



## Analysis / Test Report

**Client :** Gulf JP UT Co.,Ltd.  
999 Moo 1, Ban Chang, Uthai, Pranakhsaiyutthaya Thailand 13210  
**P/O :** สัญญาเลขที่ 4600001481  
**Project Name :** Monitoring EIA  
**Project Location :** GUT

**Lot ID: 21147453**  
**Date Received :** Jan 12, 2022  
**Date Reported :** Jan 18, 2022  
**Report Number :** 2179691-1

Page 1 of 1

**Sample Number** 21147453-1  
**Sample Description** Emission from Stationary Source  
**Location** HRSG 11  
**Sampled Date** Jan 11, 2022

### Stack Description

|                     |            |      |                   |        |    |                |         |        |
|---------------------|------------|------|-------------------|--------|----|----------------|---------|--------|
| Ambient Temperature | 32         | °C   | Diameter          | 7.62   | m  | Oxygen         | 14.40   | %      |
| Ambient Pressure    | 756        | mmHg | Shape             | Circle |    | Carbon dioxide | 5.15    | %      |
| Type of Process     | Combustion |      | Stack Temperature | 90     | °C | Gas Velocity   | 17.70   | m/s    |
| Type of Fuel        | Diesel     |      | Moisture          | 7.97   | %  | Flow Rate      | 2182243 | Nm3/hr |

| Run No.                                      | Sampling Time       | Oxygen (%) | Carbon Dioxide (%) | Carbon Monoxide (ppm)    |                      | Oxides of Nitrogen (ppm) |                      | Sulfur Dioxide (ppm)     |                      |
|--|---------------------|------------|--------------------|--------------------------|----------------------|--------------------------|----------------------|--------------------------|----------------------|
|  |                     |            |                    | at Actual O <sub>2</sub> | at 7% O <sub>2</sub> | at Actual O <sub>2</sub> | at 7% O <sub>2</sub> | at Actual O <sub>2</sub> | at 7% O <sub>2</sub> |
| 1  | 11:00 AM - 11:20 AM | 14.39      | 5.15               | 18.63                    | 39.76                | 20.66                    | 44.10                | 0.17                     | 0.36                 |
| 2  | 11:21 AM - 11:41 AM | 14.40      | 5.16               | 18.20                    | 38.89                | 20.83                    | 44.52                | 0.17                     | 0.37                 |
| 3  | 11:42 AM - 12:02 PM | 14.41      | 5.14               | 19.07                    | 40.83                | 20.36                    | 43.61                | 0.16                     | 0.34                 |
| Average (ppm)                                |                     | 14.40      | 5.15               | 18.63                    | 39.83                | 20.62                    | 44.07                | 0.17                     | 0.35                 |
| Guideline <sup>1/</sup> (ppm)                |                     |            |                    | -                        | -                    | -                        | 120                  | -                        | 30                   |
| Guideline <sup>2/</sup> (ppm)                |                     |            |                    | -                        | -                    | -                        | 180                  | -                        | 320                  |
| Guideline <sup>3/</sup> (ppm)                |                     |            |                    | -                        | 690                  | -                        | -                    | -                        | -                    |
| Result (mg/m <sup>3</sup> )                  |                     |            |                    | 21.34                    | 45.61                | 38.79                    | 82.92                | 0.43                     | 0.93                 |
| Emission Rate at Actual O <sub>2</sub> (g/s) |                     |            |                    | 12.934                   |                      | 23.516                   |                      | 0.263                    |                      |
| Guideline <sup>1/</sup> (g/s)                |                     |            |                    | -                        |                      | 61.82                    |                      | 21.49                    |                      |
| Method                                       |                     |            |                    | US EPA Method 10         |                      | US EPA Method 7E         |                      | US EPA Method 6C         |                      |

**Sampled By :** Ussaree Namburee

**Guideline :** <sup>1/</sup> Environmental Impact Assessment Report of Gulf JP UT Co.,Ltd.

<sup>2/</sup>Notification of the Ministry of Industry on determining pollutant contents in air emitted from electric power generation, transmission and distribution plant, 2004 (B.E. 2547), dated September, 2004 (B.E. 2547).

<sup>3/</sup>Notification of the Ministry of Industry 2006 (B.E. 2549) Published in the Royal Government Gazette, Vol.123 Special Part 125 D, dated December 4, 2006 (B.E. 2549)

**Technical Management**

*Wichan Choonharat*

Wichan Choonharat  
Manager  
ทะเบียนเลขที่ ว-204-ค-6113

**Approved by**

*Sarayuth Jittranont*

Sarayuth Jittranont  
Assistant General Manager  
ทะเบียนเลขที่ ว-204-ค-4702

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## Analysis / Test Report

TESTING  
No.0009

**Client :** Gulf JP UT Co., Ltd.  
999 Moo 1, Ban Chang, Uthai, Pranakhsaiyutthaya Thailand 13210  
**P/O :** สัญญาเลขที่ 4600001481  
**Project Name :** Monitoring EIA  
**Project Location :** GUT

**Lot ID: 21147462**

Date Received : Jan 12, 2022  
Date Reported : Jan 21, 2022  
Report Number: 2179704-1

Page 1 of 2

**Sample Number** 21147462-1  
**Sampled Date** Jan 11, 2022  
**Sample Description** Emission from Stationary Source  
**Location** HRSG 11  
**Date Analysis Commenced** Jan 17, 2022  
**Condition of Sample** Extracted into one filter paper placed in plastic petri dish

### Stack Description

|                     |            |      |                   |        |    |                       |         |        |
|---------------------|------------|------|-------------------|--------|----|-----------------------|---------|--------|
| Ambient Pressure    | 756        | mmHg | Diameter          | 7.62   | m  | Oxygen                | 14.4    | %      |
| Ambient Temperature | 32.0       | °C   | Shape             | Circle |    | Carbon Dioxide        | 5.2     | %      |
| Type of Process     | Combustion |      | Stack Temperature | 90.0   | °C | Gas Velocity          | 17.7    | m/s    |
| Type of Fuel        | Diesel     |      | Moisture          | 8.00   | %  | Flow Rate (Actual O2) | 2178673 | Nm3/hr |

| Analyte                     | Sampled Time        | Unit  | LOD | LOQ (LOR) | Result at 7 %O <sub>2</sub> | Result at 14.4 % O <sub>2</sub> | Guideline (1) | Guideline (2) | Method           | Testing Location |
|-----------------------------|---------------------|-------|-----|-----------|-----------------------------|---------------------------------|---------------|---------------|------------------|------------------|
| <b>Air Testing</b>          |                     |       |     |           |                             |                                 |               |               |                  |                  |
| Total Suspended Particulate | 11:00 AM - 11:48 AM | mg/m3 | -   | 0.5       | <0.5                        | <0.5                            | 120           | 35            | US EPA, Method 5 | Bangkok          |

### Guideline :

Guideline (1) Notification of the Ministry of Industry on determining pollutant contents in air emitted from electric power generation, transmission and distribution plant, 2004 (B.E. 2547), dated September, 2004 (B.E. 2547).  
dated December 4, 2006 (B.E. 2549) \*Guideline for Carbon monoxide  
Guideline (2) Environmental Impact Assessment Report of Gulf JP UT Co., Ltd.

Technical Management

*Saranya C.*

Saranya Chalermthamrong  
Scientist (4)  
ทะเบียนเลขที่ ว-204-จ-4717

Approved by

*Kanokkorn Anek*

Kanokkorn Anek  
Senior Manager  
ทะเบียนเลขที่ ว-204-ค-6111

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11730-21/ EMAIL

S:\Reports\\_Air Stack\_O2\_2GL.rpt ( 3:41PM)



## Analysis / Test Report

TESTING  
No.0009

**Client :** Gulf JP UT Co., Ltd.  
999 Moo 1, Ban Chang, Uthai, Pranakhsaiyutthaya Thailand 13210  
**P/O :** สัญญาเลขที่ 4600001481  
**Project Name :** Monitoring EIA  
**Project Location :** GUT

**Lot ID: 21147462**

Date Received : Jan 12, 2022  
Date Reported : Jan 21, 2022  
Report Number: 2179704-1

Page 2 of 2

**Sample Number** 21147462-1  
**Sampled Date** Jan 11, 2022  
**Sample Description** Emission from Stationary Source  
**Location** HRSG 11  
**Date Analysis Commenced** Jan 17, 2022  
**Condition of Sample** Extracted into one filter paper placed in plastic petri dish

### Stack Description

|                     |            |      |                   |        |    |                       |         |        |
|---------------------|------------|------|-------------------|--------|----|-----------------------|---------|--------|
| Ambient Pressure    | 756        | mmHg | Diameter          | 7.62   | m  | Oxygen                | 14.4    | %      |
| Ambient Temperature | 32.0       | °C   | Shape             | Circle |    | Carbon Dioxide        | 5.2     | %      |
| Type of Process     | Combustion |      | Stack Temperature | 90.0   | °C | Gas Velocity          | 17.7    | m/s    |
| Type of Fuel        | Diesel     |      | Moisture          | 8.00   | %  | Flow Rate (Actual O2) | 2178673 | Nm3/hr |

| Analyte                       | Sampled Time        | Unit | LOD | LOQ (LOR) | Result Emission Rate | Guideline (1) | Guideline (2) | Method     | Testing Location |
|-------------------------------|---------------------|------|-----|-----------|----------------------|---------------|---------------|------------|------------------|
| <b>Air Testing</b>            |                     |      |     |           |                      |               |               |            |                  |
| Total Suspended Particulate * | 11:00 AM - 11:48 AM | g/s  | -   | -         | <0.30                | -             | 8.79          | Calculated | Bangkok          |

### Guideline :

Guideline (1) Notification of the Ministry of Industry on determining pollutant contents in air emitted from electric power generation, transmission and distribution plant, 2004 (B.E. 2547), dated September, 2004 (B.E. 2547).  
dated December 4, 2006 (B.E. 2549) \*Guideline for Carbon monoxide  
Guideline (2) Environmental Impact Assessment Report of Gulf JP UT Co., Ltd.

### Note:

This Analysis test report is reissued to supersede report No. 2179704-1, Date Reported : Jan 19, 2022

**Sampled By :** Artit Srisen

### Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)
- Analyte(s) marked \* is/are not included in scope of Accreditation ISO/IEC 17025.

**Technical Management**

*Saranya C.*  
Saranya Chalermthamrong  
Scientist (4)  
ทะเบียนเลขที่ ว-204-จ-4717

**Approved by**

*Kanokkorn Anek*  
Kanokkorn Anek  
Senior Manager  
ทะเบียนเลขที่ ว-204-ค-6111

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## Analysis / Test Report

**Client :** Gulf JP UT Co., Ltd.  
999 Moo 1, Ban Chang, Uthai, Pranakhonsiyutthaya Thailand 13210  
**P/O :** สัญญาเลขที่ 4600001481  
**Project Name :** Monitoring EIA  
**Project Location :** GUT

**Lot ID: 21147454**  
Date Received :Jan 12, 2022  
Date Reported :Jan 18, 2022  
Report Number :2179690-1

Page 1 of 1

**Sample Number** 21147454-1  
**Sample Description** Emission from Stationary Source  
**Location** HRSG 12  
**Sampled Date** Jan 12, 2022

### Stack Description

|                     |            |      |                   |        |    |                |         |        |
|---------------------|------------|------|-------------------|--------|----|----------------|---------|--------|
| Ambient Temperature | 32         | °C   | Diameter          | 7.62   | m  | Oxygen         | 14.34   | %      |
| Ambient Pressure    | 756        | mmHg | Shape             | Circle |    | Carbon dioxide | 5.18    | %      |
| Type of Process     | Combustion |      | Stack Temperature | 94     | °C | Gas Velocity   | 18.18   | m/s    |
| Type of Fuel        | Diesel     |      | Moisture          | 8.29   | %  | Flow Rate      | 2209320 | Nm3/hr |

| Run No.                                      | Sampling Time       | Oxygen (%) | Carbon Dioxide (%) | Carbon Monoxide (ppm)    |                      | Oxides of Nitrogen (ppm) |                      | Sulfur Dioxide (ppm)     |                      |
|--|---------------------|------------|--------------------|--------------------------|----------------------|--------------------------|----------------------|--------------------------|----------------------|
|  |                     |            |                    | at Actual O <sub>2</sub> | at 7% O <sub>2</sub> | at Actual O <sub>2</sub> | at 7% O <sub>2</sub> | at Actual O <sub>2</sub> | at 7% O <sub>2</sub> |
| 1  | 08:40 AM - 09:00 AM | 14.35      | 5.18               | 35.29                    | 74.89                | 12.74                    | 27.04                | 0.13                     | 0.28                 |
| 2  | 09:01 AM - 09:21 AM | 14.34      | 5.19               | 32.49                    | 68.85                | 13.06                    | 27.67                | 0.15                     | 0.31                 |
| 3  | 09:22 AM - 09:42 AM | 14.33      | 5.18               | 35.79                    | 75.69                | 13.00                    | 27.50                | 0.14                     | 0.29                 |
| Average (ppm)                                |                     | 14.34      | 5.18               | 34.52                    | 73.14                | 12.93                    | 27.40                | 0.14                     | 0.29                 |
| Guideline <sup>1/</sup> (ppm)                |                     |            |                    | -                        | -                    | -                        | 120                  | -                        | 30                   |
| Guideline <sup>2/</sup> (ppm)                |                     |            |                    | -                        | -                    | -                        | 180                  | -                        | 320                  |
| Guideline <sup>3/</sup> (ppm)                |                     |            |                    | -                        | 690                  | -                        | -                    | -                        | -                    |
| Result (mg/m <sup>3</sup> )                  |                     |            |                    | 39.54                    | 83.76                | 24.33                    | 51.55                | 0.36                     | 0.77                 |
| Emission Rate at Actual O <sub>2</sub> (g/s) |                     |            |                    | 24.263                   |                      | 14.934                   |                      | 0.223                    |                      |
| Guideline <sup>1/</sup> (g/s)                |                     |            |                    | -                        |                      | 61.82                    |                      | 21.49                    |                      |
| Method                                       |                     |            |                    | US EPA Method 10         |                      | US EPA Method 7E         |                      | US EPA Method 6C         |                      |

**Sampled By :** Ussaree Namburee

**Guideline :** <sup>1/</sup> Environmental Impact Assessment Report of Gulf JP UT Co.,Ltd.

<sup>2/</sup>Notification of the Ministry of Industry on determining pollutant contents in air emitted from electric power generation, transmission and distribution plant, 2004 (B.E. 2547), dated September, 2004 (B.E. 2547).

<sup>3/</sup>Notification of the Ministry of Industry 2006 (B.E. 2549) Published in the Royal Government Gazette, Vol.123 Special Part 125 D, dated December 4, 2006 (B.E. 2549)

**Technical Management**

*Wichan Choonharat*

Wichan Choonharat  
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ทะเบียนเลขที่ ว-204-ค-6113

**Approved by**

*Sarayuth Jittranont*

Sarayuth Jittranont  
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## Analysis / Test Report

TESTING  
No.0009

**Client :** Gulf JP UT Co., Ltd.  
999 Moo 1, Ban Chang, Uthai, Pranakhsaiyutthaya Thailand 13210  
**P/O :** สัญญาเลขที่ 4600001481  
**Project Name :** Monitoring EIA  
**Project Location :** GUT

**Lot ID: 21147463**

Date Received : Jan 12, 2022  
Date Reported : Jan 21, 2022  
Report Number: 2179700-1

Page 1 of 2

**Sample Number** 21147463-1  
**Sampled Date** Jan 12, 2022  
**Sample Description** Emission from Stationary Source  
**Location** HRSG 12  
**Date Analysis Commenced** Jan 17, 2022  
**Condition of Sample** Extracted into one filter paper placed in plastic petri dish

### Stack Description

|                     |            |      |                   |        |    |                       |         |        |
|---------------------|------------|------|-------------------|--------|----|-----------------------|---------|--------|
| Ambient Pressure    | 756        | mmHg | Diameter          | 7.62   | m  | Oxygen                | 14.3    | %      |
| Ambient Temperature | 32.0       | °C   | Shape             | Circle |    | Carbon Dioxide        | 5.2     | %      |
| Type of Process     | Combustion |      | Stack Temperature | 94.0   | °C | Gas Velocity          | 18.2    | m/s    |
| Type of Fuel        | Diesel     |      | Moisture          | 8.29   | %  | Flow Rate (Actual O2) | 2206837 | Nm3/hr |

| Analyte                     | Sampled Time        | Unit  | LOD | LOQ (LOR) | Result at 7 %O <sub>2</sub> | Result at 14.3 % O <sub>2</sub> | Guideline (1) | Guideline (2) | Method           | Testing Location |
|-----------------------------|---------------------|-------|-----|-----------|-----------------------------|---------------------------------|---------------|---------------|------------------|------------------|
| <b>Air Testing</b>          |                     |       |     |           |                             |                                 |               |               |                  |                  |
| Total Suspended Particulate | 08:40 AM - 09:28 AM | mg/m3 | -   | 0.5       | <0.5                        | <0.5                            | 120           | 35            | US EPA, Method 5 | Bangkok          |

### Guideline :

Guideline (1) Notification of the Ministry of Industry on determining pollutant contents in air emitted from electric power generation, transmission and distribution plant, 2004 (B.E. 2547), dated September, 2004 (B.E. 2547).  
dated December 4, 2006 (B.E. 2549) \*Guideline for Carbon monoxide  
Guideline (2) Environmental Impact Assessment Report of Gulf JP UT Co., Ltd.

Technical Management

*Saranya C.*

Saranya Chalermthamrong  
Scientist (4)  
ทะเบียนเลขที่ ว-204-จ-4717

Approved by

*Kanokkorn Anek*

Kanokkorn Anek  
Senior Manager  
ทะเบียนเลขที่ ว-204-ค-6111

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## Analysis / Test Report

TESTING  
No.0009

**Client :** Gulf JP UT Co., Ltd.  
999 Moo 1, Ban Chang, Uthai, Pranakhsaiyutthaya Thailand 13210  
**P/O :** สัญญาเลขที่ 4600001481  
**Project Name :** Monitoring EIA  
**Project Location :** GUT

**Lot ID: 21147463**

Date Received : Jan 12, 2022  
Date Reported : Jan 21, 2022  
Report Number: 2179700-1

Page 2 of 2

**Sample Number** 21147463-1  
**Sampled Date** Jan 12, 2022  
**Sample Description** Emission from Stationary Source  
**Location** HRSG 12  
**Date Analysis Commenced** Jan 17, 2022  
**Condition of Sample** Extracted into one filter paper placed in plastic petri dish

### Stack Description

|                     |            |      |                   |        |    |                       |         |        |
|---------------------|------------|------|-------------------|--------|----|-----------------------|---------|--------|
| Ambient Pressure    | 756        | mmHg | Diameter          | 7.62   | m  | Oxygen                | 14.3    | %      |
| Ambient Temperature | 32.0       | °C   | Shape             | Circle |    | Carbon Dioxide        | 5.2     | %      |
| Type of Process     | Combustion |      | Stack Temperature | 94.0   | °C | Gas Velocity          | 18.2    | m/s    |
| Type of Fuel        | Diesel     |      | Moisture          | 8.29   | %  | Flow Rate (Actual O2) | 2206837 | Nm3/hr |

| Analyte                       | Sampled Time        | Unit | LOD | LOQ (LOR) | Result Emission Rate | Guideline (1) | Guideline (2) | Method     | Testing Location |
|-------------------------------|---------------------|------|-----|-----------|----------------------|---------------|---------------|------------|------------------|
| <b>Air Testing</b>            |                     |      |     |           |                      |               |               |            |                  |
| Total Suspended Particulate * | 08:40 AM - 09:28 AM | g/s  | -   | -         | <0.31                | -             | 8.79          | Calculated | Bangkok          |

### Guideline :

Guideline (1) Notification of the Ministry of Industry on determining pollutant contents in air emitted from electric power generation, transmission and distribution plant, 2004 (B.E. 2547), dated September, 2004 (B.E. 2547).  
dated December 4, 2006 (B.E. 2549) \*Guideline for Carbon monoxide  
Guideline (2) Environmental Impact Assessment Report of Gulf JP UT Co., Ltd.

### Note:

This Analysis test report is reissued to supersede report No. 2179700-1, Date Reported : Jan 19, 2022

**Sampled By :** Artit Srisen

### Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)
- Analyte(s) marked \* is/are not included in scope of Accreditation ISO/IEC 17025.

**Technical Management**

*Saranya C.*  
Saranya Chalermthamrong  
Scientist (4)  
ทะเบียนเลขที่ ว-204-จ-4717

**Approved by**

*Kanokkorn Anek*  
Kanokkorn Anek  
Senior Manager  
ทะเบียนเลขที่ ว-204-ค-6111

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11730-21/ EMAIL

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## Analysis / Test Report

**Client :** Gulf JP UT Co., Ltd.  
999 Moo 1, Ban Chang, Uthai, Pranakhsaiyutthaya Thailand 13210  
**P/O :** สัญญาเลขที่ 4600001481  
**Project Name :** Monitoring EIA  
**Project Location :** GUT

**Lot ID: 21147455**  
**Date Received :** Mar 08, 2022  
**Date Reported :** Mar 11, 2022  
**Report Number :** 2179688-1

Page 1 of 1

**Sample Number** 21147455-1  
**Sample Description** Emission from Stationary Source  
**Location** HRSG 21  
**Sampled Date** Mar 08, 2022

### Stack Description

|                     |             |      |                   |        |    |                |         |        |
|---------------------|-------------|------|-------------------|--------|----|----------------|---------|--------|
| Ambient Temperature | 32          | °C   | Diameter          | 7.62   | m  | Oxygen         | 14.40   | %      |
| Ambient Pressure    | 758         | mmHg | Shape             | Circle |    | Carbon dioxide | 4.00    | %      |
| Type of Process     | Combustion  |      | Stack Temperature | 90     | °C | Gas Velocity   | 15.04   | m/s    |
| Type of Fuel        | Natural Gas |      | Moisture          | 8.79   | %  | Flow Rate      | 1842633 | Nm3/hr |

| Run No.                                      | Sampling Time       | Oxygen (%) | Carbon Dioxide (%) | Carbon Monoxide (ppm)    |                      | Oxides of Nitrogen (ppm) |                      | Sulfur Dioxide (ppm)     |                      |
|--|---------------------|------------|--------------------|--------------------------|----------------------|--------------------------|----------------------|--------------------------|----------------------|
|  |                     |            |                    | at Actual O <sub>2</sub> | at 7% O <sub>2</sub> | at Actual O <sub>2</sub> | at 7% O <sub>2</sub> | at Actual O <sub>2</sub> | at 7% O <sub>2</sub> |
| 1  | 08:45 AM - 09:05 AM | 14.25      | 4.08               | 7.51                     | 15.71                | 17.87                    | 37.37                | 0.15                     | 0.32                 |
| 2  | 09:06 AM - 09:26 AM | 14.46      | 3.97               | 16.13                    | 34.80                | 15.87                    | 34.24                | 0.23                     | 0.50                 |
| 3  | 09:27 AM - 09:47 AM | 14.48      | 3.96               | 14.47                    | 31.31                | 16.22                    | 35.12                | 0.21                     | 0.46                 |
| Average (ppm)                                |                     | 14.40      | 4.00               | 12.70                    | 27.27                | 16.66                    | 35.58                | 0.20                     | 0.43                 |
| Guideline <sup>1/</sup> (ppm)                |                     |            |                    | -                        | -                    | -                        | 70                   | -                        | 10                   |
| Guideline <sup>2/</sup> (ppm)                |                     |            |                    | -                        | -                    | -                        | 120                  | -                        | 20                   |
| Guideline <sup>3/</sup> (ppm)                |                     |            |                    | -                        | 690                  | -                        | -                    | -                        | -                    |
| Result (mg/m <sup>3</sup> )                  |                     |            |                    | 14.55                    | 31.23                | 31.34                    | 66.93                | 0.52                     | 1.11                 |
| Emission Rate at Actual O <sub>2</sub> (g/s) |                     |            |                    | 7.446                    |                      | 16.039                   |                      | 0.266                    |                      |
| Guideline <sup>1/</sup> (g/s)                |                     |            |                    | -                        |                      | 40.80                    |                      | 8.11                     |                      |
| Method                                       |                     |            |                    | US EPA Method 10         |                      | US EPA Method 7E         |                      | US EPA Method 6C         |                      |

**Sampled By :** Navaphut Sriviriya

**Guideline :** <sup>1/</sup> Environmental Impact Assessment Report of Gulf JP UT Co., Ltd.

<sup>2/</sup> Notification of the Ministry of Industry on determining pollutant contents in air emitted from electric power generation, transmission and distribution plant, 2004 (B.E. 2547), dated September, 2004 (B.E. 2547).

<sup>3/</sup> Notification of the Ministry of Industry 2006 (B.E. 2549) Published in the Royal Government Gazette, Vol.123 Special Part 125 D, dated December 4, 2006 (B.E. 2549)

**Technical Management**

*Wichan Choonharat*

Wichan Choonharat  
Manager  
ทะเบียนเลขที่ ว-204-ค-6113

**Approved by**

*Sarayuth Jittrantont*

Sarayuth Jittrantont  
Assistant General Manager  
ทะเบียนเลขที่ ว-204-ค-4702

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## Analysis / Test Report

TESTING  
No.0009

**Client :** Gulf JP UT Co., Ltd.  
999 Moo 1, Ban Chang, Uthai, Pranakhonsiyutthaya Thailand 13210  
**P/O :** สัญญาเลขที่ 4600001481  
**Project Name :** Monitoring EIA  
**Project Location :** GUT

**Lot ID: 21147464**

Date Received : Mar 08, 2022  
Date Reported : Mar 16, 2022  
Report Number: 2179698-1

Page 1 of 2

**Sample Number** 21147464-1  
**Sampled Date** Mar 08, 2022  
**Sample Description** Emission from Stationary Source  
**Location** HRSG 21  
**Date Analysis Commenced** Mar 10, 2022  
**Condition of Sample** Extracted into one filter paper placed in plastic petri dish

### Stack Description

|                     |             |      |                   |        |    |                       |         |        |
|---------------------|-------------|------|-------------------|--------|----|-----------------------|---------|--------|
| Ambient Pressure    | 758         | mmHg | Diameter          | 7.62   | m  | Oxygen                | 14.4    | %      |
| Ambient Temperature | 32.0        | °C   | Shape             | Circle |    | Carbon Dioxide        | 4.0     | %      |
| Type of Process     | Combustion  |      | Stack Temperature | 90.0   | °C | Gas Velocity          | 15.0    | m/s    |
| Type of Fuel        | Natural Gas |      | Moisture          | 8.74   | %  | Flow Rate (Actual O2) | 1841225 | Nm3/hr |

| Analyte                     | Sampled Time        | Unit  | LOD | LOQ (LOR) | Result               |                          | Guideline (1) | Guideline (2) | Method           | Testing Location |
|-----------------------------|---------------------|-------|-----|-----------|----------------------|--------------------------|---------------|---------------|------------------|------------------|
|                             |                     |       |     |           | at 7 %O <sub>2</sub> | at 14.4 % O <sub>2</sub> |               |               |                  |                  |
| Air Testing                 |                     |       |     |           |                      |                          |               |               |                  |                  |
| Total Suspended Particulate | 08:50 AM - 09:38 AM | mg/m3 | -   | 0.5       | 0.9                  | 0.4                      | 60            | 20            | US EPA, Method 5 | Bangkok          |

### Guideline :

Guideline (1) Notification of the Ministry of Industry on determining pollutant contents in air emitted from electric power generation, transmission and distribution plant, 2004 (B.E. 2547), dated September, 2004 (B.E. 2547).  
dated December 4, 2006 (B.E. 2549) \*Guideline for Carbon monoxide  
Guideline (2) Environmental Impact Assessment Report of Gulf JP UT Co., Ltd.

Technical Management

*Saranya C.*

Saranya Chalermthamrong  
Scientist (4)  
ทะเบียนเลขที่ ว-204-จ-4717

Approved by

*Kanokkorn Anek*

Kanokkorn Anek  
Senior Manager  
ทะเบียนเลขที่ ว-204-ค-6111

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S:\Reports\\_Air Stack\_O2\_2GL.rpt ( 1:33PM)





## Analysis / Test Report

TESTING  
No.0009

**Client :** Gulf JP UT Co., Ltd.  
999 Moo 1, Ban Chang, Uthai, Pranakhsaiyutthaya Thailand 13210

**P/O :** สัญญาเลขที่ 4600001481

**Project Name :** Monitoring EIA

**Project Location :** GUT

**Lot ID: 21147464**

Date Received : Mar 08, 2022

Date Reported : Mar 16, 2022

Report Number: 2179698-1

Page 2 of 2

**Sample Number** 21147464-1  
**Sampled Date** Mar 08, 2022  
**Sample Description** Emission from Stationary Source  
**Location** HRSG 21  
**Date Analysis Commenced** Mar 10, 2022  
**Condition of Sample** Extracted into one filter paper placed in plastic petri dish

### Stack Description

|                     |             |      |                   |        |    |                       |         |        |
|---------------------|-------------|------|-------------------|--------|----|-----------------------|---------|--------|
| Ambient Pressure    | 758         | mmHg | Diameter          | 7.62   | m  | Oxygen                | 14.4    | %      |
| Ambient Temperature | 32.0        | °C   | Shape             | Circle |    | Carbon Dioxide        | 4.0     | %      |
| Type of Process     | Combustion  |      | Stack Temperature | 90.0   | °C | Gas Velocity          | 15.0    | m/s    |
| Type of Fuel        | Natural Gas |      | Moisture          | 8.74   | %  | Flow Rate (Actual O2) | 1841225 | Nm3/hr |

| Analyte                       | Sampled Time        | Unit | LOD | LOQ (LOR) | Result Emission Rate | Guideline (1) | Guideline (2) | Method     | Testing Location |
|-------------------------------|---------------------|------|-----|-----------|----------------------|---------------|---------------|------------|------------------|
| <b>Air Testing</b>            |                     |      |     |           |                      |               |               |            |                  |
| Total Suspended Particulate * | 08:50 AM - 09:38 AM | g/s  | -   | -         | 0.22                 | -             | 5.71          | Calculated | Bangkok          |

### Guideline :

- Guideline (1) Notification of the Ministry of Industry on determining pollutant contents in air emitted from electric power generation, transmission and distribution plant, 2004 (B.E. 2547), dated September, 2004 (B.E. 2547).  
dated December 4, 2006 (B.E. 2549) \*Guideline for Carbon monoxide  
Guideline (2) Environmental Impact Assessment Report of Gulf JP UT Co., Ltd.

**Sampled By :** Artit Srisen

Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)
- Analyte(s) marked \* is/are not included in scope of Accreditation ISO/IEC 17025.

**Technical Management**

*Saranya C.*

Saranya Chalermthamrong  
Scientist (4)  
ทะเบียนเลขที่ ว-204-จ-4717

**Approved by**

*Kanokkorn Anek*

Kanokkorn Anek  
Senior Manager  
ทะเบียนเลขที่ ว-204-ค-6111

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S:\Reports\\_Air Stack\_O2\_2GL.rpt ( 1:33PM)



## Analysis / Test Report

**Client :** Gulf JP UT Co., Ltd.  
999 Moo 1, Ban Chang, Uthai, Pranakhsaiyutthaya Thailand 13210  
**P/O :** สัญญาเลขที่ 4600001481  
**Project Name :** Monitoring EIA  
**Project Location :** GUT

**Lot ID: 21147456**  
**Date Received :** Apr 21, 2022  
**Date Reported :** Apr 25, 2022  
**Report Number :** 2179687-1

Page 1 of 1

**Sample Number** 21147456-1  
**Sample Description** Emission from Stationary Source  
**Location** HRSG 22  
**Sampled Date** Apr 20, 2022

### Stack Description

|                     |            |      |                   |        |    |                |         |        |
|---------------------|------------|------|-------------------|--------|----|----------------|---------|--------|
| Ambient Temperature | 32         | °C   | Diameter          | 7.62   | m  | Oxygen         | 15.29   | %      |
| Ambient Pressure    | 758        | mmHg | Shape             | Circle |    | Carbon dioxide | 4.82    | %      |
| Type of Process     | Combustion |      | Stack Temperature | 145    | °C | Gas Velocity   | 15.55   | m/s    |
| Type of Fuel        | Diesel     |      | Moisture          | 9.45   | %  | Flow Rate      | 1643917 | Nm3/hr |

| Run No.                                      | Sampling Time       | Oxygen (%) | Carbon Dioxide (%) | Carbon Monoxide (ppm)    |                      | Oxides of Nitrogen (ppm) |                      | Sulfur Dioxide (ppm)     |                      |
|--|---------------------|------------|--------------------|--------------------------|----------------------|--------------------------|----------------------|--------------------------|----------------------|
|  |                     |            |                    | at Actual O <sub>2</sub> | at 7% O <sub>2</sub> | at Actual O <sub>2</sub> | at 7% O <sub>2</sub> | at Actual O <sub>2</sub> | at 7% O <sub>2</sub> |
| 1  | 11:00 AM - 11:20 AM | 15.30      | 4.82               | 215.08                   | 533.81               | 11.42                    | 28.36                | 0.82                     | 2.04                 |
| 2  | 11:21 AM - 11:41 AM | 15.31      | 4.81               | 219.82                   | 546.11               | 11.40                    | 28.33                | 0.82                     | 2.04                 |
| 3  | 11:42 AM - 12:02 PM | 15.28      | 4.83               | 170.62                   | 421.63               | 12.06                    | 29.79                | 0.88                     | 2.17                 |
| Average (ppm)                                |                     | 15.29      | 4.82               | 201.84                   | 500.52               | 11.63                    | 28.83                | 0.84                     | 2.08                 |
| Guideline <sup>1/</sup> (ppm)                |                     |            |                    | -                        | -                    | -                        | 120                  | -                        | 30                   |
| Guideline <sup>2/</sup> (ppm)                |                     |            |                    | -                        | -                    | -                        | 180                  | -                        | 320                  |
| Guideline <sup>3/</sup> (ppm)                |                     |            |                    | -                        | 690                  | -                        | -                    | -                        | -                    |
| Result (mg/m <sup>3</sup> )                  |                     |            |                    | 231.14                   | 573.19               | 21.88                    | 54.23                | 2.20                     | 5.45                 |
| Emission Rate at Actual O <sub>2</sub> (g/s) |                     |            |                    | 105.551                  |                      | 9.990                    |                      | 1.003                    |                      |
| Guideline <sup>1/</sup> (g/s)                |                     |            |                    | -                        |                      | 61.82                    |                      | 21.49                    |                      |
| Method                                       |                     |            |                    | US EPA Method 10         |                      | US EPA Method 7E         |                      | US EPA Method 6C         |                      |

**Sampled By :** Anuvat Mounpair

**Guideline :** <sup>1/</sup> Environmental Impact Assessment Report of Gulf JP UT Co., Ltd.

<sup>2/</sup> Notification of the Ministry of Industry on determining pollutant contents in air emitted from electric power generation, transmission and distribution plant, 2004 (B.E. 2547), dated September, 2004 (B.E. 2547).

<sup>3/</sup> Notification of the Ministry of Industry 2006 (B.E. 2549) Published in the Royal Government Gazette, Vol.123 Special Part 125 D, dated December 4, 2006 (B.E. 2549)

**Technical Management**

*Wichan Choonharat*

Wichan Choonharat  
Manager  
ทะเบียนเลขที่ ว-204-ค-6113

**Approved by**

*Sarayuth Jitranont*

Sarayuth Jitranont  
Assistant General Manager  
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## Analysis / Test Report

TESTING  
No.0009

**Client :** Gulf JP UT Co., Ltd.  
999 Moo 1, Ban Chang, Uthai, Pranakhsaiyutthaya Thailand 13210

**P/O :** สัญญาเลขที่ 4600001481

**Project Name :** Monitoring EIA

**Project Location :** GUT

**Lot ID: 21147465**

Date Received : Apr 21, 2022

Date Reported : May 11, 2022

Report Number: 2179695-1 Rev. No.1

Page 1 of 2

**Sample Number** 21147465-1  
**Sampled Date** Apr 20, 2022  
**Sample Description** Emission from Stationary Source  
**Location** HRSG 22  
**Date Analysis Commenced** Apr 22, 2022  
**Condition of Sample** Extracted into one filter paper placed in plastic cassette and one amber plastic bottle

### Stack Description

|                     |            |      |                   |        |    |                       |         |        |
|---------------------|------------|------|-------------------|--------|----|-----------------------|---------|--------|
| Ambient Pressure    | 758        | mmHg | Diameter          | 7.62   | m  | Oxygen                | 14.7    | %      |
| Ambient Temperature | 32.0       | °C   | Shape             | Circle |    | Carbon Dioxide        | 4.8     | %      |
| Type of Process     | Combustion |      | Stack Temperature | 145    | °C | Gas Velocity          | 15.6    | m/s    |
| Type of Fuel        | Diesel     |      | Moisture          | 9.60   | %  | Flow Rate (Actual O2) | 1649632 | Nm3/hr |

| Analyte                     | Sampled Time        | Unit  | LOD | LOQ (LOR) | Result at 7 %O <sub>2</sub> | Result at 14.7 % O <sub>2</sub> | Guideline (1) | Guideline (2) | Method           | Testing Location |
|-----------------------------|---------------------|-------|-----|-----------|-----------------------------|---------------------------------|---------------|---------------|------------------|------------------|
| <b>Air Testing</b>          |                     |       |     |           |                             |                                 |               |               |                  |                  |
| Total Suspended Particulate | 11:00 AM - 12:00 PM | mg/m3 | -   | 0.5       | 3.2                         | 1.4                             | 120           | 35            | US EPA, Method 5 | Bangkok          |

### Guideline :

Guideline (1) Notification of the Ministry of Industry on determining pollutant contents in air emitted from electric power generation, transmission and distribution plant, 2004 (B.E. 2547), dated September, 2004 (B.E. 2547).  
dated December 4, 2006 (B.E. 2549) \*Guideline for Carbon monoxide  
Guideline (2) Environmental Impact Assessment Report of Gulf JP UT Co., Ltd.

Technical Management

*Saranya C.*

Saranya Chalermthamrong  
Scientist (4)  
ทะเบียนเลขที่ ว-204-จ-4717

Approved by

*Kanokkorn Anek*

Kanokkorn Anek  
Senior Manager  
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S:\Reports\\_Air Stack\_O2\_2GL.rpt ( 9:00AM)



## Analysis / Test Report

TESTING  
No.0009

**Client :** Gulf JP UT Co., Ltd.  
999 Moo 1, Ban Chang, Uthai, Pranakhsaiyutthaya Thailand 13210  
**P/O :** สัญญาเลขที่ 4600001481  
**Project Name :** Monitoring EIA  
**Project Location :** GUT

**Lot ID: 21147465**

Date Received : Apr 21, 2022  
Date Reported : May 11, 2022  
Report Number: 2179695-1 Rev. No.1

Page 2 of 2

**Sample Number** 21147465-1  
**Sampled Date** Apr 20, 2022  
**Sample Description** Emission from Stationary Source  
**Location** HRSG 22  
**Date Analysis Commenced** Apr 22, 2022  
**Condition of Sample** Extracted into one filter paper placed in plastic cassette and one amber plastic bottle

### Stack Description

|                     |            |      |                   |        |    |                       |         |        |
|---------------------|------------|------|-------------------|--------|----|-----------------------|---------|--------|
| Ambient Pressure    | 758        | mmHg | Diameter          | 7.62   | m  | Oxygen                | 14.7    | %      |
| Ambient Temperature | 32.0       | °C   | Shape             | Circle |    | Carbon Dioxide        | 4.8     | %      |
| Type of Process     | Combustion |      | Stack Temperature | 145    | °C | Gas Velocity          | 15.6    | m/s    |
| Type of Fuel        | Diesel     |      | Moisture          | 9.60   | %  | Flow Rate (Actual O2) | 1649632 | Nm3/hr |

| Analyte                       | Sampled Time        | Unit | LOD | LOQ (LOR) | Result Emission Rate | Guideline (1) | Guideline (2) | Method     | Testing Location |
|-------------------------------|---------------------|------|-----|-----------|----------------------|---------------|---------------|------------|------------------|
| <b>Air Testing</b>            |                     |      |     |           |                      |               |               |            |                  |
| Total Suspended Particulate * | 11:00 AM - 12:00 PM | g/s  | -   | -         | 0.65                 | -             | 8.79          | Calculated | Bangkok          |

### Guideline :

Guideline (1) Notification of the Ministry of Industry on determining pollutant contents in air emitted from electric power generation, transmission and distribution plant, 2004 (B.E. 2547), dated September, 2004 (B.E. 2547).  
dated December 4, 2006 (B.E. 2549) \*Guideline for Carbon monoxide  
Guideline (2) Environmental Impact Assessment Report of Gulf JP UT Co., Ltd.

**Note:**  
This Analysis test report is reissued to supersede report No. 2179695-1 Reported : Apr 29 ,2022 due to revise guideline/specification

**Sampled By :** Anuvat Moungpai

### Remark :

- LOD : Limit of Detection
- "<" : Lower than LOQ (Limit of Quantitation) / LOR (Limit of Reporting)
- Analyte(s) marked \* is/are not included in scope of Accreditation ISO/IEC 17025.

**Technical Management**

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Saranya Chalermthamrong  
Scientist (4)  
ทะเบียนเลขที่ ว-204-จ-4717

**Approved by**

*Kanokkorn Anek*  
Kanokkorn Anek  
Senior Manager  
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