L Zn	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	0.071	0.003
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			COLOURLESS/CLEAR	

^a : ISO/IEC 17025 ACCREDITED BY THAI INDUSTRIAL STANDARDS INSTITUTE (TISI)

^b : ISO/IEC 17025 ACCREDITED BY DEPARTMENT OF SCIENCE SERVICE (DSS)

^c : VERIFIED BY OWN LABORATORY QUALITY SYSTEM, BUT STILL NOT ACCREDITED

IN-HOUSE : BASED ON STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

ND : NON-DETECTABLE.

< LOQ : < LEVEL OF QUANTITATION (TOTAL MERCURY \geq 0.0001 AND < 0.0005 mg/L).



(MISS BENJAWAN VIRIYOTHA)
LABORATORY SUPERVISOR

MARCH 4, 2022

ANALYSIS REPORT

CUSTOMER NAME : PAN ORIENT ENERGY (SIAM) LIMITED
ADDRESS : 555 RASA TOWER II 17TH FLOOR UNIT 1702 PHAHONYOTHIN ROAD, CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 2937 1138-40 e-mail : prakaipruek@poesiam.com
SAMPLING SOURCE : MWL53A-1 (UTM WGS 84 ZONE 47P 598513E 1553073N)
SAMPLE TYPE : GROUNDWATER
SAMPLING DATE : FEBRUARY 17, 2022
SAMPLING TIME : 11:20 HOUR
SAMPLING METHOD ° : SUBMERSIBLE PUMP
SAMPLING BY ° : MR KRIDSANAPONG NAMTHIP
ANALYZED BY : MISS NADNAPA KAMOLBOON

RECEIVED DATE : FEBRUARY 18, 2022
ANALYTICAL DATE : FEBRUARY 18-MARCH 4, 2022
REPORT NO. : 2022-U016042
WORK NO. : 2022-000521
ANALYSIS NO. : T22AC959-0001

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			MWL53A-1 T22AC959-0001	
pH °	-	ELECTROMETRIC METHOD AT SITE (SM:4500-H+ B)	6.7 (30°C)	-
ELECTRICAL CONDUCTIVITY °	µmhos/cm	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: 2510 B)	39,300 (30°C)	0.1
CHLORIDE °	mg/L Cl ⁻	ARGENTOMETRIC METHOD (SM: 4500-Cl ⁻ B)	13,502	2.0
SULPHATE °	mg/L SO ₄ ²⁻	TURBIDIMETRIC METHOD (SM: 4500-SO ₄ ²⁻ E)	1,181	0.3
TOTAL PETROLEUM HYDROCARBONS °	mg/L	SOXHLET EXTRACTION METHOD (SM: 5520 D AND 5520 F)	ND	3
METALS				
ARSENIC °	mg/L As	HYDRIDE GENERATION AAS METHOD (SM: 3114 C)	0.0004	0.0003
CADMIUM °	mg/L Cd	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	ND	0.002
COPPER °	mg/L Cu	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	ND	0.002
IRON °	mg/L Fe	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	0.186	0.005
LEAD °	mg/L Pb	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	ND	0.003
MANGANESE °	mg/L Mn	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	2.42	0.002
NICKEL °	mg/L Ni	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	ND	0.005
TOTAL CHROMIUM °	mg/L Cr	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	ND	0.005



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			MWL53A-1 T22AC959-0001	
TOTAL MERCURY ^b	mg/L Hg	IN-HOUSE METHOD: UAE.TP.HEM.002 (COLD VAPOUR ATOMIC ABSORPTION SPECTROMETRIC METHOD); SM: 3112 B	< LOQ	0.0001
ZINC ^c	mg/L Zn	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	< LOQ	0.003
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			COLOURLESS/CLEAR BROWN	

^a : ISO/IEC 17025 ACCREDITED BY THAI INDUSTRIAL STANDARDS INSTITUTE (TISI)

^b : ISO/IEC 17025 ACCREDITED BY DEPARTMENT OF SCIENCE SERVICE (DSS)

^c : VERIFIED BY OWN LABORATORY QUALITY SYSTEM, BUT STILL NOT ACCREDITED

IN-HOUSE : BASED ON STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

ND : NON-DETECTABLE.

< LOQ : < LEVEL OF QUANTITATION (TOTAL MERCURY \geq 0.0001 AND < 0.0005 mg/L, ZINC \geq 0.003 AND < 0.025 mg/L).

Benjawan V.

(MISS BENJAWAN VIRIYOTHA)
LABORATORY SUPERVISOR

MARCH 7, 2022

ANALYSIS REPORT

CUSTOMER NAME : PAN ORIENT ENERGY (SIAM) LIMITED
ADDRESS : 555 RASA TOWER II 17TH FLOOR UNIT 1702 PHAHONYOTHIN ROAD, CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 2937 1138-40 e-mail : prakaipruek@poesiam.com
SAMPLING SOURCE : MWL53A-2 (UTM WGS 84 ZONE 47P 598573E 1553042N)
SAMPLE TYPE : GROUNDWATER
SAMPLING DATE : FEBRUARY 17, 2022
SAMPLING TIME : 10:50 HOUR
SAMPLING METHOD ° : SUBMERSIBLE PUMP
SAMPLING BY ° : MR KRIDSANAPONG NAMTHIP
ANALYZED BY : MISS NADNAPA KAMOLBOON

RECEIVED DATE : FEBRUARY 18, 2022
ANALYTICAL DATE : FEBRUARY 18-MARCH 4, 2022
REPORT NO. : 2022-U016043
WORK NO. : 2022-000521
ANALYSIS NO. : T22AC959-0002

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			MWL53A-2 T22AC959-0002	
pH °	-	ELECTROMETRIC METHOD AT SITE (SM:4500-H+ B)	7.0 (30°C)	-
ELECTRICAL CONDUCTIVITY °	µmhos/cm	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: 2510 B)	10,610 (30°C)	0.1
CHLORIDE °	mg/L Cl ⁻	ARGENTOMETRIC METHOD (SM: 4500-Cl ⁻ B)	4,941	2.0
SULPHATE °	mg/L SO ₄ ²⁻	TURBIDIMETRIC METHOD (SM: 4500-SO ₄ ²⁻ E)	381	0.3
TOTAL PETROLEUM HYDROCARBONS °	mg/L	SOXHLET EXTRACTION METHOD (SM: 5520 D AND 5520 F)	ND	3
METALS				
ARSENIC °	mg/L As	HYDRIDE GENERATION AAS METHOD (SM: 3114 C)	0.0007	0.0003
CADMIUM °	mg/L Cd	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	ND	0.002
COPPER °	mg/L Cu	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	ND	0.002
IRON °	mg/L Fe	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	1.48	0.005
LEAD °	mg/L Pb	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	ND	0.003
MANGANESE °	mg/L Mn	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	0.660	0.002
NICKEL °	mg/L Ni	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	ND	0.005
TOTAL CHROMIUM °	mg/L Cr	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	ND	0.005



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			MWL53A-2 T22AC959-0002	
TOTAL MERCURY ^b	mg/L Hg	IN-HOUSE METHOD: UAE.TP.HEM.002 (COLD VAPOUR ATOMIC ABSORPTION SPECTROMETRIC METHOD); SM: 3112 B	< LOQ	0.0001
ZINC ^c	mg/L Zn	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	ND	0.003
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			YELLOW/CLEAR BROWN	

^a : ISO/IEC 17025 ACCREDITED BY THAI INDUSTRIAL STANDARDS INSTITUTE (TISI)

^b : ISO/IEC 17025 ACCREDITED BY DEPARTMENT OF SCIENCE SERVICE (DSS)

^c : VERIFIED BY OWN LABORATORY QUALITY SYSTEM, BUT STILL NOT ACCREDITED

IN-HOUSE : BASED ON STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

ND : NON-DETECTABLE.

< LOQ : < LEVEL OF QUANTITATION (TOTAL MERCURY \geq 0.0001 AND < 0.0005 mg/L).

Benjawan V.

(MISS BENJAWAN VIRIYOTHAI)
LABORATORY SUPERVISOR

MARCH 7, 2022

ANALYSIS REPORT

CUSTOMER NAME : PAN ORIENT ENERGY (SIAM) LIMITED
ADDRESS : 555 RASA TOWER II 17TH FLOOR UNIT 1702 PHAHONYOTHIN ROAD, CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 2937 1138-40 e-mail : prakaipruek@poesiam.com
SAMPLING SOURCE : MWL53A-3 (UTM WGS 84 ZONE 47P 598552E 1552959N)
SAMPLE TYPE : GROUNDWATER
SAMPLING DATE : FEBRUARY 17, 2022
SAMPLING TIME : 12:00 HOUR
SAMPLING METHOD ° : SUBMERSIBLE PUMP
SAMPLING BY ° : MR KRIDSANAPONG NAMTHIP
ANALYZED BY : MISS NADNAPA KAMOLBOON

RECEIVED DATE : FEBRUARY 18, 2022
ANALYTICAL DATE : FEBRUARY 18-MARCH 4, 2022
REPORT NO. : 2022-U016044
WORK NO. : 2022-000521
ANALYSIS NO. : T22AC959-0003

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			MWL53A-3 T22AC959-0003	
pH °	-	ELECTROMETRIC METHOD AT SITE (SM:4500-H+ B)	7.4 (30°C)	-
ELECTRICAL CONDUCTIVITY °	µmhos/cm	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: 2510 B)	8,860 (30°C)	0.1
CHLORIDE °	mg/L Cl ⁻	ARGENTOMETRIC METHOD (SM: 4500-Cl ⁻ B)	4,036	2.0
SULPHATE °	mg/L SO ₄ ²⁻	TURBIDIMETRIC METHOD (SM: 4500-SO ₄ ²⁻ E)	501	0.3
TOTAL PETROLEUM HYDROCARBONS °	mg/L	SOXHLET EXTRACTION METHOD (SM: 5520 D AND 5520 F)	ND	3
METALS				
ARSENIC °	mg/L As	HYDRIDE GENERATION AAS METHOD (SM: 3114 C)	0.0206	0.0003
CADMIUM °	mg/L Cd	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	ND	0.002
COPPER °	mg/L Cu	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	< LOQ	0.002
IRON °	mg/L Fe	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	4.79	0.005
LEAD °	mg/L Pb	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	ND	0.003
MANGANESE °	mg/L Mn	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	0.526	0.002
NICKEL °	mg/L Ni	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	ND	0.005
TOTAL CHROMIUM °	mg/L Cr	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	ND	0.005



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			MWL53A-3 T22AC959-0003	
TOTAL MERCURY ^b	mg/L Hg	IN-HOUSE METHOD: UAE.TP.HEM.002 (COLD VAPOUR ATOMIC ABSORPTION SPECTROMETRIC METHOD); SM: 3112 B	< LOQ	0.0001
ZINC ^c	mg/L Zn	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	< LOQ	0.003
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			YELLOW/CLEAR BROWN	

^a : ISO/IEC 17025 ACCREDITED BY THAI INDUSTRIAL STANDARDS INSTITUTE (TISI)

^b : ISO/IEC 17025 ACCREDITED BY DEPARTMENT OF SCIENCE SERVICE (DSS)

^c : VERIFIED BY OWN LABORATORY QUALITY SYSTEM, BUT STILL NOT ACCREDITED

IN-HOUSE : BASED ON STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

ND : NON-DETECTABLE.

< LOQ : < LEVEL OF QUANTITATION (COPPER ≥ 0.002 AND < 0.025 mg/L, TOTAL MERCURY ≥ 0.0001 AND < 0.0005 mg/L, ZINC ≥ 0.003 AND < 0.025 mg/L).

Benjawan V.

(MISS BENJAWAN VIRIYOTHAJ)
LABORATORY SUPERVISOR

MARCH 7, 2022

ดิน



ANALYSIS REPORT

CUSTOMER NAME : PAN ORIENT ENERGY (SIAM) LIMITED
ADDRESS : 555 RASA TOWER II, 17TH FLOOR, UNIT 1702, PHAHOLYOTHIN ROAD, CHATUCHAK, BANGKOK 10900.
CONTACT INFORMATION : TEL : 0 2937 1138-40 e-mail : prakaipruek@poesiam.com
SAMPLING SOURCE : L53-A-S2 (UTM WGS 84 ZONE 47P 598474E 598474N)
SAMPLE TYPE : SOIL
SAMPLING DATE : FEBRUARY 17, 2022
SAMPLING TIME : 13:30 HOUR
SAMPLING METHOD ° : UNDISTURBED
SAMPLING BY ° : MR KRIDSANAPONG NAMTHIP
ANALYZED BY : MISS JINTASUPA PLIANSRI

RECEIVED DATE : FEBRUARY 18, 2022
ANALYTICAL DATE : FEBRUARY 18 - MARCH 11, 2022
REPORT NO. : 2022-U018544
WORK NO. : 2022-000521
ANALYSIS NO. : T22AC964-0001

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			L53-A-S2 T22AC964-0001	
pH (1:1) ^b	-	ELECTROMETRIC METHOD (US EPA 2004: 9045D)	6.6 (25°C)	-
CHLORIDE °	% w/w	BS 1377 : PART3 : 1990	0.01	0.01
TOTAL PETROLEUM HYDROCARBONS °	mg/kg	SOXHLET EXTRACTION METHOD (SM: 5520 E AND 5520 F)	627	100
METALS				
ARSENIC (As) °	mg/kg	ACID DIGESTION AND HYDRIDE GENERATION AAS METHOD (US EPA 1996: 3050B AND 1992: 7061A)	12.8	0.100
BARIUM (Ba) °	mg/kg	ACID DIGESTION AND INDUCTIVELY COUPLED PLASMA (ICP) METHOD (US EPA 1996: 3050B AND 2018: 6010D)	69.3	0.250
CADMIUM AND COMPOUNDS °	mg/kg	ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD (US EPA 1996: 3050B AND 2007: 7000B)	ND	0.300
LEAD (Pb) °	mg/kg	ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD (US EPA 1996: 3050B AND 2007: 7000B)	16.5	1.55
MERCURY (Hg) °	mg/kg	ACID DIGESTION AND COLD VAPOUR AAS METHOD (US EPA 2007: 7471B)	ND	0.100
SAMPLE CONDITION			BROWN SOIL	

^a : ISO/IEC 17025 ACCREDITED BY THAI INDUSTRIAL STANDARDS INSTITUTE (TISI)

^b : ISO/IEC 17025 ACCREDITED BY DEPARTMENT OF SCIENCE SERVICE (DSS)

^c : VERIFIED BY OWN LABORATORY QUALITY SYSTEM, BUT STILL NOT ACCREDITED

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

ND : NON-DETECTABLE.

SAMPLE (S) ANALYSED ON AS RECEIVED BASIS. RESULT (S) REPORTED ON A DRY WEIGHT BASIS.

Benjawan V.

(MISS BENJAWAN VIRIYOTHAI)
LABORATORY SUPERVISOR

MARCH 16, 2022



ANALYSIS REPORT

CUSTOMER NAME : PAN ORIENT ENERGY (SIAM) LIMITED
ADDRESS : 555 RASA TOWER II, 17TH FLOOR, UNIT 1702, PHAHOLYOTHIN ROAD, CHATUCHAK, BANGKOK 10900.
CONTACT INFORMATION : TEL : 0 2937 1138-40 e-mail : prakaipruek@poesiam.com
SAMPLING SOURCE : L53-A-S3 (UTM WGS 84 ZONE 47P 598502E 1553027N)
SAMPLE TYPE : SOIL
SAMPLING DATE : FEBRUARY 17, 2022
SAMPLING TIME : 13:45 HOUR
SAMPLING METHOD ° : UNDISTURBED
SAMPLING BY ° : MR KRIDSANAPONG NAMTHIP
ANALYZED BY : MISS JINTASUPA PLIANSRI

RECEIVED DATE : FEBRUARY 18, 2022
ANALYTICAL DATE : FEBRUARY 18 - MARCH 11, 2022
REPORT NO. : 2022-U018545
WORK NO. : 2022-000521
ANALYSIS NO. : T22AC964-0002

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			L53-A-S3 T22AC964-0002	
pH (1:1) ^b	-	ELECTROMETRIC METHOD (US EPA 2004: 9045D)	7.2 (25°C)	-
CHLORIDE °	% w/w	BS 1377 : PART3 : 1990	ND	0.01
TOTAL PETROLEUM HYDROCARBONS °	mg/kg	SOXHLET EXTRACTION METHOD (SM: 5520 E AND 5520 F)	505	100
METALS				
ARSENIC (As) °	mg/kg	ACID DIGESTION AND HYDRIDE GENERATION AAS METHOD (US EPA 1996: 3050B AND 1992: 7061A)	8.65	0.100
BARIIUM (Ba) °	mg/kg	ACID DIGESTION AND INDUCTIVELY COUPLED PLASMA (ICP) METHOD (US EPA 1996: 3050B AND 2018: 6010D)	95.0	0.250
CADMIUM AND COMPOUNDS °	mg/kg	ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD (US EPA 1996: 3050B AND 2007: 7000B)	ND	0.300
LEAD (Pb) °	mg/kg	ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD (US EPA 1996: 3050B AND 2007: 7000B)	15.9	1.55
MERCURY (Hg) °	mg/kg	ACID DIGESTION AND COLD VAPOUR AAS METHOD (US EPA 2007: 7471B)	ND	0.100
SAMPLE CONDITION			BROWN SOIL	

^a : ISO/IEC 17025 ACCREDITED BY THAI INDUSTRIAL STANDARDS INSTITUTE (TISI)

^b : ISO/IEC 17025 ACCREDITED BY DEPARTMENT OF SCIENCE SERVICE (DSS)

^c : VERIFIED BY OWN LABORATORY QUALITY SYSTEM, BUT STILL NOT ACCREDITED

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

ND : NON-DETECTABLE.

SAMPLE (S) ANALYSED ON AS RECEIVED BASIS. RESULT (S) REPORTED ON A DRY WEIGHT BASIS.

Benjawan V.

(MISS BENJAWAN VIRIYOTHAI)
LABORATORY SUPERVISOR

MARCH 16, 2022



ANALYSIS REPORT

CUSTOMER NAME : PAN ORIENT ENERGY (SIAM) LIMITED
ADDRESS : 555 RASA TOWER II, 17TH FLOOR, UNIT 1702, PHAHOLYOTHIN ROAD, CHATUCHAK, BANGKOK 10900.
CONTACT INFORMATION : TEL : 0 2937 1138-40 e-mail : prakaipruek@poesiam.com
SAMPLING SOURCE : L53-A-S4 (UTM WGS 84 ZONE 47P 598573E 1553016N)
SAMPLE TYPE : SOIL
SAMPLING DATE : FEBRUARY 17, 2022
SAMPLING TIME : 14:00 HOUR
SAMPLING METHOD ° : UNDISTURBED
SAMPLING BY ° : MR KRIDSANAPONG NAMTHIP
ANALYZED BY : MISS JINTASUPA PLIANSRI

RECEIVED DATE : FEBRUARY 18, 2022
ANALYTICAL DATE : FEBRUARY 18 - MARCH 11, 2022
REPORT NO. : 2022-U018546
WORK NO. : 2022-000521
ANALYSIS NO. : T22AC964-0003

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			L53-A-S4 T22AC964-0003	
pH (1:1) ^b	-	ELECTROMETRIC METHOD (US EPA 2004: 9045D)	6.9 (25°C)	-
CHLORIDE °	% w/w	BS 1377 : PART3 : 1990	ND	0.01
TOTAL PETROLEUM HYDROCARBONS °	mg/kg	SOXHLET EXTRACTION METHOD (SM: 5520 E AND 5520 F)	489	100
METALS				
ARSENIC (As) °	mg/kg	ACID DIGESTION AND HYDRIDE GENERATION AAS METHOD (US EPA 1996: 3050B AND 1992: 7061A)	8.07	0.100
BARIUM (Ba) °	mg/kg	ACID DIGESTION AND INDUCTIVELY COUPLED PLASMA (ICP) METHOD (US EPA 1996: 3050B AND 2018: 6010D)	56.8	0.250
CADMIUM AND COMPOUNDS °	mg/kg	ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD (US EPA 1996: 3050B AND 2007: 7000B)	ND	0.300
LEAD (Pb) °	mg/kg	ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD (US EPA 1996: 3050B AND 2007: 7000B)	11.1	1.55
MERCURY (Hg) °	mg/kg	ACID DIGESTION AND COLD VAPOUR AAS METHOD (US EPA 2007: 7471B)	ND	0.100
SAMPLE CONDITION			BROWN SOIL	

^a : ISO/IEC 17025 ACCREDITED BY THAI INDUSTRIAL STANDARDS INSTITUTE (TISI)

^b : ISO/IEC 17025 ACCREDITED BY DEPARTMENT OF SCIENCE SERVICE (DSS)

^c : VERIFIED BY OWN LABORATORY QUALITY SYSTEM, BUT STILL NOT ACCREDITED

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

ND : NON-DETECTABLE.

SAMPLE (S) ANALYSED ON AS RECEIVED BASIS. RESULT (S) REPORTED ON A DRY WEIGHT BASIS.

Benjawan V.

(MISS BENJAWAN VIRIYOTHAI)
LABORATORY SUPERVISOR

MARCH 16, 2022



ANALYSIS REPORT

CUSTOMER NAME : PAN ORIENT ENERGY (SIAM) LIMITED
ADDRESS : 555 RASA TOWER II, 17TH FLOOR, UNIT 1702, PHAHOLYOTHIN ROAD, CHATUCHAK, BANGKOK 10900.
CONTACT INFORMATION : TEL : 0 2937 1138-40 e-mail : prakaipruek@poesiam.com
SAMPLING SOURCE : L53-A-S5 (UTM WGS 84 ZONE 47P 598543E 1552907N)
SAMPLE TYPE : SOIL
SAMPLING DATE : FEBRUARY 17, 2022
SAMPLING TIME : 14:25 HOUR
SAMPLING METHOD ° : UNDISTURBED
SAMPLING BY ° : MR KRIDSANAPONG NAMTHIP
ANALYZED BY : MISS JINTASUPA PLIANSRI

RECEIVED DATE : FEBRUARY 18, 2022
ANALYTICAL DATE : FEBRUARY 18 - MARCH 11, 2022
REPORT NO. : 2022-U018547
WORK NO. : 2022-000521
ANALYSIS NO. : T22AC964-0004

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			L53-A-S5 T22AC964-0004	
pH (1:1) ^b	-	ELECTROMETRIC METHOD (US EPA 2004: 9045D)	7.2 (25°C)	-
CHLORIDE °	% w/w	BS 1377 : PART3 : 1990	ND	0.01
TOTAL PETROLEUM HYDROCARBONS °	mg/kg	SOXHLET EXTRACTION METHOD (SM: 5520 E AND 5520 F)	457	100
METALS				
ARSENIC (As) °	mg/kg	ACID DIGESTION AND HYDRIDE GENERATION AAS METHOD (US EPA 1996: 3050B AND 1992: 7061A)	14.3	0.100
BARIUM (Ba) °	mg/kg	ACID DIGESTION AND INDUCTIVELY COUPLED PLASMA (ICP) METHOD (US EPA 1996: 3050B AND 2018: 6010D)	111	0.250
CADMIUM AND COMPOUNDS °	mg/kg	ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD (US EPA 1996: 3050B AND 2007: 7000B)	ND	0.300
LEAD (Pb) °	mg/kg	ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD (US EPA 1996: 3050B AND 2007: 7000B)	22.2	1.55
MERCURY (Hg) °	mg/kg	ACID DIGESTION AND COLD VAPOUR AAS METHOD (US EPA 2007: 7471B)	ND	0.100
SAMPLE CONDITION			BROWN SOIL	

^a : ISO/IEC 17025 ACCREDITED BY THAI INDUSTRIAL STANDARDS INSTITUTE (TISI)

^b : ISO/IEC 17025 ACCREDITED BY DEPARTMENT OF SCIENCE SERVICE (DSS)

^c : VERIFIED BY OWN LABORATORY QUALITY SYSTEM, BUT STILL NOT ACCREDITED

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

ND : NON-DETECTABLE.

SAMPLE (S) ANALYSED ON AS RECEIVED BASIS. RESULT (S) REPORTED ON A DRY WEIGHT BASIS.

Benjawan V.

(MISS BENJAWAN VIRIYOTHAI)
LABORATORY SUPERVISOR

MARCH 16, 2022



ANALYSIS REPORT

CUSTOMER NAME : PAN ORIENT ENERGY (SIAM) LIMITED
ADDRESS : 555 RASA TOWER II, 17TH FLOOR, UNIT 1702, PHAHOLYOTHIN ROAD, CHATUCHAK, BANGKOK 10900.
CONTACT INFORMATION : TEL : 0 2937 1138-40 e-mail : prakaipruek@poesiam.com
SAMPLING SOURCE : L53-A-S6 (UTM WGS 84 ZONE 47P 598472E 1552870N)
SAMPLE TYPE : SOIL
SAMPLING DATE : FEBRUARY 17, 2022
SAMPLING TIME : 13:00 HOUR
SAMPLING METHOD : UNDISTURBED
SAMPLING BY : MR KRIDSANAPONG NAMTHIP
ANALYZED BY : MISS LADDAWAN PHOPHAN

RECEIVED DATE : FEBRUARY 18, 2022
ANALYTICAL DATE : FEBRUARY 18-28, 2022
REPORT NO. : 2022-U018548
WORK NO. : 2022-000521
ANALYSIS NO. : T22AC964-0005

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			L53-A-S6 T22AC964-0005	
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs)				
ACENAPHTHENE	mg/kg	ULTRASONIC EXTRACTION AND GAS CHROMATOGRAPHIC (FID) METHOD (US EPA 2007: 3550C AND 1986: 8100)	ND	0.01
ACENAPHTHYLENE	mg/kg	ULTRASONIC EXTRACTION AND GAS CHROMATOGRAPHIC (FID) METHOD (US EPA 2007: 3550C AND 1986: 8100)	ND	0.01
ANTHRACENE	mg/kg	ULTRASONIC EXTRACTION AND GAS CHROMATOGRAPHIC (FID) METHOD (US EPA 2007: 3550C AND 1986: 8100)	ND	0.01
BENZ(a)ANTHRACENE	mg/kg	ULTRASONIC EXTRACTION AND GAS CHROMATOGRAPHIC (FID) METHOD (US EPA 2007: 3550C AND 1986: 8100)	ND	0.01
BENZO(a)PYRENE	mg/kg	ULTRASONIC EXTRACTION AND GAS CHROMATOGRAPHIC (FID) METHOD (US EPA 2007: 3550C AND 1986: 8100)	ND	0.01
BENZO(b)FLUORANTHENE	mg/kg	ULTRASONIC EXTRACTION AND GAS CHROMATOGRAPHIC (FID) METHOD (US EPA 2007: 3550C AND 1986: 8100)	ND	0.01
BENZO(g,h,i)PERYLENE	mg/kg	ULTRASONIC EXTRACTION AND GAS CHROMATOGRAPHIC (FID) METHOD (US EPA 2007: 3550C AND 1986: 8100)	ND	0.01
BENZO(k)FLUORANTHENE	mg/kg	ULTRASONIC EXTRACTION AND GAS CHROMATOGRAPHIC (FID) METHOD (US EPA 2007: 3550C AND 1986: 8100)	ND	0.01
CHRYSENE	mg/kg	ULTRASONIC EXTRACTION AND GAS CHROMATOGRAPHIC (FID) METHOD (US EPA 2007: 3550C AND 1986: 8100)	ND	0.01
DIBENZ(a,h)ANTHRACENE	mg/kg	ULTRASONIC EXTRACTION AND GAS CHROMATOGRAPHIC (FID) METHOD (US EPA 2007: 3550C AND 1986: 8100)	ND	0.01
FLUORANTHENE	mg/kg	ULTRASONIC EXTRACTION AND GAS CHROMATOGRAPHIC (FID) METHOD (US EPA 2007: 3550C AND 1986: 8100)	ND	0.01
FLUORENE	mg/kg	ULTRASONIC EXTRACTION AND GAS CHROMATOGRAPHIC (FID) METHOD (US EPA 2007: 3550C AND 1986: 8100)	ND	0.01
INDENO(1,2,3-cd)PYRENE	mg/kg	ULTRASONIC EXTRACTION AND GAS CHROMATOGRAPHIC (FID) METHOD (US EPA 2007: 3550C AND 1986: 8100)	ND	0.01



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			L53-A-S6 T22AC964-0005	
1-METHYLNAPHTHALENE	mg/kg	ULTRASONIC EXTRACTION AND GAS CHROMATOGRAPHIC (FID) METHOD (US EPA 2007: 3550C AND 1986: 8100)	ND	0.01
2-METHYLNAPHTHALENE	mg/kg	ULTRASONIC EXTRACTION AND GAS CHROMATOGRAPHIC (FID) METHOD (US EPA 2007: 3550C AND 1986: 8100)	ND	0.01
NAPHTHALENE	mg/kg	ULTRASONIC EXTRACTION AND GAS CHROMATOGRAPHIC (FID) METHOD (US EPA 2007: 3550C AND 1986: 8100)	ND	0.01
PHENANTHRENE	mg/kg	ULTRASONIC EXTRACTION AND GAS CHROMATOGRAPHIC (FID) METHOD (US EPA 2007: 3550C AND 1986: 8100)	ND	0.01
PYRENE	mg/kg	ULTRASONIC EXTRACTION AND GAS CHROMATOGRAPHIC (FID) METHOD (US EPA 2007: 3550C AND 1986: 8100)	ND	0.01
SAMPLE CONDITION			BROWN SOIL	

ND : NON-DETECTABLE.

SAMPLE (S) ANALYSED ON AS RECEIVED BASIS. RESULT (S) REPORTED ON A DRY WEIGHT BASIS.

Benjawan V.

(MISS BENJAWAN VIRIYOTHAI)
LABORATORY SUPERVISOR

MARCH 16, 2022

น้ำจากกระบวนการผลิต



ANALYSIS REPORT

CUSTOMER NAME : PAN ORIENT ENERGY (SIAM) LIMITED
ADDRESS : 555 RASA TOWER II 17TH FLOOR UNIT 1702 PHAHONYOTHIN ROAD, CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 2937 1138-40 e-mail : prakaipruek@poesiam.com
SAMPLING SOURCE : L53-A-PW1 (UTM WGS 84 ZONE 47P 598525E 1553051N)
SAMPLE TYPE : PRODUCED WATER
SAMPLING DATE : FEBRUARY 17, 2022
SAMPLING TIME : 09:30 HOUR
SAMPLING METHOD : GRAB
SAMPLING BY : MR KRIDSANAPONG NAMTHIP
ANALYZED BY : MISS CHOMTHANAN APHIPATPAPHA

RECEIVED DATE : FEBRUARY 18, 2022
ANALYTICAL DATE : FEBRUARY 18 - MARCH 4, 2022
REPORT NO. : 2022-U016035
WORK NO. : 2022-000521
ANALYSIS NO. : T22AC960-0001

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			L53-A-PW1 T22AC960-0001	
pH	-	ELECTROMETRIC METHOD AT SITE (SM:4500-H* B)	8.5 (29°C)	-
TEMPERATURE	°C	THERMOMETER AT SITE (SM: 2550 B)	29	-
ELECTRICAL CONDUCTIVITY	µmhos/cm	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: 2510 B)	2,780 (29°C)	0.1
SALINITY	ppt	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: 2520 B)	2.0	0.1
SUSPENDED SOLIDS	mg/L	SUSPENDED SOLIDS DRIED AT 103-105 °C (SM: 2540 D)	530	5.0
TOTAL DISSOLVED SOLIDS	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: 2540 C)	2,840	25
TOTAL PETROLEUM HYDROCARBONS	mg/L	SOXHLET EXTRACTION METHOD (SM: 5520 D AND 5520 F)	63	3
CHLORIDE	mg/L Cl ⁻	ARGENTOMETRIC METHOD (SM: 4500-Cl ⁻ B)	30.3	2.0
SULPHATE	mg/L SO ₄ ²⁻	TURBIDIMETRIC METHOD (SM: 4500-SO ₄ ²⁻ E)	3.1	0.3
METALS				
IRON	mg/L Fe	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	0.992	0.005
TOTAL CHROMIUM	mg/L Cr	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	ND	0.007
ARSENIC	mg/L As	HYDRIDE GENERATION AAS METHOD (SM: 3114 C)	0.0034	0.0003
SELENIUM	mg/L Se	HYDRIDE GENERATION AAS METHOD (SM: 3114 C)	ND	0.0005
CADMIUM	mg/L Cd	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	ND	0.002
COPPER	mg/L Cu	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	ND	0.005
LEAD	mg/L Pb	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	ND	0.015
MANGANESE	mg/L Mn	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	< LOQ	0.004
NICKEL	mg/L Ni	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	ND	0.005



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	DETECTION LIMIT
			L53-A-PW1 T22AC960-0001	
ZINC	mg/L Zn	IN-HOUSE METHOD: UAE.TP.IW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	< LOQ	0.003
TOTAL MERCURY	mg/L Hg	COLD VAPOUR AAS METHOD (SM: 3112 B)	ND	0.0005
BARIUM	mg/L Ba	NITRIC ACID-HYDROCHLORIC ACID DIGESTION AND INDUCTIVELY COUPLED PLASMA (ICP) METHOD (SM: 3030 F AND 3120 B)	0.409	0.005
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			BROWN/TURBID BROWN	

IN-HOUSE : BASED ON STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

ND : NON-DETECTABLE.

< LOQ : < LEVEL OF QUANTITATION (MANGANESE ≥ 0.004 AND < 0.050 mg/L, ZINC ≥ 0.003 AND < 0.050 mg/L).

Benjawan V.

(MISS BENJAWAN VIRIYOTHAI)
LABORATORY SUPERVISOR

MARCH 7, 2022