

| <div>  <div> <div>POWERPIPE CO.,LTD.</div> <div>PROJECT REFERENCE LIST HOT TAP, LINE STOP &amp; PIPING WORK</div> </div> </div> |                                                                        |                |             |             |                    |                  |            |          |                             |  |           |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|----------------|-------------|-------------|--------------------|------------------|------------|----------|-----------------------------|--|-----------|
| ITEM                                                                                                                                                                                                            | TIE-IN No.                                                             | Main line size | Branch size | SERVICE     | OR. PR.<br>(Bar-g) | OR. TEM.<br>(°C) | Location   | Duration | Scope of work               |  | Remarks   |
| 1)                                                                                                                                                                                                              | HMC Polymer 20"x4" Hot tap                                             |                |             |             |                    |                  |            | Jul-14   | fittings, welding & hot tap |  |           |
|                                                                                                                                                                                                                 | 1                                                                      | 8"             | 4"          | Hot oil     | 1                  | 300              | HMC        |          |                             |  |           |
| 2)                                                                                                                                                                                                              | PTTGSP-Waste Heat Recovery System for GSP#5 - Thai Woo Ree Engineering |                |             |             |                    |                  |            | Jul-14   | fittings, welding & hot tap |  |           |
|                                                                                                                                                                                                                 | 1                                                                      | 8"             | 4"          | FLARE       | 1.75               | 70               | GSP5 AREA  |          |                             |  |           |
|                                                                                                                                                                                                                 | 2                                                                      | 24"            | 4"          | FLARE       | 1.75               | 70               | OCS3 AREA  |          |                             |  |           |
|                                                                                                                                                                                                                 | 3                                                                      | 2"             | 1-1/2"      | N2          | 5.5                | 28.5             | GSP5 AREA  |          |                             |  |           |
|                                                                                                                                                                                                                 | 4                                                                      | 2"             | 2"          | N2          | 5.5                | 28.5             | OCS3 AREA  |          |                             |  |           |
|                                                                                                                                                                                                                 | 5                                                                      | 3"             | 2"          | IA          | 7.6                | 52               | OCS3 AREA  |          |                             |  |           |
|                                                                                                                                                                                                                 | 6                                                                      | 3"             | 2"          | UA          | 7.6                | 52               | OCS3 AREA  |          |                             |  |           |
|                                                                                                                                                                                                                 | 7                                                                      | 2"             | 2"          | PW          | 3.75               | 28               | OCS3 AREA  |          |                             |  |           |
|                                                                                                                                                                                                                 | 8                                                                      | 4"             | 1"          | IA          | 7.6                | 52               | GSP5 AREA  |          |                             |  |           |
|                                                                                                                                                                                                                 | 9                                                                      | 3"             | 2"          | FLARE       | 0.1                | 60               | GSP5 AREA  |          |                             |  |           |
|                                                                                                                                                                                                                 | 10                                                                     | 3"             | 2"          | FLARE       | 1.75               | 70               | GSP5 AREA  |          |                             |  |           |
|                                                                                                                                                                                                                 | 11                                                                     | 2"             | 3/4"        | UA          | 7.6                | 40               | GSP5 AREA  |          |                             |  |           |
|                                                                                                                                                                                                                 | 12                                                                     | 2"             | 3/4"        | UA          | 7.6                | 40               | GSP5 AREA  |          |                             |  |           |
|                                                                                                                                                                                                                 | 13                                                                     | 3"             | 3/4"        | FW          | 7.3                | 28               | GSP5 AREA  |          |                             |  |           |
|                                                                                                                                                                                                                 | 14                                                                     | 2"             | 3/4"        | N           | 5.5                | 28.5             | GSP5 AREA  |          |                             |  |           |
| 3)                                                                                                                                                                                                              | PTTGSP-Waste Heat Recovery Unit (WHRU)-Samsung Engineering             |                |             |             |                    |                  |            | Jul-14   | fittings, welding & hot tap |  |           |
|                                                                                                                                                                                                                 | 1                                                                      | 2              | 2           | N2          | 7                  | 30               | GSP5 AREA  |          |                             |  |           |
| 4)                                                                                                                                                                                                              | PTTGSP - WHRS - TWRE , VARIOUS COLD TAP                                |                |             |             |                    |                  |            | Sep-14   | fittings, welding & hot tap |  |           |
|                                                                                                                                                                                                                 | 1                                                                      | 24             | 16          | Nil         | 0                  | 35               | GSP5 AREA  |          |                             |  |           |
|                                                                                                                                                                                                                 | 2                                                                      | 18             | 14          | Nil         | 0                  | 35               | GSP5 AREA  |          |                             |  |           |
|                                                                                                                                                                                                                 | 3                                                                      | 40             | 10          | Nil         | 0                  | 35               | GSP5 AREA  |          |                             |  |           |
|                                                                                                                                                                                                                 | 4                                                                      | 2"             | 2"          | Nil         | 0                  | 35               | GSP5 AREA  |          |                             |  |           |
|                                                                                                                                                                                                                 | 5                                                                      | 24             | 10          | Nil         | 0                  | 35               | GSP5 AREA  |          |                             |  |           |
| 5)                                                                                                                                                                                                              | PTTGSP-ISO PENTANE TO ROC                                              |                |             |             |                    |                  |            | Aug-14   | FITTINGS, WELDING, HOT TAP  |  |           |
|                                                                                                                                                                                                                 | 1                                                                      | 3"             | 3"          | Pentane     | 17.2               | 200              | GSP#6      |          |                             |  |           |
|                                                                                                                                                                                                                 | 2                                                                      | 6"             | 3"          | Pentane     | 16.85              | 35               | GSP#6      |          |                             |  |           |
|                                                                                                                                                                                                                 | 3                                                                      | 4"             | 3"          | Pentane     | 12.82              | 35               | GSP#6      |          |                             |  |           |
|                                                                                                                                                                                                                 | 4                                                                      | 8"             | 3"          | Pentane     | 23                 | 15               | GSP#6      |          |                             |  |           |
|                                                                                                                                                                                                                 | 5                                                                      | 10"            | 3"          | Pentane     | 24.2               | 15               | GSP#6      |          |                             |  |           |
|                                                                                                                                                                                                                 | 6                                                                      | 24"            | 6"          | Pentane     | 17.9               | 180              | GSP#6      |          |                             |  |           |
| 6)                                                                                                                                                                                                              | PTTGSP-RIC Iso Pentane                                                 |                |             |             |                    |                  |            | Sep-14   | FITTINGS, WELDING, HOT TAP  |  |           |
|                                                                                                                                                                                                                 | 1                                                                      | 20"            | 3           | Pentane     | 17.9               | 35               | GSP#6      |          |                             |  |           |
| 7)                                                                                                                                                                                                              | PTT-LPG TERMINAL (TWRE) 2 NOS OF 16" ANGLE TAP ONTO 20"                |                |             |             |                    |                  |            | Sep-14   | fittings, welding & hot tap |  |           |
|                                                                                                                                                                                                                 | 1                                                                      | 20             | 16          | Nil         | 0.5                | 35               | Khao Bo Ya |          |                             |  |           |
|                                                                                                                                                                                                                 | 2                                                                      | 20             | 16          | Nil         | 0.5                | 35               | Khao Bo Ya |          |                             |  |           |
| 8)                                                                                                                                                                                                              | PTTGSP - WHRS - TWRE , VARIOUS HOT TAP                                 |                |             |             |                    |                  |            | Oct-14   | fittings, welding & hot tap |  |           |
|                                                                                                                                                                                                                 | TP-D01                                                                 | 6"             | 2"          | Hot oil     | 13.5               | 135              | PTTGSP     |          |                             |  |           |
|                                                                                                                                                                                                                 | TP-D02                                                                 | 6"             | 2"          | Hot oil     | 13.5               | 135              | PTTGSP     |          |                             |  |           |
|                                                                                                                                                                                                                 | TP-D03                                                                 | 3"             | 2"          | Hot oil     | 13.5               | 135              | PTTGSP     |          |                             |  |           |
|                                                                                                                                                                                                                 | TP-D04                                                                 | 2"             | 2"          | Hot oil     | 13.5               | 135              | PTTGSP     |          |                             |  |           |
|                                                                                                                                                                                                                 | TP-D05                                                                 | 6"             | 2"          | Hot oil     | 13.5               | 135              | PTTGSP     |          |                             |  |           |
|                                                                                                                                                                                                                 | TP-D06                                                                 | 3"             | 2"          | Hot oil     | 13.5               | 135              | PTTGSP     |          |                             |  |           |
|                                                                                                                                                                                                                 | TP-D07                                                                 | 3"             | 2"          | Hot oil     | 13.5               | 135              | PTTGSP     |          |                             |  |           |
|                                                                                                                                                                                                                 | TP-D08                                                                 | 3"             | 2"          | Hot oil     | 13.5               | 135              | PTTGSP     |          |                             |  |           |
|                                                                                                                                                                                                                 | TP-D09                                                                 | 3"             | 2"          | Hot oil     | 13.5               | 135              | PTTGSP     |          |                             |  |           |
|                                                                                                                                                                                                                 | TP-D10                                                                 | 3"             | 2"          | Hot oil     | 13.5               | 135              | PTTGSP     |          |                             |  |           |
|                                                                                                                                                                                                                 | TP-D11                                                                 | 4"             | 2"          | Hot oil     | 13.5               | 135              | PTTGSP     |          |                             |  |           |
|                                                                                                                                                                                                                 | TP-N01                                                                 | 4"             | 2"          | Hot oil     | 5.5                | 28.5             | PTTGSP     |          |                             |  |           |
|                                                                                                                                                                                                                 | TP-N02                                                                 | 2"             | 2"          | Hot oil     | 5.5                | 28.5             | PTTGSP     |          |                             |  |           |
| 9)                                                                                                                                                                                                              | Q8 Terminal                                                            |                |             |             |                    |                  |            | Oct-14   | Hot tap                     |  |           |
|                                                                                                                                                                                                                 | 1                                                                      | 8"             | 6"          | Water       | 7                  | 32               | Sriracha   |          |                             |  |           |
|                                                                                                                                                                                                                 | 2                                                                      | 8"             | 6"          | Water       | 7                  | 32               | Sriracha   |          |                             |  |           |
|                                                                                                                                                                                                                 | 3                                                                      | 8"             | 6"          | Water       | 7                  | 32               | Sriracha   |          |                             |  |           |
|                                                                                                                                                                                                                 | 4                                                                      | 8"             | 6"          | Water       | 7                  | 32               | Sriracha   |          |                             |  |           |
|                                                                                                                                                                                                                 | 5                                                                      | 8"             | 6"          | Water       | 7                  | 32               | Sriracha   |          |                             |  |           |
| 10                                                                                                                                                                                                              | PTTGSP#4 2 of 8"x8"-300# hot tap for hot oil                           |                |             |             |                    |                  |            | Nov-14   | Fittings, Welding & Hot tap |  |           |
|                                                                                                                                                                                                                 | TP-01                                                                  | 8"             | 8"          | Hot oil     | 15                 | 370              | Khanom     |          |                             |  |           |
|                                                                                                                                                                                                                 | TP-02                                                                  | 10"            | 8"          | Hot oil     | 15                 | 370              | Khanom     |          |                             |  |           |
| 11                                                                                                                                                                                                              | PTTGSP - 4"x4"-150# hot tap for Demin water                            |                |             |             |                    |                  |            | Dec-14   | Fittings, Welding & Hot tap |  |           |
|                                                                                                                                                                                                                 | 1                                                                      | 4"             | 4"          | Demin water | 6                  | 32               | Map Ta Put |          |                             |  |           |
| 12                                                                                                                                                                                                              | SCG - In-Service welding of repair sleeve                              |                |             |             |                    |                  |            | Dec-14   | In-service welding          |  |           |
|                                                                                                                                                                                                                 | 1                                                                      | 16"            | -           | HP steam    | 65                 | 320              | ROC        |          |                             |  |           |
| 13                                                                                                                                                                                                              | Hot tap 3" onto 10"-VGT Metering station                               |                |             |             |                    |                  |            | Jan-15   | Hot tap                     |  |           |
|                                                                                                                                                                                                                 | 1                                                                      | 10             | 3"          | NG          | 30                 | 35               | Bangkok    |          |                             |  |           |
| 14                                                                                                                                                                                                              | Thai oil - 2 of 8"x8"-150# hot tap                                     |                |             |             |                    |                  |            | Feb-15   | Fittings, Welding & Hot tap |  |           |
|                                                                                                                                                                                                                 | 1                                                                      | 8"             | 8"          | Base oil    | 1.5                | 8-               | Sriracha   |          |                             |  |           |
|                                                                                                                                                                                                                 | 2                                                                      | 8"             | 8"          | Base oil    | 1.5                | 8-               | Sriracha   |          |                             |  |           |
| 15                                                                                                                                                                                                              | Thai oil - 5 of Line stop & 1 of 3" hot tap                            |                |             |             |                    |                  |            | Feb-15   | Fittings, Welding & Hot tap |  | Line Stop |
|                                                                                                                                                                                                                 | 1                                                                      | 6"             | 6"          | N2          | 7                  | 35               | Sriracha   |          | Double stopple              |  |           |
|                                                                                                                                                                                                                 | 1                                                                      | 6"             | 6"          | N2          | 7                  | 35               | Sriracha   |          | Double stopple              |  |           |
|                                                                                                                                                                                                                 | 1                                                                      | 6"             | 6"          | N2          | 7                  | 35               | Sriracha   |          | Double stopple              |  |           |
|                                                                                                                                                                                                                 | 1                                                                      | 2"             | 2"          | N2          | 7                  | 35               | Sriracha   |          | Double stopple              |  |           |
|                                                                                                                                                                                                                 | 1                                                                      | 3"             | 3"          | N2          | 7                  | 35               | Sriracha   |          | Double stopple              |  |           |
|                                                                                                                                                                                                                 | 1                                                                      | 3"             | 3"          | N2          | 7                  | 35               | Sriracha   |          | Hot tap only                |  |           |
| 16                                                                                                                                                                                                              | BWCE-16"x12"-600# Hot tap                                              |                |             |             |                    |                  |            | Mar-15   | WELDING/Hot tap             |  |           |
|                                                                                                                                                                                                                 | 1                                                                      | 16"            | 12"         | Natural gas | 35                 | 32               | Bo Win     |          |                             |  |           |

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|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|----------------|-------------|-------------------------------------------------------|-----------------|---------------|---------------|----------|-------------------------------|--|-----------------------------------------|
| ITEM                                                                                                                                                                                                            | TIE-IN No.                                        | Main line size | Branch size | SERVICE                                               | PRESS.<br>(Bar) | TEMP.<br>(°C) | Location      | Duration | Scope of work                 |  | Remarks                                 |
| 17                                                                                                                                                                                                              | PTT ELK project various hot tap                   |                |             |                                                       |                 |               |               | Mar-15   | Fittings, Welding & Hot tap   |  |                                         |
|                                                                                                                                                                                                                 | 1                                                 | 20             | 16          | HC                                                    | 48.6            | 35            | Khao Bo Ya    |          |                               |  |                                         |
|                                                                                                                                                                                                                 | 2                                                 | 10             | 8           | HC                                                    | 3.5             | 5             | Khao Bo Ya    |          |                               |  |                                         |
|                                                                                                                                                                                                                 | 3                                                 | 6              | 6           | HC                                                    | 3.5             | 35            | Khao Bo Ya    |          |                               |  |                                         |
|                                                                                                                                                                                                                 | 4                                                 | 6              | 3           | HC                                                    | 3.5             | 35            | Khao Bo Ya    |          |                               |  |                                         |
|                                                                                                                                                                                                                 | 5                                                 | 12             | 12          | HC                                                    | 3.5             | 35            | Khao Bo Ya    |          |                               |  |                                         |
| 18                                                                                                                                                                                                              | Esso - T4201 Hottap                               |                |             |                                                       |                 |               |               | Mar-15   | Hot tap                       |  |                                         |
|                                                                                                                                                                                                                 | 1                                                 | 12"            | 12"         | HC                                                    | 1.2             | 159           | Esso Sriracha |          |                               |  |                                         |
|                                                                                                                                                                                                                 | 2                                                 | 14             | T-4201      | HC                                                    | 1.2             | 99            | Esso Sriracha |          |                               |  |                                         |
| 19                                                                                                                                                                                                              | Polytechnology Amata NGD 42"x16"-600# Hot tap     |                |             |                                                       |                 |               |               | Jun-15   | WELDING                       |  | Welding on heavy wall pipe without PWHT |
|                                                                                                                                                                                                                 | 1                                                 | 42"            | 16"         | NG                                                    | 69              | 32            | Amata NGD     |          |                               |  |                                         |
| 20                                                                                                                                                                                                              | PTTGSP 2 of 2"x2"150# hot tap for Demin water     |                |             |                                                       |                 |               |               | May-15   | Fittings, Welding & Hot tap   |  |                                         |
|                                                                                                                                                                                                                 | 1                                                 | 2"             | 2"          | Flare                                                 | 1               | 32            | PTTGSP#1      |          |                               |  |                                         |
| 21                                                                                                                                                                                                              | Thai Oil 2 of 4"-150# Hot tap onto 18" Fuel Oil   |                |             |                                                       |                 |               |               | Jun-15   | Welding & Hot tap             |  |                                         |
|                                                                                                                                                                                                                 | 1                                                 | 4"             | 18"         | Fuel oil                                              | 7               | 32            | Thai Oil      |          |                               |  |                                         |
| 22                                                                                                                                                                                                              | Thai Oil - 17 Hot tap for HVU-3RI Project         |                |             |                                                       |                 |               |               | Aug-15   | fittings, welding & hot tap   |  |                                         |
|                                                                                                                                                                                                                 | 1                                                 | 4              | 2           | Flushing oil                                          | 13.1            | 50            | Thai Oil      |          |                               |  |                                         |
|                                                                                                                                                                                                                 | 2                                                 | 4              | 2           | Flushing oil                                          | 13.1            | 50            | Thai Oil      |          |                               |  |                                         |
|                                                                                                                                                                                                                 | 3                                                 | 4              | 2           | dry slop                                              | 7.5             | 50            | Thai Oil      |          |                               |  |                                         |
|                                                                                                                                                                                                                 | 4                                                 | 4              | 2           | dry slop                                              | 7.5             | 87            | Thai Oil      |          |                               |  |                                         |
|                                                                                                                                                                                                                 | 5                                                 | 12             | 2           | dry slop                                              | 2.8             | 142           | Thai Oil      |          |                               |  |                                         |
|                                                                                                                                                                                                                 | 6                                                 | 3              | 2           | Raw water                                             | 3.5             | 27            | Thai Oil      |          |                               |  |                                         |
|                                                                                                                                                                                                                 | 7                                                 | 3              | 2           | Plant air                                             | 6.9             | 40            | Thai Oil      |          |                               |  |                                         |
|                                                                                                                                                                                                                 | 8                                                 | 12             | 2           | Steam                                                 | 2.8             | 142           | Thai Oil      |          |                               |  |                                         |
|                                                                                                                                                                                                                 | 9                                                 | 3              | 2           | Raw water                                             | 3.5             | 27            | Thai Oil      |          |                               |  |                                         |
|                                                                                                                                                                                                                 | 10                                                | 3              | 2           | Plant air                                             | 6.9             | 40            | Thai Oil      |          |                               |  |                                         |
|                                                                                                                                                                                                                 | 11                                                | 3              | 2           | Raw water                                             | 3.5             | 27            | Thai Oil      |          |                               |  |                                         |
|                                                                                                                                                                                                                 | 12                                                | 16             | 2           | Cooling water                                         | 2.1             | 42            | Thai Oil      |          |                               |  |                                         |
|                                                                                                                                                                                                                 | 13                                                | 16             | 2           | Cooling water                                         | 4.5             | 32            | Thai Oil      |          |                               |  |                                         |
|                                                                                                                                                                                                                 | 14                                                | 2              | 2           | Inert gas                                             | 7.3             | 35            | Thai Oil      |          |                               |  |                                         |
|                                                                                                                                                                                                                 | 15                                                | 10             | 8           | Steam                                                 | 13.8            | 238           | Thai Oil      |          |                               |  |                                         |
|                                                                                                                                                                                                                 | 16                                                | 6              | 4           | Condensate                                            | 0.7             | 115           | Thai Oil      |          |                               |  |                                         |
|                                                                                                                                                                                                                 | 17                                                | 2              | 2           | Inert gas                                             | 7.3             | 35            | Thai Oil      |          |                               |  |                                         |
| 23                                                                                                                                                                                                              | PTTGC5-ARDB II Total 94 Tie-in cold tap           |                |             |                                                       |                 |               |               | Sep-15   | fittings, welding & hot tap   |  |                                         |
|                                                                                                                                                                                                                 | 97                                                | 2" to 48"      | 3/4" to 30" | cold tap                                              | atm             | amb           | PTTGC 5       |          |                               |  |                                         |
| 24                                                                                                                                                                                                              | PTTGSP - 4 of 4" & 6" hot tap for fire water line |                |             |                                                       |                 |               |               | Oct-15   | fittings, welding & hot tap   |  |                                         |
|                                                                                                                                                                                                                 | 4                                                 | 12"            | 4" & 6"     | fire water                                            | 7 bar           | amb           | PTTGSP        |          |                               |  |                                         |
| 25                                                                                                                                                                                                              | PTTGSP - Hot tap cold flare 14"x14"-150#          |                |             |                                                       |                 |               |               | Nov-15   | fittings, welding & hot tap   |  |                                         |
|                                                                                                                                                                                                                 | 1                                                 | 14"            | 14"         | Flare                                                 | 1               | amb           | PTTGSP        |          |                               |  |                                         |
| 26                                                                                                                                                                                                              | Brave 10"x3"-150# Angle tap for flare line        |                |             |                                                       |                 |               |               | Nov-15   | fittings, welding & hot tap   |  |                                         |
|                                                                                                                                                                                                                 | 1                                                 | 10"            | 3"          | Flare                                                 | 1               | amb           | PTTGSP#4      |          |                               |  |                                         |
| 27                                                                                                                                                                                                              | PTTGSP#4 / ITD 5 of various hot tap               |                |             |                                                       |                 |               |               | Dec-15   | fittings, welding & hot tap   |  |                                         |
|                                                                                                                                                                                                                 | 1                                                 | 8"             | 6"          | Hot oil                                               | 15bar           | 200           | PTTGSP#4      |          |                               |  |                                         |
|                                                                                                                                                                                                                 | 2                                                 | 8"             | 6"          | Hot oil                                               | 15bar           | 200           | PTTGSP#4      |          |                               |  |                                         |
|                                                                                                                                                                                                                 | 3                                                 | 4"             | 2"          | Condensate                                            | 1bar            | 35            | PTTGSP#4      |          |                               |  |                                         |
|                                                                                                                                                                                                                 | 4                                                 | 4"             | 2"          | Condensate                                            | 1bar            | 35            | PTTGSP#4      |          |                               |  |                                         |
|                                                                                                                                                                                                                 | 5                                                 | 10"            | 8"          | Flare                                                 | 1bar            | 30            | PTTGSP#4      |          |                               |  |                                         |
| 28                                                                                                                                                                                                              | PTTNGD-Term Engineering                           |                |             | In-service welding of 4 nos 16"-600# STOPPLE FITTINGS |                 |               |               | Dec-15   | WELDING                       |  | High pressure Hot tap                   |
|                                                                                                                                                                                                                 | 1                                                 | 16"            | 16"         | Natural gas                                           | 40              | 35            | Bang poo      |          |                               |  |                                         |
| 29                                                                                                                                                                                                              | LABIX                                             |                |             | 2 nos. 4"x4"-300# Hot tap work                        |                 |               |               | Jan-16   | fittings, welding & hot tap   |  |                                         |
|                                                                                                                                                                                                                 | 1                                                 | 4"             | 4"          | Raffinate                                             | 19              | 200           | LABIX         |          |                               |  |                                         |
|                                                                                                                                                                                                                 | 2                                                 | 4"             | 4"          | Condensate                                            | 4               | 35            | LABIX         |          |                               |  |                                         |
| 30                                                                                                                                                                                                              | Thai Oil                                          |                |             | 2 nos. 16"x10"-150# Hot tap work                      |                 |               |               | Jan-16   | Hot tap                       |  |                                         |
|                                                                                                                                                                                                                 |                                                   |                |             |                                                       |                 |               |               |          |                               |  |                                         |
| 31                                                                                                                                                                                                              | PTTGSP/CKC                                        |                |             | 3 nos of 1" Line Stop Services                        |                 |               |               | Feb-16   | Fittings, Welding & Line stop |  |                                         |
|                                                                                                                                                                                                                 |                                                   |                |             |                                                       |                 |               |               |          |                               |  |                                         |
| 32                                                                                                                                                                                                              | Thai Oil                                          |                |             | 2 nos. 12"x4"-150# Hot tap work                       |                 |               |               | Feb-16   | Hot tap                       |  |                                         |
|                                                                                                                                                                                                                 |                                                   |                |             |                                                       |                 |               |               |          |                               |  |                                         |
| 33                                                                                                                                                                                                              | Thai Oil                                          |                |             | 2 nos. 2"-150# Hot tap onto Tank T-3103               |                 |               |               | Feb-16   | Hot tap                       |  |                                         |
|                                                                                                                                                                                                                 |                                                   |                |             |                                                       |                 |               |               |          |                               |  |                                         |
| 34                                                                                                                                                                                                              | CKC/PTTGSP                                        |                |             | 7 nos of various cold tap                             |                 |               |               | Mar-16   | Cold tap                      |  |                                         |
|                                                                                                                                                                                                                 |                                                   |                |             |                                                       |                 |               |               |          |                               |  |                                         |
| 34                                                                                                                                                                                                              | RIC/PTTGSP                                        |                |             | 5 nos of various hot tap for ESP project              |                 |               |               | Mar-16   | Hot tap                       |  |                                         |
|                                                                                                                                                                                                                 |                                                   |                |             |                                                       |                 |               |               |          |                               |  |                                         |
| 35                                                                                                                                                                                                              | Thai Oil                                          |                |             | Angle tap 14"x6" -500# for flare line                 |                 |               |               | Mar-16   | Welding & Hot tap             |  |                                         |
|                                                                                                                                                                                                                 |                                                   |                |             |                                                       |                 |               |               |          |                               |  |                                         |
| 36                                                                                                                                                                                                              | PTT Region 7 - Chana/Expert team                  |                |             |                                                       |                 |               |               | Apr-16   | Fitting, welding & hot tap    |  |                                         |
|                                                                                                                                                                                                                 | 1                                                 | 20             | 12          | Natural gas                                           | 1100 psi        | 32            | Chana         |          |                               |  | High pressure Hot tap                   |
|                                                                                                                                                                                                                 | 2                                                 | 20             | 12          | Natural gas                                           | 1100 psi        | 32            | Chana         |          |                               |  | High pressure Hot tap                   |
| 37                                                                                                                                                                                                              | PTTGSP-Chinese hat replacement                    |                |             |                                                       |                 |               | PTTGSP        | May-16   |                               |  |                                         |
| 38                                                                                                                                                                                                              | Samsung-ITD Joint Venture                         |                |             |                                                       |                 |               | Khao Bo Ya    | May-16   | Cold tap                      |  |                                         |
|                                                                                                                                                                                                                 | 1                                                 | 2              | 2           | Flare                                                 | 15 psi          | 32            |               |          |                               |  |                                         |
| 39                                                                                                                                                                                                              | Thai Oil                                          |                |             | Hot tap 6"x6"-600#                                    |                 |               |               | Jun-16   | Fitting, welding & hot tap    |  |                                         |
|                                                                                                                                                                                                                 | 1                                                 | 6              | 6           | Hot oil                                               | 50              | 180           |               |          |                               |  |                                         |
| 40                                                                                                                                                                                                              | Posco Engineering-2 of 2" Hot tap                 |                |             |                                                       |                 |               | Thai oil      | Jun-16   | Hot tap                       |  |                                         |
|                                                                                                                                                                                                                 | 1                                                 | Column         | 2           | HC                                                    | 29bar           | 30C           |               |          |                               |  |                                         |
|                                                                                                                                                                                                                 | 2                                                 | Column         | 2           | HC                                                    | 29bar           | 30C           |               |          |                               |  |                                         |

| POWERPIPE CO.,LTD.                                      |                                                 |                        |               |                |                   |               |              |          |                                  |                                                   | Remarks |
|---------------------------------------------------------|-------------------------------------------------|------------------------|---------------|----------------|-------------------|---------------|--------------|----------|----------------------------------|---------------------------------------------------|---------|
| PROJECT REFERENCE LIST-HOT TAP, LINE STOP & PIPING WORK |                                                 |                        |               |                |                   |               |              |          |                                  |                                                   |         |
| ITEM                                                    | TIE-IN No.                                      | Main line size         | Branch size   | SERVICE        | PRESS.<br>(Bar/g) | TEMP.<br>(°C) | Location     | Duration | Scope of work                    |                                                   |         |
| 41                                                      | Thai Oil-2" Single stople for Super heat steam  |                        |               |                |                   |               |              |          |                                  |                                                   |         |
|                                                         | 1                                               | 2"x1"-1500#            | 2"            | HP Steam       | 110 bar           | 190C          | Thaioil      | Jul-16   | Hot tap & Line stop              | Hot tap & Line stop for High pressure & High temp |         |
|                                                         |                                                 |                        |               |                |                   |               |              |          |                                  |                                                   |         |
| 42                                                      | PTTME                                           |                        |               |                |                   |               | PTTGSP       | Jul-16   | Fitting, welding & hot tap       |                                                   |         |
|                                                         | TP-12                                           | 2"                     | 2"            | Condensate     |                   |               |              |          |                                  |                                                   |         |
|                                                         | TP-27                                           | 2"                     | 2"            | Condensate     |                   |               |              |          |                                  |                                                   |         |
|                                                         | TP-54                                           | 2"                     | 2"            | Nitrogen       |                   |               |              |          |                                  |                                                   |         |
|                                                         | TP-55                                           | 2"                     | 2"            | Nitrogen       |                   |               |              |          |                                  |                                                   |         |
|                                                         | TP-67                                           | 2"                     | 2"            | Condensate     |                   |               |              |          |                                  |                                                   |         |
|                                                         | TP-70                                           | 2"                     | 2"            | Condensate     |                   |               |              |          |                                  |                                                   |         |
|                                                         | TP-11                                           | 6"                     | 4"            | Flare gas      |                   |               |              |          |                                  | Angle tap                                         |         |
|                                                         | TP-28                                           | 6"                     | 6"            | Condensate     |                   |               |              |          |                                  |                                                   |         |
|                                                         | TP-40                                           | 6"                     | 2"            | Condensate     |                   |               |              |          |                                  |                                                   |         |
|                                                         | TP-25                                           | 10"                    | 4"            | Flare gas      |                   |               |              |          |                                  | Angle tap                                         |         |
|                                                         | TP-26                                           | 10"                    | 10"           | Flare gas      |                   |               |              |          |                                  | Angle tap                                         |         |
|                                                         | TP-39                                           | 24"                    | 4"            | Flare gas      |                   |               |              |          |                                  | Angle tap                                         |         |
|                                                         |                                                 |                        |               |                |                   |               |              |          |                                  |                                                   |         |
| 43                                                      | Chart Kamchang Co., Ltd.                        |                        |               |                |                   |               | Thai Oil     | Aug-16   | Fitting, welding, hot tap & line |                                                   |         |
|                                                         | 1                                               | 1"                     | 1"            | HC             | 17bar             | 35C           |              |          |                                  | Line stop 1"                                      |         |
| 44                                                      | Union Construction Co., Ltd.                    |                        |               |                |                   |               | Thai Oil     | Sep-16   | Fitting, welding & hot tap       |                                                   |         |
|                                                         | 1                                               | 12"                    | 12"           | UG 95          | 8 bar             | 35C           |              |          |                                  | total 4 tie-in points                             |         |
| 45                                                      | Chart Kamchang Co., Ltd.                        |                        |               |                |                   |               | Thai Oil     | Sep-16   | Fitting, welding & hot tap       |                                                   |         |
|                                                         | 1                                               | 8"                     | 8"            | Naphta         | 8 bar             | 35C           |              |          |                                  |                                                   |         |
| 46                                                      | PTTME                                           |                        |               |                |                   |               | PTT region#1 | Oct-16   | Fitting, welding, hot tap & line |                                                   |         |
|                                                         | 1                                               | 3"                     | 3"            | NG             | 15 bar            | 35C           |              |          |                                  | Line stop 3"                                      |         |
| 47                                                      | Union Construction Co., Ltd.                    |                        |               |                |                   |               | Thai Oil     | Oct-16   | Fitting, welding & hot tap       |                                                   |         |
|                                                         | 1                                               | 10"                    | 2"            | MP Steam       | 60 bar            | 120C          |              |          |                                  |                                                   |         |
|                                                         | 2                                               | 6"                     | 3"            | Slop           | 2 bar             | 40C           |              |          |                                  |                                                   |         |
|                                                         | 3                                               | 4"                     | 2"            | N2             | 7 bar             | 35c           |              |          |                                  |                                                   |         |
|                                                         | 4                                               | 40"                    | 4"            | Steam to flare | 9 bar             | 120C          |              |          |                                  |                                                   |         |
|                                                         | 5                                               | 3"                     | 2"            | Condensate     | 3 bar             | 60C           |              |          |                                  |                                                   |         |
|                                                         | 6                                               | 10"                    | 2"            | LP Steanm      | 15 bar            | 120C          |              |          |                                  |                                                   |         |
| 48                                                      | PTT Public Co., Ltd.                            |                        |               |                |                   |               | PTTGSP\$4    | Nov-16   | Fitting, welding & hot tap       |                                                   |         |
|                                                         | 1                                               | 48"                    | 12"           | NG             | 1200 psi          | 30C           |              |          |                                  |                                                   |         |
|                                                         | 2                                               | 20"                    | 12"           | NG             | 1200 psi          | 30C           |              |          |                                  |                                                   |         |
|                                                         | 3                                               | 20"                    | 12"           | NG             | 1200 psi          | 30C           |              |          |                                  |                                                   |         |
| 49                                                      | Yokokawa Co., Ltd.                              |                        |               |                |                   |               | PTTGSP       | Nov-16   | Hot tap                          |                                                   |         |
|                                                         | 1                                               | 1/2"                   | 2"            | IA             | 7 bar             | 35C           |              |          |                                  |                                                   |         |
| 50                                                      | Bestech Co., Ltd.                               |                        |               |                |                   |               | PTTGSP       | Nov-16   | Hot tap                          |                                                   |         |
|                                                         | 1                                               | 8"                     | 4"            | Fire water     | 7 bar             | 25c           |              |          |                                  |                                                   |         |
| 51                                                      | Rayong Olefin Co., Ltd.                         |                        |               |                |                   |               | SCG          | Dec-16   | Hot tap                          |                                                   |         |
|                                                         | 1                                               | 24"                    | 2"            | HP Steam       | 75 bar            | 270C          |              |          |                                  |                                                   |         |
|                                                         | 2                                               | 24"                    | 1"            | HP Steam       | 75 bar            | 270C          |              |          |                                  |                                                   |         |
| 52                                                      | Thai Oil Co., Ltd.                              |                        |               |                |                   |               | Thai Oil     | Dec-16   | Hot tap                          |                                                   |         |
|                                                         | 1                                               | 16"                    | 4"            | Flare          | 1 bar             | 35C           |              |          |                                  | Angle tap 45 Degree                               |         |
|                                                         | 2                                               | 6"                     | 3"            | Hot oil        | 12 bar            | 230C          |              |          |                                  |                                                   |         |
| 53                                                      | Polytech Co., Ltd.                              |                        |               |                |                   |               | GPSC         | Dec-16   | Hot tap                          |                                                   |         |
|                                                         | 1                                               | 12"                    | 12"           | NG             | 750 psi           | 25c           |              |          |                                  |                                                   |         |
| 54                                                      | Polytech Co., Ltd.                              |                        |               |                |                   |               | PTT region#5 | Jan-17   | Fitting, welding & hot tap       |                                                   |         |
|                                                         | 1                                               | 30"                    | 12"           | NG             | 1100psi           | 25c           |              |          |                                  |                                                   |         |
| 54                                                      | PTT                                             |                        |               |                |                   |               | PTT region#4 | Feb-17   | Fitting/welding repair sleeve    |                                                   |         |
|                                                         | 1                                               | Various Welding nozzle |               | NG             | 300psi            | 25c           |              |          |                                  |                                                   |         |
| 55                                                      | PTT Asahi                                       |                        |               |                |                   |               | PTT region#4 | Feb-17   | Fitting/welding repair sleeve    |                                                   |         |
|                                                         | 1                                               | Welding repair sleeve  |               | steam          | 750psi            | 230C          |              |          |                                  |                                                   |         |
| 56                                                      | Polytech Co., Ltd.                              |                        |               |                |                   |               | PTT Asahi    | Mar-17   | In-service welding               |                                                   |         |
|                                                         | 1                                               | 36"                    | 6"            | NG             | 850 psi           | 25c           |              |          |                                  |                                                   |         |
| 57                                                      | Kikuchi                                         |                        |               |                |                   |               | PTT Region#9 |          |                                  |                                                   |         |
|                                                         | 1                                               | 30"                    | 12"           | NG             | 1100psi           | 25c           |              | Apr-17   | In-service welding               |                                                   |         |
| 58                                                      | Polytech Co., Ltd.                              |                        |               |                |                   |               |              |          |                                  |                                                   |         |
|                                                         | 1                                               | Variuos size 9 tie-in  |               | NG             | 400 psi           | 25c           | Map Ta Put   | May-17   | Fititng, welding & hot tap       |                                                   |         |
|                                                         |                                                 |                        |               |                |                   |               |              |          |                                  |                                                   |         |
| 59                                                      | Polytech Co., Ltd., Amata NGD Line stop 8"-600# |                        |               |                |                   |               |              |          |                                  | Line Stop                                         |         |
|                                                         | 1                                               | 8"                     | 8"            | NG             | 500 psi           | 25c           | Bowin        | May-17   | Fititng, welding & hot tap       |                                                   |         |
|                                                         |                                                 |                        |               |                |                   |               |              |          |                                  |                                                   |         |
| 60                                                      | Expert Team                                     |                        |               |                |                   |               |              |          |                                  |                                                   |         |
|                                                         | 1                                               | 24"                    | 16"           | NG             | 1100psi           | 25c           | Khanom       | May-17   | Fititng, welding & hot tap       | High pressure                                     |         |
| 61                                                      | PTT/Polytech                                    |                        |               |                |                   |               |              |          |                                  |                                                   |         |
|                                                         | 1                                               | 28"                    | repair sleeve | NG             | 690 psi           | 25c           | Khanom       | May-17   | Welding repair sleeve            |                                                   |         |
| 62                                                      | Thai Oil                                        |                        |               |                |                   |               |              |          |                                  |                                                   |         |
|                                                         | 1                                               | 8"                     | 3"            | Parafin        | 36 bar            | 130C          | Thai Oil     | Jun-17   | Fititng, welding & hot tap       | High pressure                                     |         |
|                                                         | 2                                               | 3"                     | 3"            | Parafin        | 25 bar            | 25c           | Thai Oil     | Jun-17   | Fititng, welding & Line stop     | Line Stop                                         |         |
| 63                                                      | PTTGSP/CES                                      |                        |               |                |                   |               |              |          |                                  |                                                   |         |
|                                                         | 1                                               | 8"                     | 4"            | Flare          | 1 bar             | 30C           | GSP#4        | Jul-17   | Fititng, welding & hot tap       | Angle tap 45 Degree                               |         |
|                                                         | 2                                               | 2"                     | 2"            | HC             | 7 bar             | 25c           | GSP#4        | Jul-17   | Fititng, welding & hot tap       |                                                   |         |
| 64                                                      | PTTGSP                                          |                        |               |                |                   |               |              |          |                                  |                                                   |         |
|                                                         | TP-01                                           | 16"                    | 6"            | Flare          | 1 bar             | 30C           | GSP#4        | Jul-17   | Fititng, welding & hot tap       | Angle tap 45 Degree                               |         |

| POWERPIPE CO.,LTD.                                      |                                                            |                |                   |                |                   |               |               |                  |                                         |                                    |  |
|---------------------------------------------------------|------------------------------------------------------------|----------------|-------------------|----------------|-------------------|---------------|---------------|------------------|-----------------------------------------|------------------------------------|--|
| PROJECT REFERENCE LIST-HOT TAP, LINE STOP & PIPING WORK |                                                            |                |                   |                |                   |               |               |                  |                                         |                                    |  |
| ITEM                                                    | TIE-IN No.                                                 | Main line size | Branch size       | SERVICE        | PRESS.<br>(Bar/g) | TEMP.<br>(°C) | Location      | Duration         | Scope of work                           | Remarks                            |  |
|                                                         | TP-02                                                      | 16"            | 6"                | Flare          | 1 bar             | 30C           | GSP#4         | Jul-17           | Fitting, welding & hot tap              | Angle tap 45 Degree                |  |
| 65                                                      | Polytechnology                                             |                |                   |                |                   |               |               |                  |                                         |                                    |  |
|                                                         | TP-01                                                      | 2"             | 24"               | Natural gas    | 900 psi           | 30C           | North Bangkok | Aug-18           | Fitting, welding & hot tap              |                                    |  |
| 66                                                      | Bangkok Industrial Gas                                     |                |                   |                |                   |               |               |                  |                                         |                                    |  |
|                                                         | 1                                                          | 2"             | 14"               | Steam          | 60bar             | 270C          | BIG           | Aug-18           | Fitting, welding & hot tap              |                                    |  |
| 67                                                      | Rayong Intania-PTTGSP 4" angle tap onto 10" pipe           |                |                   |                |                   |               |               |                  |                                         |                                    |  |
|                                                         | TP-01                                                      | 6"             | 10"               | Flare          | 1 bar             | 30C           | PTTGSP        | Sep-17           | Fitting, welding & hot tap              | Angle tap 45 Degree                |  |
| 68                                                      | Bankai Concrete Co.,Ltd.                                   |                |                   |                |                   |               |               |                  |                                         |                                    |  |
|                                                         | 1                                                          | 20"            | 40"               | Water          | 4 bar             | 30C           | Maptaphut     | Sep-17           | Fitting, welding & hot tap              |                                    |  |
| 69                                                      | August Thai Tech Co.,Ltd./Bangkok Glass plant              |                |                   |                |                   |               |               |                  |                                         |                                    |  |
|                                                         | TP-01                                                      | 8"             | 8"                | Natural gas    | 4 bar             | 30C           | BGC           | Oct-17           | Fitting, welding & Line stop            | Line stop 8"                       |  |
|                                                         | TP-02                                                      | 6"             | 8"                | Natural gas    | 4 bar             | 30C           | BGC           | Oct-17           | Fitting, welding & Line stop            | by pass line                       |  |
| 70                                                      | Map Ta Phut Olefin Co.,Ltd.                                |                |                   |                |                   |               |               |                  |                                         |                                    |  |
|                                                         | 1                                                          | 10"            | 10"               | Steam          | 750psi            | 300C          | MOC#7         | Nov-17           | Fitting & welding                       | Welding repair sleeve for steam    |  |
| 71                                                      | Polytechnology                                             |                |                   |                |                   |               |               |                  |                                         |                                    |  |
|                                                         | TP-01                                                      | 2"             | 36"               | Natural gas    | 900 psi           | 30C           | BV#9          | Nov-17           | Fitting, welding & hot tap              |                                    |  |
| 72                                                      | Rayong Olefins                                             |                |                   |                |                   |               |               |                  |                                         |                                    |  |
|                                                         | TP-01                                                      | 6"             | 6"                | Flare          | 1 bar             | 30C           | ROC           | Dec-17           | Fitting, welding & hot tap              | Angle tap 45 Degree                |  |
| 73                                                      | Esso - 9 nos. Hot tap & line stop for Benzene @ FE-20      |                |                   |                |                   |               |               |                  |                                         |                                    |  |
|                                                         | 1                                                          | 8"             | 8"                | Benzene        | 12 bar            | 75C           | Esso-Sriracha | Dec-17           | Fitting & Line stop                     | Line stop services                 |  |
|                                                         | 2                                                          | 8"             | 8"                | Benzene        | 12 bar            | 75C           | Esso-Sriracha | Dec-17           | Fitting & Line stop                     | Line stop services                 |  |
|                                                         | 3                                                          | 8"             | 8"                | Benzene        | 12 bar            | 75C           | Esso-Sriracha | Dec-17           | Fitting & Line stop                     | Line stop services                 |  |
|                                                         | 4                                                          | 4"             | 4"                | Benzene        | 12 bar            | 75C           | Esso-Sriracha | Dec-17           | Fitting & Line stop                     | Line stop services                 |  |
|                                                         | 5                                                          | 4"             | 4"                | Benzene        | 12 bar            | 75C           | Esso-Sriracha | Dec-17           | Fitting & Line stop                     | Line stop services                 |  |
|                                                         | 6                                                          | 4"             | 4"                | Benzene        | 12 bar            | 75C           | Esso-Sriracha | Dec-17           | Fitting & Line stop                     | Line stop services                 |  |
|                                                         | 7                                                          | 4"             | 4"                | Benzene        | 12 bar            | 75C           | Esso-Sriracha | Dec-17           | Fitting & Line stop                     | Line stop services                 |  |
|                                                         | 8                                                          | 4"             | 4"                | Benzene        | 12 bar            | 75C           | Esso-Sriracha | Dec-17           | Fitting & Line stop                     | Line stop services                 |  |
|                                                         | 9                                                          | 4"             | 4"                | Benzene        | 12 bar            | 75C           | Esso-Sriracha | Dec-17           | Fitting & Line stop                     | Line stop services                 |  |
| 74                                                      | Polytechnologh                                             |                |                   |                |                   |               |               |                  |                                         |                                    |  |
|                                                         | 1                                                          | 2"             | 16"               | Flare          | 1bar              | 30C           | Sriracha      | Jan-18           | Fitting, welding & hot tap              |                                    |  |
| 75                                                      | WES- 4 nos of 4" hot tap onto 16" water pipe               |                |                   |                |                   |               |               |                  |                                         |                                    |  |
|                                                         | 1                                                          | 4"             | 16"               | Water          | 7 bar             | 30C           | Ayudthaya     | Jan-18           | Hot tap service                         |                                    |  |
| 76                                                      | Rayong intania                                             |                |                   |                |                   |               |               |                  |                                         |                                    |  |
|                                                         | 1                                                          | 2"             | 24"               | Natural gas    | 600 psi           | 30C           | PTTGSP        | Feb-18           | Fitting, welding & hot tap              |                                    |  |
| 77                                                      | Rayong Olefin                                              |                |                   |                |                   |               |               |                  |                                         |                                    |  |
|                                                         | 1                                                          | 1"             | 6"                | Steam          | 34 bar            | 300C          | ROC           | Feb-18           | Fitting, welding & hot tap              |                                    |  |
| 78                                                      | Esso - 18" & 16"-150# hot tap & line stop @ E-110          |                |                   |                |                   |               |               |                  |                                         |                                    |  |
|                                                         | 1                                                          | 18"            | 18"               | Naptha         | 8bar              | 70c           | Esso-Sriracha | Feb-18           | Fitting & Line stop                     | Line stop services                 |  |
|                                                         | 2                                                          | 16"            | 16"               | Naptha         | 8bar              | 70C           | Esso-Sriracha | Feb-18           | Fitting & Line stop                     | Line stop services                 |  |
| 79                                                      | Esso - 2 no of 24"-150# hot tap onto 30" cement lined pipe |                |                   |                |                   |               |               |                  |                                         |                                    |  |
|                                                         | 1                                                          | 24"            | 30"               | Sea water      | 7 bar             | 25/c          | Esso-Sriracha | Mar-18           | Fitting & hot tap                       |                                    |  |
| 80                                                      | Glow Energy-2"-1500# Single line stop for superheat steam  |                |                   |                |                   |               |               |                  |                                         |                                    |  |
|                                                         | 1                                                          | 2"             | 2"                | Steam          | 80 bar            | 250c          | Maptaphut     | Mar-18           | Fitting, welding & Line stop            | Line stop 2"-1500#                 |  |
| 81                                                      | China Petroleum Pipeline 8"x8"-600# NLL2                   |                |                   |                |                   |               |               |                  |                                         |                                    |  |
|                                                         | 1                                                          | 8"             | 8"                | NG             | 810 psi           | 25C           | Gulf SPP      | Apr-18           | Fitting, welding & Line stop            |                                    |  |
| 82                                                      | PTTGSP 12"-600# Line stop                                  |                |                   |                |                   |               |               |                  |                                         |                                    |  |
|                                                         | 1                                                          | 12"            | 12"               | NG             | 700psi            | 30C           | PTTGSP        | Sep-17           | Fitting, welding & Line stop            | Hot tap , Line stop & piping work  |  |
|                                                         | 2                                                          | 12"            | 12"               | NG             | 700psi            | 30C           | PTTGSP        | Sep-17           | Fitting, welding & Line stop            |                                    |  |
| 83                                                      | Bangkok Industrial gas                                     |                |                   |                |                   |               |               |                  |                                         |                                    |  |
|                                                         | 1                                                          | 3"             | 3"                | Nitrogen       | 7 bar             | 30C           | BIG-1         | Oct-18           | Fitting, welding & Hot tap              |                                    |  |
|                                                         | 2                                                          | 3"             | 3"                | Nitrogen       | 7 bar             | 30C           | BIG-1         | Oct-18           | Fitting, welding & Hot tap              |                                    |  |
| 84                                                      | Thai Oil-Early work Plot - X project                       |                |                   |                |                   |               |               |                  |                                         |                                    |  |
|                                                         | 17 tie-in                                                  | 3"&4"          | 16",24",36" & 40" | Crude, Naptha  | 3-10bar           | 30C           | Sriracha      | Nov-Dec18        | Fitting, welding & Hot tap              |                                    |  |
| 84                                                      | PTTGSP-TechAsia                                            |                |                   |                |                   |               |               |                  |                                         |                                    |  |
|                                                         | 4 tie-in                                                   | 2",3",4"       | 10",18",24" & 36" | Gas oil, flare | 3-10bar           | 30C           | PTTGSP        | Dec-18           | Fitting, welding & Hot tap              |                                    |  |
| 86                                                      | Bangkok Industrial gas                                     |                |                   |                |                   |               |               |                  |                                         |                                    |  |
|                                                         | 1                                                          | 30"            | 10"               | CWS            | 7 bar             | 30C           | BIG-1         | Dec-18           | Fitting, welding & Hot tap              |                                    |  |
|                                                         | 2                                                          | 30"            | 10"               | CWR            | 7 bar             | 30C           | BIG-1         | Dec-18           | Fitting, welding & Hot tap              |                                    |  |
| 87                                                      | Polytechnology BV-1 modification                           |                |                   |                |                   |               |               |                  |                                         |                                    |  |
|                                                         | 1                                                          | 34"            | 34"               | NG             | 1100              | 27            | Rayong        | Jan - Feb 19     | Hot tap , Line stop & piping work       |                                    |  |
|                                                         | 2                                                          | 34"            | 12"               | NG             | 1100              | 27            | Rayong        | Jan - Feb 19     | Hot tap , Line stop & piping work       |                                    |  |
| 88                                                      | Bangkok Industrial Gas                                     |                |                   |                |                   |               |               |                  |                                         |                                    |  |
|                                                         | 1                                                          | 24"            | 14"               | CWS            | 7 bar             | 25C           | Rayong        | March-April 2019 | Fitting, hot tap & Line stop            |                                    |  |
| 89                                                      | Italian Thai Development PCL.                              |                |                   |                |                   |               |               |                  |                                         |                                    |  |
|                                                         | 1                                                          | 30"            | 30"               | NG             | 900               | 27            | Rayong        | March-June 19    | Fitting , welding & hot tap & Line stop | 30"-900#                           |  |
|                                                         | 2                                                          | 30"            | 30"               | NG             | 900               | 27            | Rayong        | March-June 19    | Fitting , welding & hot tap & Line stop | 30"-600#                           |  |
| 90                                                      | Sriracha Construction                                      |                |                   |                |                   |               |               |                  |                                         |                                    |  |
|                                                         | 1                                                          | 8"             | 8"                | UG-91          | 4 bar             | 30C           | Thai Oil      | Jul-19           | Fitting , welding & hot tap             |                                    |  |
| 91                                                      | Thai Oil PCL.                                              |                |                   |                |                   |               |               |                  |                                         |                                    |  |
|                                                         | 1                                                          | 1.5"           | 2"                | Steam          | 30 bar            | 170c          | Thai Oil      | Aug-19           | Fitting , welding & hot tap & Line stop | High temp line stop for small size |  |
| 92                                                      | Polytechnology                                             |                |                   |                |                   |               |               |                  |                                         |                                    |  |
|                                                         | 1                                                          | 8"             | 6"                | NG             | 275 psi           | 25            | Saraburi      | Sep-19           | Fitting , welding & hot tap             |                                    |  |
| 93                                                      | Kikuchi Industry                                           |                |                   |                |                   |               |               |                  |                                         |                                    |  |
|                                                         | 1                                                          | 8"             | 6"                | NG             | 275 psi           | 25            | Saraburi      | Sep-19           | Fitting , welding & hot tap             |                                    |  |
| 94                                                      | TechAsia                                                   |                |                   |                |                   |               |               |                  |                                         |                                    |  |

| <div>  <div> POWERPIPE CO.,LTD.<br/> PROJECT REFERENCE LIST-HOT TAP, LINE STOP &amp; PIPING WORK </div> </div> |                          |                |             |          |                   |               |            |          |                                      |  |         |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|----------------|-------------|----------|-------------------|---------------|------------|----------|--------------------------------------|--|---------|
| ITEM                                                                                                                                                                                           | TIE-IN No.               | Main line size | Branch size | SERVICE  | PRESS.<br>(Bar/g) | TEMP.<br>(°C) | Location   | Duration | Scope of work                        |  | Remarks |
|                                                                                                                                                                                                | 1                        | 3"             | 24"         | Flare    | 15 psi            | 25            | PTTGSP     | Nov-19   | Fitting , welding & hot tap          |  |         |
|                                                                                                                                                                                                | 2                        | 4"             | 24"         | Flare    | 15 psi            | 25            | PTTGSP     | Nov-19   | Fitting , welding & hot tap          |  |         |
| 95                                                                                                                                                                                             | Air Liquide-Line stop 4" |                |             |          |                   |               |            |          |                                      |  |         |
|                                                                                                                                                                                                | 1                        | 4'             | 4"          | N2       | 13 bar            | 25C           | Lamchabang | Dec-19   | ting , welding & hot tap & Line stop |  |         |
| 96                                                                                                                                                                                             | Thai Oil PCL.            |                |             |          |                   |               |            |          |                                      |  |         |
|                                                                                                                                                                                                | 1                        | 3/4"           | 8"/12"/16"  | Steam    | 17 bar            | 160           | Thai Oil   | Dec-19   | Fitting , welding & hot tap          |  |         |
| 97                                                                                                                                                                                             | Thai Oil PCL.            |                |             |          |                   |               |            |          |                                      |  |         |
|                                                                                                                                                                                                | 1                        | 16"            | 16"         | Fuel oil | 3 bar             | 30            | Thai Oil   | Jan-19   | ting , welding & hot tap & Line stop |  |         |
| 98                                                                                                                                                                                             | CKC                      |                |             |          |                   |               |            |          |                                      |  |         |
|                                                                                                                                                                                                | 1                        | 10"            | 10"         | Benzene  | 6 bar             | 28            | Thai Oil   | Feb-19   | Fitting , welding & hot tap          |  |         |
| 99                                                                                                                                                                                             | Thysenkrupp              |                |             |          |                   |               |            |          |                                      |  |         |
|                                                                                                                                                                                                | 1                        | 8"             | 8"          | Water    | 6 bar             | 25            | BST        | Mar-19   | Fitting , welding & hot tap          |  |         |
|                                                                                                                                                                                                |                          |                |             |          |                   |               |            |          |                                      |  |         |
|                                                                                                                                                                                                |                          |                |             |          |                   |               |            |          |                                      |  |         |