

# ภาคผนวก ข-30

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HyCO Alarm & Trip setting

# Alarm and Trip Setting HyCO

## SEP'2019

## HyCO Alarm&Trip setting (Main Plant)

Update SEP'2019

| PID    | LOOP_NAME | Tag_number  | Description                      | DVS RANGE |      |         |      |     |     |     | Delay   | Effect |
|--------|-----------|-------------|----------------------------------|-----------|------|---------|------|-----|-----|-----|---------|--------|
|        |           |             |                                  | MIN       | MAX  | UNIT    | ALL  | AL  | AH  | AHH |         |        |
| 10PP01 | F10001    | FALL10001.A | Recycle N2 flow                  | 0         | 1600 | kg/h    | -    | 700 | -   | -   |         |        |
| 10PP01 | F10001    | FALL10001.A | Recycle N2 flow                  | 0         | 1600 | kg/h    | 600  | -   | -   | -   |         |        |
| 10PP01 | F10001    | FSL10001.A  | Recycle N2 flow                  |           |      |         | -    | -   | -   | -   |         |        |
| 10PP01 | F10002    | FDA10002    | NG feed flow                     |           |      | %       | -    | -   | -   | -   |         |        |
| 10PP01 | F10002    | FALL10002   | NG feed flow                     | 0         | 1900 | kg/h    | -    | 500 | -   | -   |         |        |
| 10PP01 | F10002    | FALL10002   | NG feed flow                     |           |      |         | -    | -   | -   | -   | 15 min  |        |
| 10PP01 | F10002    | FALL10002.A | NG feed flow                     | 0         | 1900 | kg/h    | -    | 500 | -   | -   |         |        |
| 10PP01 | F10002    | FALL10002.A | NG feed flow                     | 0         | 1900 | kg/h    | 250  | -   | -   | -   | 15 min  |        |
| 10PP01 | F10002    | FSL10002.A  |                                  |           |      |         | -    | -   | -   | -   | 15 min  |        |
| 10PP01 | F10002    | FALL10002.B | NG feed flow                     | 0         | 1900 | kg/h    | -    | 500 | -   | -   |         |        |
| 10PP01 | F10002    | FALL10002.B | NG feed flow                     | 0         | 1900 | kg/h    | 250  | -   | -   | -   | 15 min  |        |
| 10PP01 | F10002    | FSL10002.B  |                                  |           |      |         | -    | -   | -   | -   | 15 min  |        |
| 10PP01 | F10002    | FALL10002.C | NG feed flow                     | 0         | 1900 | kg/h    | -    | 500 | -   | -   |         |        |
| 10PP01 | F10002    | FALL10002.C | NG feed flow                     | 0         | 1900 | kg/h    | 250  | -   | -   | -   | 15 min  |        |
| 10PP01 | F10002    | FSL10002.C  |                                  |           |      |         | -    | -   | -   | -   | 15 min  |        |
| 10PP01 | P10002    | PDA10002    | NG feed pres.                    |           |      | %       | -    | -   | -   | -   |         |        |
| 10PP01 | T10002    | TDA10002    | NG feed temp.(TOC FEED TEMP.)    |           |      | %       | -    | -   | -   | -   |         |        |
| 10PP01 | F10003    | FALL10003.A | H2 recycle flow                  | 0         | 16   | kg/h    | -    | 8   | -   | -   |         |        |
| 10PP01 | F10003    | FAH10003.A  | H2 recycle flow                  | 0         | 16   | kg/h    | -    | -   | 15  | -   |         |        |
| 10PP03 | T10003    | TAH10003    | FDG Temp. control R1001          | 0         | 500  | °C      | -    | -   | 390 | -   |         |        |
| 10PP03 | T10003    | TAL10003    | FDG Temp. control R1002          | 0         | 500  | °C      | -    | 300 | -   | -   |         |        |
| 10PP04 | L10004    | LAHH10004   | Level in E1012                   | 0         | 100  | %       | -    | -   | -   | -   | 5 sec.  |        |
| 10PP04 | L10004    | LSHH10004   | Level in E1012                   | 0         | 100  | %       | -    | -   | -   | -   | 5 sec.  |        |
| 10PP02 | F10005    | FDA10005    | LPG feed flow                    |           |      | %       | -    | -   | -   | -   |         |        |
| 10PP02 | F10005    | FALL10005   | LPG feed flow                    | 0         | 2200 | kg/h    | -    | 550 | -   | -   |         |        |
| 10PP02 | F10005    | FALL10005   |                                  |           |      |         | -    | -   | -   | -   | 15 min. |        |
| 10PP02 | F10005    | FALL10005.A | LPG feed flow                    | 0         | 2200 | kg/h    | -    | 550 | -   | -   |         |        |
| 10PP02 | F10005    | FALL10005.A | LPG feed flow                    | 0         | 2200 | kg/h    | 380  | -   | -   | -   | 15 min. |        |
| 10PP02 | F10005    | FSL10005.A  |                                  |           |      |         | -    | -   | -   | -   | 15 min. |        |
| 10PP02 | F10005    | FALL10005.B | LPG feed flow                    | 0         | 2200 | kg/h    | -    | 550 | -   | -   |         |        |
| 10PP02 | F10005    | FALL10005.B | LPG feed flow                    | 0         | 2200 | kg/h    | 380  | -   | -   | -   | 15 min. |        |
| 10PP02 | F10005    | FSL10005.B  |                                  |           |      |         | -    | -   | -   | -   | 15 min. |        |
| 10PP02 | F10005    | FALL10005.C | LPG feed flow                    | 0         | 2200 | kg/h    | -    | 550 | -   | -   |         |        |
| 10PP02 | F10005    | FALL10005.C | LPG feed flow                    | 0         | 2200 | kg/h    | 380  | -   | -   | -   | 15 min. |        |
| 10PP02 | F10005    | FSL10005.C  |                                  |           |      |         | -    | -   | -   | -   | 15 min. |        |
| 10PP02 | F10005    | FAHH10005.D |                                  |           |      |         | -    | -   | -   | 700 | 5 sec.  |        |
| 10PP02 | F10005    | FSHH10005.D |                                  |           |      |         | -    | -   | -   | -   | 5 sec.  |        |
| 10PP02 | F10005    | FAHH10005.E |                                  |           |      |         | -    | -   | -   | 700 | 5 sec.  |        |
| 10PP02 | F10005    | FSHH10005.E |                                  |           |      |         | -    | -   | -   | -   | 5 sec.  |        |
| 10PP02 | F10005    | FAHH10005.F |                                  |           |      |         | -    | -   | -   | 700 | 5 sec.  |        |
| 10PP02 | F10005    | FSHH10005.F |                                  |           |      |         | -    | -   | -   | -   | 5 sec.  |        |
| 10PP02 | P10005    | PDA10005    | LPG feed pres.                   |           |      | %       | -    | -   | -   | -   |         |        |
| 10PP02 | T10005    | TDA10005    | LPG feed temp.                   |           |      | %       | -    | -   | -   | -   |         |        |
| 10PP04 | F10006    | FALL1006    | Steam to carbon ratio (LPG feed) |           |      |         | 2.06 | -   | -   | -   | 5 sec.  |        |
| 10PP04 | F10006    | FALL1006.A  | Steam to carbon ratio (LPG feed) | 0         | 100  | mol/mol | 2.06 | -   | -   | -   | 5 sec.  |        |
| 10PP04 | F10006    | FSL1006.A   | Steam to carbon ratio (LPG feed) | 0         | 100  | mol/mol | -    | -   | -   | -   | 5 sec.  |        |
| 10PP04 | F10006    |             | Steam to carbon ratio (LPG feed) | 0         | 100  | mol/mol | 2.06 | -   | -   | -   | 5 sec.  |        |
| 10PP04 | F10006    | FSL1006.B   | Steam to carbon ratio (LPG feed) | 0         | 100  | mol/mol | -    | -   | -   | -   | 5 sec.  |        |
| 10PP04 | F10006    | FALL1006.C  | Steam to carbon ratio (LPG feed) | 0         | 100  | mol/mol | 2.06 | -   | -   | -   | 5 sec.  |        |
| 10PP04 | F10006    | FSL1006.C   | Steam to carbon ratio (LPG feed) | 0         | 100  | mol/mol | -    | -   | -   | -   | 5 sec.  |        |
| 10PP02 | P10006    | PDAH10006   | Pres. Drop of E1011              | 0         | 1    | barg    | -    | -   | 0.5 | -   | 5 sec.  |        |
| 10PP04 | F10008    | FALL1008    | Total steam flow (LPG feed)      |           |      |         | 1300 | -   | -   | -   | 5 sec.  |        |
| 10PP04 | F10008    | FALL1008.A  | Total steam flow (LPG feed)      | 0         | 6000 | kg/h    | 1300 | -   | -   | -   | 5 sec.  |        |
| 10PP04 | F10008    | FSL1008.A   | Total steam flow (LPG feed)      | 0         | 6000 | kg/h    | -    | -   | -   | -   | 5 sec.  |        |
| 10PP04 | F10008    | FALL1008.B  | Total steam flow (LPG feed)      | 0         | 6000 | kg/h    | 1300 | -   | -   | -   | 5 sec.  |        |
| 10PP04 | F10008    | FSL1008.B   | Total steam flow (LPG feed)      | 0         | 6000 | kg/h    | -    | -   | -   | -   | 5 sec.  |        |
| 10PP04 | F10008    | FALL1008.C  | Total steam flow (LPG feed)      | 0         | 6000 | kg/h    | 1300 | -   | -   | -   | 5 sec.  |        |
| 10PP04 | F10008    | FSL1008.C   | Total steam flow (LPG feed)      | 0         | 6000 | kg/h    | -    | -   | -   | -   | 5 sec.  |        |
| 10PP03 | T10008    | TAH10008    |                                  |           |      |         | -    | -   | -   | -   |         |        |
| 10PP05 | F10011    | FDA10011    | R1105 steam flow                 |           |      | %       | -    | -   | -   | -   |         |        |

BMS trip

## HyCO Alarm&Trip setting (Main Plant)

Update SEP'2019

| PID    | LOOP_NAME | Tag_number  | Description                       | DVS RANGE |      |         |      |      |     |     | Delay  | Effect |
|--------|-----------|-------------|-----------------------------------|-----------|------|---------|------|------|-----|-----|--------|--------|
|        |           |             |                                   | MIN       | MAX  | UNIT    | ALL  | AL   | AH  | AHH |        |        |
| 10PP05 | F10011    | FDA10011.A  |                                   |           |      |         | -    | -    | -   | -   |        |        |
| 10PP05 | F10011    | FDA10011.A  |                                   |           |      |         | -    | -    | -   | -   |        |        |
| 10PP05 | T10011    | TDA10011    | Process steam temp.               |           |      | %       | -    | -    | -   | -   |        |        |
| 10PP05 | F10012    | FDA10012    | Reformer steam flow               |           |      | %       | -    | -    | -   | -   |        |        |
| 10PP04 | H10012    | HA10012     |                                   |           |      |         | -    | -    | -   | -   |        |        |
| 10PP05 | P10012    | PDA10012    | Reformer steam pres.              |           |      | %       | -    | -    | -   | -   |        |        |
| 10PP05 | T10012    | TAL10012    | Feed Gas Temp.                    | 0         | 500  | °C      | -    | 350  | -   | -   |        |        |
| 10PP06 | P10013    | PDAL10013   | Pres.Drop CO2 import valve        | 0         | 60   | barg    | -    | 0.15 | -   | -   |        |        |
| 10PP06 | P10013    | PDALL10013  | Pres.Drop CO2 import valve        | 0         | 60   | barg    | 0.1  | -    | -   | -   |        |        |
| 10PP06 | P10013    | PDSSL10013  | Pres.Drop CO2 import valve        | 0         | 60   | barg    | 0.1  | -    | -   | -   |        |        |
| 10PP06 | T10013    | TAL10013    | CO2 import temp.                  | 0         | 60   | °C      | -    | 7    | -   | -   |        |        |
| 10PP04 | H10014    | HA10014     |                                   |           |      |         | -    | -    | -   | -   |        |        |
| 10PP03 | T10014    | TAHH10014   |                                   |           |      |         | -    | -    | -   | 420 | 5 sec. |        |
| 10PP03 | T10014    | TAH10014.A  | Temp.1st.Bed of R1001             | 0         | 500  | °C      | -    | -    | 410 | -   | 5 sec. |        |
| 10PP03 | T10014    | TAHH10014.A | Temp.1st.Bed of R1001             | 0         | 500  | °C      | -    | -    | -   | 420 | 5 sec. |        |
| 10PP03 | T10014    | TSHH10014.A |                                   |           |      |         | -    | -    | -   | -   | 5 sec. |        |
| 10PP03 | T10014    | TAH10014.B  | Temp.1st.Bed of R1001             | 0         | 500  | °C      | -    | -    | 410 | -   | 5 sec. |        |
| 10PP03 | T10014    | TAHH10014.B | Temp.1st.Bed of R1001             | 0         | 500  | °C      | -    | -    | -   | 420 | 5 sec. |        |
| 10PP03 | T10014    | TSHH10014.B |                                   |           |      |         | -    | -    | -   | -   | 5 sec. |        |
| 10PP03 | T10014    | TAH10014.C  | Temp.1st.Bed of R1001             | 0         | 500  | °C      | -    | -    | 410 | -   | 5 sec. |        |
| 10PP03 | T10014    | TAHH10014.C | Temp.1st.Bed of R1001             | 0         | 500  | °C      | -    | -    | -   | 420 | 5 sec. |        |
| 10PP03 | T10014    | TSHH10014.C |                                   |           |      |         | -    | -    | -   | -   | 5 sec. |        |
| 10PP03 | T10014    | TAH10014.C  | Temp.1st.Bed of R1001             | 0         | 500  | °C      | -    | -    | 410 | -   | 5 sec. |        |
| 10PP03 | T10014    | TAHH10014.C | Temp.1st.Bed of R1001             | 0         | 500  | °C      | -    | -    | -   | 420 | 5 sec. |        |
| 10PP03 | T10014    | TSHH10014.C |                                   |           |      |         | -    | -    | -   | -   | 5 sec. |        |
| 10PP06 | F10016    | FDA10016    |                                   |           |      | %       | -    | -    | -   | -   |        |        |
| 10PP06 | F10016    | FAL10016    | CO2/LPG Ratio                     | 0         | 4500 | kg/h    | -    | 400  | -   | -   |        |        |
| 10PP06 | F10016    | FSL10016    | CO2/LPG Ratio                     | 0         | 100  |         | -    | 1.2  | -   | -   |        |        |
| 10PP06 | F10016    | FSSL10016.H | CO2/LPG Ratio                     | 0         | 100  |         | -    | -    | -   | -   |        |        |
| 10PP01 | T10016    | TAH10016    | Ref.gas temp.                     | 0         | 500  | °C      | -    | -    | 400 | -   |        |        |
| 10PP06 | F10017    | FDA10017    |                                   |           |      | %       | -    | -    | -   | -   |        |        |
| 10PP03 | T10017    | TAH10017    | OUTLET TEMP. OF R1001             | 0         | 500  | °C      | -    | -    | 400 | -   |        |        |
| 10PP03 | T10017    | TAL10017    | OUTLET TEMP. OF R1002             | 0         | 500  | °C      | -    | 370  | -   | -   |        |        |
| 10PP04 | F10018    | FALL10018   | Total steam ratio (LPG feed)      |           |      |         | -    | -    | -   | -   |        |        |
| 10PP04 | F10018    | FALL10018.A | Flow ratio steam/LPG              | 0         | 100  |         | 1.45 | -    | -   | -   | 5 sec. |        |
| 10PP04 | F10018    | FSL10018.A  | Flow ratio steam/LPG              | 0         | 100  |         | -    | -    | -   | -   | 5 sec. |        |
| 10PP04 | F10018    | FALL10018.B | Flow ratio steam/LPG              | 0         | 100  |         | 1.45 | -    | -   | -   | 5 sec. |        |
| 10PP04 | F10018    | FSSL10018.B | Flow ratio steam/LPG              | 0         | 100  |         | -    | -    | -   | -   | 5 sec. |        |
| 10PP04 | F10018    | FALL10018.C | Flow ratio steam/LPG              | 0         | 100  |         | 1.45 | -    | -   | -   | 5 sec. |        |
| 10PP04 | F10018    | FSL10018.C  | Flow ratio steam/LPG              | 0         | 100  |         | -    | -    | -   | -   | 5 sec. |        |
| 10PP04 | F10506    | FALL10506   | Total ratio steam (NG feed)       | 0         | 100  | mol/mol | 2.08 | -    | -   | -   | 5 sec. |        |
| 10PP04 | F10506    | FALL10506.A | Total ratio steam (NG feed)       | 0         | 100  | mol/mol | 2.08 | -    | -   | -   | 5 sec. |        |
| 10PP04 | F10506    | FSL10506.A  | Total ratio steam (NG feed)       | 0         | 100  | mol/mol | -    | -    | -   | -   | 5 sec. |        |
| 10PP04 | F10506    | FALL10506.B | Total ratio steam (NG feed)       | 0         | 100  | mol/mol | 2.08 | -    | -   | -   | 5 sec. |        |
| 10PP04 | F10506    | FSL10506.B  | Total ratio steam (NG feed)       | 0         | 100  | mol/mol | -    | -    | -   | -   | 5 sec. |        |
| 10PP04 | F10506    | FALL10506.C | Total ratio steam (NG feed)       | 0         | 100  | mol/mol | 2.08 | -    | -   | -   | 5 sec. |        |
| 10PP04 | F10506    | FSSL10506.C | Total ratio steam (NG feed)       | 0         | 100  | mol/mol | -    | -    | -   | -   | 5 sec. |        |
| 10PP04 | F10508    | FALL10508   | Total steam flow(NG feed)         |           |      |         | -    | -    | -   | -   | 5 sec. |        |
| 10PP04 | F10508    | FALL10508.A | Total steam flow(NG feed)         | 0         | 6000 | kg/h    | 1200 | -    | -   | -   | 5 sec. |        |
| 10PP04 | F10508    | FSSL10508.A | Total steam flow(NG feed)         | 0         | 6000 | kg/h    | -    | -    | -   | -   | 5 sec. |        |
| 10PP04 | F10508    | FALL10508.B | Total steam flow(NG feed)         | 0         | 6000 | kg/h    | 1200 | -    | -   | -   | 5 sec. |        |
| 10PP04 | F10508    | FSL10508.B  | Total steam flow(NG feed)         | 0         | 6000 | kg/h    | -    | -    | -   | -   | 5 sec. |        |
| 10PP04 | F10508    | FALL10508.C | Total steam flow(NG feed)         | 0         | 6000 | kg/h    | 1200 | -    | -   | -   | 5 sec. |        |
| 10PP04 | F10508    | FSSL10508.C | Total steam flow(NG feed)         | 0         | 6000 | kg/h    | -    | 2.17 | -   | -   | 5 sec. |        |
| 10PP04 | F10511    | FALL10511.A | Steam to carbon ratio             | 0         | 100  | mol/mol | 2.08 | -    | -   | -   |        |        |
| 10PP04 | F10511    | FALL10511.A | Steam to carbon ratio             | 0         | 100  | mol/mol | -    | 1.72 | -   | -   |        |        |
| 10PP04 | F10511    | FALL10511.B | Total ratio steam to carbon ratio | 0         | 5    | mol/mol | 1.63 | -    | -   | -   |        |        |
| 10PP04 | F10511    | FALL10511.B | Total ratio steam to carbon ratio | 0         | 5    | mol/mol | -    | -    | -   | -   |        |        |
| 10PP04 | H10512    | HA10513     |                                   |           |      |         | -    | -    | -   | -   |        |        |
| 10PP06 | F10516    | FSSL10516   | CO2/TOC ratio                     | 0         | 100  | mol/mol | -    | -    | -   | -   |        |        |

PV10009, BMS

BMS trip

## HyCO Alarm&Trip setting (Main Plant)

Update SEP'2019

| PID    | LOOP_NAME | Tag_number  | Description                   | DVS RANGE |       |         |      |      |     |     | Delay  | Effect |
|--------|-----------|-------------|-------------------------------|-----------|-------|---------|------|------|-----|-----|--------|--------|
|        |           |             |                               | MIN       | MAX   | UNIT    | ALL  | AL   | AH  | AHH |        |        |
| 10PP06 | F10516    | FFSL10516.H |                               |           |       |         | -    | -    | -   | -   |        |        |
| 10PP04 | F10518    | FALL10518   | Flow ratio steam/toc          | 0         | 100   | mol/mol | 1.63 | -    | -   | -   | 5 sec. |        |
| 10PP04 | F10518    | FALL10518.A | Flow ratio steam/toc          | 0         | 100   | mol/mol | 1.63 | -    | -   | -   | 5 sec. |        |
| 10PP04 | F10518    | FSL10518.A  | Flow ratio steam/toc          | 0         | 100   | mol/mol | -    | -    | -   | -   | 5 sec. |        |
| 10PP04 | F10518    | FALL10518.B | Flow ratio steam/toc          | 0         | 100   | mol/mol | 1.63 | -    | -   | -   | 5 sec. |        |
| 10PP04 | F10518    | FSL10518.B  | Flow ratio steam/toc          | 0         | 100   | mol/mol | -    | -    | -   | -   | 5 sec. |        |
| 10PP04 | F10518    | FALL10518.C | Flow ratio steam/toc          | 0         | 100   | mol/mol | 1.63 | -    | -   | -   | 5 sec. |        |
| 10PP04 | F10518    | FSL10518.C  | Flow ratio steam/toc          | 0         | 100   | mol/mol | -    | -    | -   | -   | 5 sec. |        |
| 10PP04 | H10521    | HA10521     |                               |           |       |         | -    | -    | -   | -   |        |        |
| 10PP04 | H10523    | HA10524     |                               |           |       |         | -    | -    | -   | -   |        |        |
| 11PP01 | A11001    | AAH11001    | Conductivityblowdown          | 0         | 150   | µs/cm   | -    | -    | 50  | -   |        |        |
| 11PP04 | B11001    | BAL11001    | Burner AL                     |           |       |         | -    | Low  | -   | -   |        |        |
| 11PP04 | B11001    | BSL11001    | Burner AL                     |           |       |         | -    | -    | -   | -   |        |        |
| 11PP06 | E11001    | EALL11001   | Fault CM1107                  |           |       |         | -    | -    | -   | -   |        |        |
| 11PP07 | F11001    | FAL11001    |                               |           |       | %       | -    | -    | -   | -   |        |        |
| 11PP07 | F11001    | FALL11001   |                               | 0         | 15000 | kg/h    | -    | -    | -   | -   |        |        |
| 11PP07 | F11001    | FAL11001.A  | Com.air flow                  | 0         | 15000 | kg/h    | -    | 6100 | -   | -   |        |        |
| 11PP07 | F11001    | FALL11001.A | Com.air flow                  | 0         | 15000 | kg/h    | 6000 | -    | -   | -   | 5 sec. |        |
| 11PP07 | F11001    | FSL11001.A  | Com.air flow                  | 0         | 15000 | kg/h    | -    | -    | -   | -   | 5 sec. |        |
| 11PP07 | F11001    | FAL11001.B  | Com.air flow                  | 0         | 15000 | kg/h    | -    | 6100 | -   | -   |        |        |
| 11PP07 | F11001    | FALL11001.B | Com.air flow                  | 0         | 15000 | kg/h    | 6000 | -    | -   | -   | 5 sec. |        |
| 11PP07 | F11001    | FSL11001.B  | Com.air flow                  | 0         | 15000 | kg/h    | -    | -    | -   | -   | 5 sec. |        |
| 11PP07 | F11001    | FAL11001.C  | Com.air flow                  | 0         | 15000 | kg/h    | -    | 6100 | -   | -   |        |        |
| 11PP07 | F11001    | FALL11001.C | Com.air flow                  | 0         | 15000 | kg/h    | 6000 | -    | -   | -   | 5 sec. |        |
| 11PP07 | F11001    | FSL11001.C  | Com.air flow                  | 0         | 15000 | kg/h    | -    | -    | -   | -   | 5 sec. |        |
| 11PP01 | L11001    | LAH11001    | Level control of D1131        | 0         | 100   | %       | -    | -    | 70  | -   |        |        |
| 11PP01 | L11001    | LAL11001    | Level control of D1132        | 0         | 100   | %       | -    | 50   | -   | -   |        |        |
| 11PP01 | T11001    | TAH11001    | REF gas temp. control E1122   | 0         | 600   | °C      | -    | -    | 430 | -   |        |        |
| 11PP01 | T11001    | TAL11001    | REF gas temp. control E1122   | 0         | 600   | °C      | -    | 390  | -   | -   |        |        |
| 11PP05 | U11001    | UA11001     | Remote lamp reformer start-up |           |       |         | -    | -    | -   | -   |        |        |
| 11PP02 | Z11001    | ZAH11001    | IndicHV11001 open             |           |       |         | -    | -    | -   | -   |        |        |
| 11PP02 | Z11001    | ZSH11001    |                               |           |       |         | -    | -    | -   | -   |        |        |
| 11PP04 | B11002    | BAL11002    | Burner AL                     |           |       |         | -    | Low  | -   | -   |        |        |
| 11PP04 | B11002    | BSL11002    | Burner AL                     |           |       |         | -    | -    | -   | -   |        |        |
| 11PP07 | E11002    | EAL11002    | Fault CM1109                  |           |       |         | -    | -    | -   | -   |        |        |
| 11PP07 | F11002    | FAL11002    | Comb. Air flow control        | 0         | 15000 | kg/h    | -    | 5500 | -   | -   |        |        |
| 11PP01 | H11002    | HA11002.A   | Override                      |           |       |         | -    | -    | -   | -   |        |        |
| 11PP01 | H11002    | HA11002.B   | Override                      |           |       |         | -    | -    | -   | -   |        |        |
| 11PP01 | H11002    | HA11002.C   | Override                      |           |       |         | -    | -    | -   | -   |        |        |
| 11PP01 | L11002    | LALL11002   |                               | 0         | 100   | %       | 50   | -    | -   | -   | 2 sec. |        |
| 11PP01 | L11002    | LALL11002.A |                               | 0         | 100   | %       | 50   | -    | -   | -   | 2 sec. |        |
| 11PP01 | L11002    | LSL11002.A  |                               | 0         | 100   | %       | -    | -    | -   | -   | 2 sec. |        |
| 11PP01 | L11002    | LALL11002.B |                               | 0         | 100   | %       | 50   | -    | -   | -   | 2 sec. |        |
| 11PP01 | L11002    | LSL11002.B  |                               | 0         | 100   | %       | -    | -    | -   | -   | 2 sec. |        |
| 11PP01 | L11002    | LALL11002.C |                               | 0         | 100   | %       | 50   | -    | -   | -   | 2 sec. |        |
| 11PP01 | L11002    | LSL11002.C  |                               | 0         | 100   | %       | -    | -    | -   | -   | 2 sec. |        |
| 11PP02 | T11002    | TAH11002.C  | LPG feed gas temp. R1105      | 0         | 600   | °C      | -    | -    | 440 | -   |        |        |
| 11PP02 | T11002    | TAHH11002.C | LPG feed gas temp. R1105      | 0         | 600   | °C      | -    | -    | -   | 460 |        |        |
| 11PP02 | T11002    | TAL11002.C  | LPG feed gas temp. R1105      | 0         | 600   | °C      | -    | 370  | -   | -   |        |        |
| 11PP02 | T11002    | TAH11002.D  | NG feed gas temp. R1105       | 0         | 600   | °C      | -    | -    | 530 | -   |        |        |
| 11PP02 | T11002    | TAHH11002.D | NG feed gas temp. R1105       | 0         | 600   | °C      | -    | -    | -   | 540 |        |        |
| 11PP02 | T11002    | TAL11002.D  | NG feed gas temp. R1105       | 0         | 600   | °C      | -    | 370  | -   | -   |        |        |
| 11PP05 | U11002    | UA11002     | Remote lamp normal operation  |           |       |         | -    | -    | -   | -   |        |        |
| 11PP02 | Z11002    | ZAL11002    | IndicXV11002 closed           |           |       |         | -    | -    | -   | -   |        |        |
| 11PP02 | Z11002    | ZSL11002    | IndicXV11002 closed           |           |       |         | -    | -    | -   | -   |        |        |
| 11PP02 | A11003    | ADA11003    |                               |           |       | %       | -    | -    | -   | -   |        |        |
| 11PP02 | A11003    | AAL11003    | O2 conc. in flue gas          | 0         | 10    | Vol%    | -    | 1    | -   | -   |        |        |
| 11PP02 | A11003    | AALL11003.A | O2 conc. in flue gas          | 0         | 10    | Vol%    | 0.5  | -    | -   | -   |        |        |
| 11PP02 | A11003    | ASLL11003.A | O2 conc. in flue gas          | 0         | 10    | Vol%    | -    | -    | -   | -   |        |        |
| 11PP02 | A11003    | AALL11003.B | O2 conc. in flue gas          | 0         | 10    | Vol%    | 0.5  | -    | -   | -   |        |        |

## HyCO Alarm&Trip setting (Main Plant)

Update SEP'2019

| PID    | LOOP_NAME | Tag_number  | Description                           | OVS RANGE |     |      |     |     |      |     | Delay   | Effect |
|--------|-----------|-------------|---------------------------------------|-----------|-----|------|-----|-----|------|-----|---------|--------|
|        |           |             |                                       | MIN       | MAX | UNIT | ALL | AL  | AH   | AHH |         |        |
| 11PP02 | A11003    | ASLL11003.B | O2 conc. in flue gas                  | 0         | 10  | Vol% | -   | -   | -    | -   |         |        |
| 11PP06 | E11003    | EL11003     | Running CM1107                        |           |     |      | -   | -   | -    | -   |         |        |
| 11PP08 | F11003    | FAL11003    | LPG fuel flow                         | 0         | 800 | kg/h | -   | 100 | -    | -   |         |        |
| 11PP05 | U11003    | UA11003     | Remote Ready for tightness test       |           |     |      | -   | -   | -    | -   |         |        |
| 11PP04 | B11004    | BAL11004    | Burner AL                             |           |     |      | -   | -   | -    | -   |         |        |
| 11PP04 | B11004    | BSL11004    | Burner AL                             |           |     |      | -   | -   | -    | -   |         |        |
| 11PP07 | E11004    | EL11004     | Running CM1109                        |           |     |      | -   | -   | -    | -   |         |        |
| 11PP08 | F11004    | FAL11004    | NG fuel flow                          | 0         | 800 | kg/h | -   | 65  | -    | -   |         |        |
| 11PP02 | T11005    | TAH11005.A  | Temp. gradient R1105                  | 0         | 600 | °C   | -   | -   | 520  | -   |         |        |
| 11PP02 | T11005    | TAH11005.B  | Temp. gradient R1105                  | 0         | 600 | °C   | -   | -   | 520  | -   |         |        |
| 11PP02 | T11005    | TAH11005.C  | Temp. gradient R1105                  | 0         | 600 | °C   | -   | -   | 520  | -   |         |        |
| 11PP02 | T11005    | TAH11005.D  | Temp. gradient R1105                  | 0         | 600 | °C   | -   | -   | 520  | -   |         |        |
| 11PP02 | T11005    | TAH11005.E  | Temp. gradient R1105                  | 0         | 600 | °C   | -   | -   | 520  | -   |         |        |
| 11PP02 | T11005    | TAH11005.F  | Temp. gradient R1105                  | 0         | 600 | °C   | -   | -   | 520  | -   |         |        |
| 11PP02 | T11005    | TAH11005.G  | Temp. gradient R1105                  | 0         | 600 | °C   | -   | -   | 520  | -   |         |        |
| 11PP02 | T11005    | TAH11005.H  | Temp. gradient R1105                  | 0         | 600 | °C   | -   | -   | 520  | -   |         |        |
| 11PP02 | T11005    | TAH11005.I  | Temp. gradient R1105                  | 0         | 600 | °C   | -   | -   | 520  | -   |         |        |
| 11PP02 | T11005    | TAH11005.K  | Temp. gradient R1105                  | 0         | 600 | °C   | -   | -   | 520  | -   |         |        |
| 11PP02 | T11005    | TAH11005.L  | Temp. gradient R1105                  | 0         | 600 | °C   | -   | -   | 520  | -   |         |        |
| 11PP02 | T11005    | TAH11005.M  | Temp. gradient R1105                  | 0         | 600 | °C   | -   | -   | 520  | -   |         |        |
| 11PP02 | T11005    | TAH11005.N  | Temp. gradient R1105                  | 0         | 600 | °C   | -   | -   | 520  | -   |         |        |
| 11PP02 | T11005    | TAH11005.O  | Temp. gradient R1105                  | 0         | 600 | °C   | -   | -   | 520  | -   |         |        |
| 11PP02 | T11005    | TAH11005.P  | Temp. gradient R1105                  | 0         | 600 | °C   | -   | -   | 520  | -   |         |        |
| 11PP02 | T11005    | TAH11005.Q  | Temp. gradient R1105                  | 0         | 600 | °C   | -   | -   | 520  | -   |         |        |
| 11PP02 | T11005    | TAH11005.R  | Temp. gradient R1105                  | 0         | 600 | °C   | -   | -   | 520  | -   |         |        |
| 11PP02 | T11005    | TAH11005.S  | Temp. gradient R1105                  | 0         | 600 | °C   | -   | -   | 520  | -   |         |        |
| 11PP02 | T11005    | TAH11005.T  | Temp. gradient R1105                  | 0         | 600 | °C   | -   | -   | 520  | -   |         |        |
| 11PP05 | U11005    | UA11005     | Remote lamp tightness test processing |           |     |      | -   | -   | -    | -   |         |        |
| 11PP01 | Z11005    | ZA11005     | Calibr. AT11001                       |           |     |      | -   | -   | -    | -   |         |        |
| 11PP05 | U11006    | UL11006     | Local lamp tightness test processing  |           |     |      | -   | -   | -    | -   |         |        |
| 11PP06 | E11007    | EALL11007   | Fault CM1107                          |           |     |      | -   | -   | -    | -   |         |        |
| 11PP05 | P11007    | PAH11007.A  | Reformer boxpres.                     | -10       | 1   | mbar | -   | -   | -0.5 | -   |         |        |
| 11PP05 | P11007    | PAL11007.A  | Reformer boxpres.                     | -10       | 1   | mbar | -   | -3  | -    | -   |         |        |
| 11PP05 | P11007    | PALL11007.A | Reformer boxpres.                     | -10       | 1   | mbar | -5  | -   | -    | -   | 30 sec. |        |
| 11PP05 | P11007    | PSLL11007.A | Reformer boxpres.                     | -10       | 1   | mbar | -   | -   | -    | -   | 30 sec. |        |
| 11PP05 | P11007    | PAH11007.B  | Reformer boxpres.                     | -10       | 1   | mbar | -   | -   | -0.5 | -   | 30 sec. |        |
| 11PP05 | P11007    | PAL11007.B  | Reformer boxpres.                     | -10       | 1   | mbar | -   | -3  | -    | -   | 30 sec. |        |
| 11PP05 | P11007    | PALL11007.B | Reformer boxpres.                     | -10       | 1   | mbar | -5  | -   | -    | -   | 30 sec. |        |
| 11PP05 | P11007    | PSLL11007.B | Reformer boxpres.                     | -10       | 1   | mbar | -   | -   | -    | -   | 30 sec. |        |
| 11PP05 | P11007    | PAH11007.C  | Reformer boxpres.                     | -10       | 1   | mbar | -   | -   | -0.5 | -   |         |        |
| 11PP05 | P11007    | PAL11007.C  | Reformer boxpres.                     | -10       | 1   | mbar | -   | -3  | -    | -   |         |        |
| 11PP05 | P11007    | PALL11007.C | Reformer boxpres.                     | -10       | 1   | mbar | -5  | -   | -    | -   | 30 sec. |        |
| 11PP05 | P11007    | PSLL11007.C | Reformer boxpres.                     | -10       | 1   | mbar | -   | -   | -    | -   | 30 sec. |        |
| 11PP05 | P11007    | PALL11007.D | Reformer boxpres.                     |           |     |      | -   | -   | -    | 0   | 30 sec. |        |
| 11PP05 | P11007    | PSLL11007.D | Reformer boxpres.                     |           |     |      | -   | -   | -    | -   | 30 sec. |        |
| 11PP05 | P11007    | PALL11007.E | Reformer boxpres.                     |           |     |      | -   | -   | -    | 0   | 30 sec. |        |
| 11PP05 | P11007    | PSLL11007.E | Reformer boxpres.                     |           |     |      | -   | -   | -    | -   | 30 sec. |        |
| 11PP05 | P11007    | PALL11007.F | Reformer boxpres.                     |           |     |      | -   | -   | -    | 0   | 30 sec. |        |
| 11PP05 | P11007    | PSLL11007.F | Reformer boxpres.                     |           |     |      | -   | -   | -    | -   | 30 sec. |        |
| 11PP05 | P11007    | PALL11007.G | Reformer boxpres.                     |           |     |      | -   | -   | -    | -   | 30 sec. |        |
| 11PP05 | P11007    | PAHH11007.G | Reformer boxpres.                     |           |     |      | -   | -   | -    | -   | 30 sec. |        |
| 11PP05 | U11007    | UA11007     | Remote lamp ready for ignition        |           |     |      | -   | -   | -    | -   |         |        |
| 11PP07 | E11008    | EAL11008    | Fault alarm                           |           |     |      | -   | -   | -    | -   |         |        |
| 11PP05 | U11008    | UL11008     | Local lamp ready for ignition         |           |     |      | -   | -   | -    | -   |         |        |
| 11PP05 | P11009    | PAH11009    | Reformer boxpres. control             | -10       | 1   | mbar | -   | -   | -0.5 | -   |         |        |
| 11PP05 | P11009    | PDAH11009   |                                       |           |     | %    | -   | -   | -    | -   |         |        |
| 11PP05 | P11009    | PAL11009    | Reformer boxpres. control             | -10       | 1   | mbar | -   | -3  | -    | -   |         |        |
| 11PP02 | T11009    | TAH11009    | Feed gas temp.                        | 0         | 800 | °C   | -   | -   | 590  | -   |         |        |

BMStrip

## HyCO Alarm&Trip setting (Main Plant)

Update SEP'2019

| PID     | LOOP_NAME | Tag_number  | Description                     | OVS RANGE |      |        |     |     |      |      | Delay  | Effect   |
|---------|-----------|-------------|---------------------------------|-----------|------|--------|-----|-----|------|------|--------|----------|
|         |           |             |                                 | MIN       | MAX  | UNIT   | ALL | AL  | AH   | AHH  |        |          |
| 11PPF05 | U11009    | UA11009     | Remote lamp ignition proceeding |           |      |        | -   | -   | -    | -    |        |          |
| 11PPF01 | F11010    | FAL11010    | Blowdown sampling flow          |           |      |        | -   | 30  | -    | -    |        |          |
| 11PPF01 | F11010    | FSL11010    | Blowdown sampling flow          |           |      |        | -   | -   | -    | -    |        |          |
| 11PPF08 | P11010    | PDAL11010   | LPG fuel pipe/ref box(igni)     | 0         | 250  | mbar   | -   | -   | 200  | -    |        |          |
| 11PPF08 | P11010    | PDAL11010   | LPG fuel pipe/ref box(igni)     | 0         | 250  | mbar   | -   | 100 | -    | -    |        |          |
| 11PPF05 | T11010    | TDA11010    |                                 |           |      | %      | -   | -   | -    | -    |        |          |
| 11PPF05 | T11010    | TAH11010    | Reformer outlet temp. control   | 700       | 1000 | °C     | -   | -   | 880  | -    |        |          |
| 11PPF05 | T11010    | TAL11010    | Reformer outlet temp. control   | 700       | 1000 | °C     | -   | 810 | -    | -    |        |          |
| 11PPF05 | U11010    | UL11010     | Local lamp ignition proceeding  |           |      |        | -   | -   | -    | -    |        |          |
| 11PPF05 | T11011    | TAHH11011   | Ref.gas temp.                   |           |      |        | -   | -   | -    | -    |        |          |
| 11PPF05 | T11011    | TAH11011.A  | Ref.gas temp.                   | 0         | 1000 | °C     | -   | -   | 880  | -    |        |          |
| 11PPF05 | T11011    | TAHH11011.A | Ref.gas temp.                   | 0         | 1000 | °C     | -   | -   | -    | 900  | 5 sec. |          |
| 11PPF05 | T11011    | TSHH11011.A | Ref.gas temp.                   | 0         | 1000 | °C     | -   | -   | -    | -    | 5 sec. |          |
| 11PPF05 | T11011    | TAH11011.B  | Ref.gas temp.                   | 700       | 1000 | °C     | -   | -   | 880  | -    |        |          |
| 11PPF05 | T11011    | TAHH11011.B | Ref.gas temp.                   | 700       | 1000 | °C     | -   | -   | -    | 900  | 5 sec. | BMS Trip |
| 11PPF05 | T11011    | TSHH11011.B | Ref.gas temp.                   | 700       | 1000 | °C     | -   | -   | -    | -    | 5 sec. |          |
| 11PPF05 | T11011    | TAH11011.C  | Ref.gas temp.                   | 700       | 1000 | °C     | -   | -   | 880  | -    |        |          |
| 11PPF05 | T11011    | TAHH11011.C | Ref.gas temp.                   | 700       | 1000 | °C     | -   | -   | -    | 900  | 5 sec. |          |
| 11PPF05 | T11011    | TSHH11011.C | Ref.gas temp.                   | 700       | 1000 | °C     | -   | -   | -    | -    | 5 sec. |          |
| 11PPF02 | U11011    | UA11011.A   | Fault O2 measurem.              |           |      |        | -   | -   | -    | -    |        |          |
| 11PPF02 | U11011    | UA11011.B   | Fault O2 measurem.              |           |      |        | -   | -   | -    | -    |        |          |
| 11PPF06 | H11012    | HAAUTO11012 | Remote/local indic. OM11007     |           |      |        | -   | -   | -    | -    |        |          |
| 11PPF05 | T11012    | TAH11012.A  | FLG Temp.2 stackdraft           | 0         | 1300 | °C     | -   | -   | 1030 | -    |        |          |
| 11PPF05 | T11012    | TAH11012.B  | FLG Temp.2 stackdraft           | 0         | 1300 | °C     | -   | -   | 1030 | -    |        |          |
| 11PPF05 | T11012    | TAL11012.A  | FLG Temp.2 stackdraft           | 0         | 1300 | °C     | -   | 750 | -    | -    |        |          |
| 11PPF05 | T11012    | TAL11012.B  | FLG Temp.2 stackdraft           | 0         | 1300 | °C     | -   | 750 | -    | -    |        |          |
| 11PPF08 | P11013    | PAHH11013   | Fuel gas pres.                  | 0         | 1000 | mbar g | -   | -   | -    | 160  | 5 sec. |          |
| 11PPF08 | P11013    | PAH11013.A  | Fuel gas pres.                  | 0         | 1000 | mbar g | -   | -   | 140  | -    |        |          |
| 11PPF08 | P11013    | PAHH11013.A | Fuel gas pres.                  | 0         | 1000 | mbar g | -   | -   | -    | 160  | 5 sec. |          |
| 11PPF08 | P11013    | PSHH11013.A | Fuel gas pres.                  | 0         | 1000 | mbar g | -   | -   | 140  | -    | 5 sec. |          |
| 11PPF08 | P11013    | PAH11013.B  | Fuel gas pres.                  | 0         | 1000 | mbar g | -   | -   | -    | 160  |        |          |
| 11PPF08 | P11013    | PAHH11013.B | Fuel gas pres.                  | 0         | 1000 | mbar g | -   | -   | 140  | -    | 5 sec. |          |
| 11PPF08 | P11013    | PSHH11013.B | Fuel gas pres.                  | 0         | 1000 | mbar g | -   | -   | -    | -    | 5 sec. |          |
| 11PPF08 | P11013    | PAH11013.C  | Fuel gas pres.                  | 0         | 1000 | mbar g | -   | -   | -    | 160  |        |          |
| 11PPF08 | P11013    | PAHH11013.C | Fuel gas pres.                  | 0         | 1000 | mbar g | -   | -   | 140  | -    | 5 sec. |          |
| 11PPF08 | P11013    | PSHH11013.C | Fuel gas pres.                  | 0         | 1000 | mbar g | -   | -   | -    | -    | 5 sec. |          |
| 11PPF08 | P11014    | PALL11014   |                                 |           |      |        | -   | -   | -    | -    |        |          |
| 11PPF08 | P11014    | PALL11014.A | Fuel gas pipe/reformerbox       | 0         | 250  | mbar   | -   | 3.5 | -    | -    |        | BMS Trip |
| 11PPF08 | P11014    | PALL11014.A | Fuel gas pipe/reformerbox       | 0         | 250  | mbar   | 2.5 | -   | -    | -    | 5 sec. |          |
| 11PPF08 | P11014    | PSLL11014.A | Fuel gas pipe/reformerbox       | 0         | 250  | mbar   | 2.5 | -   | -    | -    | 5 sec. |          |
| 11PPF08 | P11014    | PALL11014.B | Fuel gas pipe/reformerbox       | 0         | 250  | mbar   | -   | 3.5 | -    | -    |        |          |
| 11PPF08 | P11014    | PALL11014.B | Fuel gas pipe/reformerbox       | 0         | 250  | mbar   | 2.5 | -   | -    | -    | 5 sec. |          |
| 11PPF08 | P11014    | PSLL11014.B | Fuel gas pipe/reformerbox       | 0         | 250  | mbar   | 2.5 | -   | -    | -    | 5 sec. |          |
| 11PPF08 | P11014    | PALL11014.C | Fuel gas pipe/reformerbox       | 0         | 250  | mbar   | -   | 3.5 | -    | -    |        |          |
| 11PPF08 | P11014    | PALL11014.C | Fuel gas pipe/reformerbox       | 0         | 250  | mbar   | 2.5 | -   | -    | -    | 5 sec. |          |
| 11PPF08 | P11014    | PSLL11014.C | Fuel gas pipe/reformerbox       | 0         | 250  | mbar   | 2.5 | -   | -    | -    | 5 sec. |          |
| 11PPF06 | T11014    | TAH11014    | Comb. Air temp.                 | 0         | 600  | °C     | -   | -   | 420  | -    |        |          |
| 11PPF08 | P11015    | PAHH11015   | Fuel gas pres.                  | 0         | 1000 | mbar g | -   | -   | -    | 500  | 5 sec. |          |
| 11PPF08 | P11015    | PSHH11016   | Fuel gas pres.                  | 0         | 1000 | mbar g | -   | -   | -    | -    |        |          |
| 11PPF02 | T11015    | TAH11015    | Fug temp. 3 chem. Draught       | 0         | 900  | °C     | -   | -   | 760  | -    |        |          |
| 11PPF02 | P11016    | PAL11016    | Inlet Press.Prereformer         | 0         | 60   | barg   | -   | 27  | -    | -    |        |          |
| 11PPF08 | P11017    | PDAL11017   | TOC Fuel Pipe/REF. Box(igni)    | 0         | 250  | mbar g | -   | -   | 200  | -    |        |          |
| 11PPF08 | P11017    | PDAL11017   | TOC Fuel Pipe/REF. Box(igni)    | 0         | 250  | mbar g | -   | 50  | -    | -    |        |          |
| 11PPF07 | H11018    | HAAUTO11018 | Auto Status indic. OM11009      |           |      |        | -   | -   | -    | -    |        |          |
| 11PPF06 | T11018    | TAH11018    | FUG TEMP.5 CHIM.DRAUGHT         | 0         | 900  | °C     | -   | -   | 650  | -    |        |          |
| 11PPF06 | T11019    | TAH11019    | FUG OUT.TEMP. CHIM.DRAUGHT      | 0         | 200  | °C     | -   | -   | 200  | -    |        |          |
| 11PPF06 | T11019    | TAL11019    | FUG OUT.TEMP. CHIM.DRAUGHT      | 0         | 200  | °C     | -   | 110 | -    | -    |        |          |
| 11PPF08 | P11020    | PAHH11020   | LPG FUEL GAS PRES.              | 0         | 1000 | mbar g | -   | -   | -    | -    |        |          |
| 11PPF08 | P11020    | PAH11020.A  | LPG FUEL GAS PRES.              | 0         | 1000 | mbar g | -   | -   | 1900 | -    |        |          |
| 11PPF08 | P11020    | PAHH11020.A | LPG FUEL GAS PRES.              | 0         | 1000 | mbar g | -   | -   | -    | 2100 | 5 sec. |          |

## HyCO Alarm&Trip setting (Main Plant)

Update SEP'2019

| PID     | LOOP_NAME | Tag_number   | Description                    | DVS RANGE |      |        |     |     |      |      | Delay  | Effect   |
|---------|-----------|--------------|--------------------------------|-----------|------|--------|-----|-----|------|------|--------|----------|
|         |           |              |                                | MIN       | MAX  | UNIT   | ALL | AL  | AH   | AHH  |        |          |
| 11PPF08 | P11020    | PSHH11020.A  | LPG FUEL GAS PRES.             | 0         | 1000 | mbar g | -   | -   | -    | -    | 5 sec. | BMS Trip |
| 11PPF08 | P11020    | PAH11020.B   | LPG FUEL GAS PRES.             | 0         | 1000 | mbar g | -   | -   | 1900 | -    |        |          |
| 11PPF08 | P11020    | PAHH11020.B  | LPG FUEL GAS PRES.             | 0         | 1000 | mbar g | -   | -   | -    | 2100 | 5 sec. |          |
| 11PPF08 | P11020    | PSHH11020.B  | LPG FUEL GAS PRES.             | 0         | 1000 | mbar g | -   | -   | -    | -    | 5 sec. |          |
| 11PPF08 | P11020    | PAH11020.C   | LPG FUEL GAS PRES.             | 0         | 1000 | mbar g | -   | -   | 1900 | -    |        |          |
| 11PPF08 | P11020    | PAHH11020.C  | LPG FUEL GAS PRES.             | 0         | 1000 | mbar g | -   | -   | -    | 2100 | 5 sec. |          |
| 11PPF08 | P11020    | PSHH11020.C  | LPG FUEL GAS PRES.             | 0         | 1000 | mbar g | -   | -   | -    | -    | 5 sec. |          |
| 11PPF08 | P11021    | PDAL11021.A  | LPG FUEL GAS PRES./REF. BOX    | -50       | 250  | mbar g | -   | 250 | -    | -    |        |          |
| 11PPF08 | P11020    | PDALL11021.A | LPG FUEL GAS PRES./REF. BOX    | -50       | 250  | mbar g | -   | -   | -    | -    |        |          |
| 11PPF08 | P11020    | PDALL11021.A | LPG FUEL GAS PRES./REF. BOX    | -50       | 250  | mbar g | -   | -   | -    | -    |        |          |
| 11PPF08 | P11020    | PDALL11021.B | LPG FUEL GAS PRES./REF. BOX    | -50       | 250  | mbar g | -   | 250 | -    | -    |        |          |
| 11PPF08 | P11020    | PDALL11021.B | LPG FUEL GAS PRES./REF. BOX    | -50       | 250  | mbar g | -   | -   | -    | -    |        |          |
| 11PPF08 | P11020    | PDALL11021.B | LPG FUEL GAS PRES./REF. BOX    | -50       | 250  | mbar g | -   | -   | -    | -    |        |          |
| 11PPF08 | P11020    | PDALL11021.C | LPG FUEL GAS PRES./REF. BOX    | -50       | 250  | mbar g | -   | 250 | -    | -    |        |          |
| 11PPF08 | P11020    | PDALL11021.C | LPG FUEL GAS PRES./REF. BOX    | -50       | 250  | mbar g | -   | -   | -    | -    |        |          |
| 11PPF08 | P11020    | PDALL11021.C | LPG FUEL GAS PRES./REF. BOX    | -50       | 250  | mbar g | -   | -   | -    | -    |        |          |
| 11PPF01 | T11024    | TAHH11024    | REF. GAS TEMP.                 | 0         | 600  | °C     | -   | -   | -    | 440  | 5 sec. |          |
| 11PPF01 | T11024    | TSHH11024    | REF. GAS TEMP.                 | 0         | 600  | °C     | -   | -   | -    | -    | 5 sec. |          |
| 11PPF02 | H11027    | HA11027      |                                |           |      |        | -   | -   | -    | -    |        |          |
| 11PPF01 | P11027    | PAL11027     | Process Steam Pres. Control    | 0         | 60   | barg   | -   | 38  | -    | -    |        |          |
| 11PPF02 | P11028    | PAH11028     | Feed Gas Pres.                 | -60       | 60   | barg   | -   | -   | 40   | -    |        |          |
| 11PPF02 | T11028    | TAHH11028.C  | LPG FEED TEMP. CONTROL R1105   | 0         | 600  | °C     | -   | -   | -    | 460  | 5 sec. |          |
| 11PPF02 | T11028    | TSHH11028.C  | LPG FEED TEMP. CONTROL R1105   | 0         | 600  | °C     | -   | -   | -    | -    | 5 sec. |          |
| 11PPF02 | T11028    | TAHH11028.D  | TOC FEED TEMP. CONTROL R1105   | 0         | 600  | °C     | -   | -   | -    | 540  | 5 sec. |          |
| 11PPF02 | T11028    | TSHH11028.D  | TOC FEED TEMP. CONTROL R1105   | 0         | 600  | °C     | -   | -   | -    | -    | 5 sec. |          |
| 11PPF09 | P11029    | PDAL11029    | PRES. DROP FV11006             | -50       | 250  | mbar g | -   | -5  | -    | -    |        |          |
| 11PPF09 | P11029    | PSL11029     | PRES. DROP FV11007             | -50       | 250  | mbar g | -   | -   | -    | -    |        |          |
| 11PPF02 | H11031    | HO11031      | HV ON CONTROL                  |           |      |        | -   | -   | -    | -    |        |          |
| 11PPF05 | H11034    | HA11034      | MAIN TRIP REMOTE               |           |      |        | -   | -   | -    | -    |        |          |
| 11PPF05 | H11035    | HA11035      | TRIP INDICATION                |           |      |        | -   | -   | -    | -    |        |          |
| 11PPF05 | H11036    | HA11036      | MAIN TRIP LOCAL                |           |      |        | -   | -   | -    | -    |        |          |
| 11PPF08 | H11041    | HA11041      |                                |           |      |        | -   | -   | -    | -    |        |          |
| 11PPF08 | H11043    | HA11043      |                                |           |      |        | -   | -   | -    | -    |        |          |
| 11PPF05 | H11057    | HA11057      | EMERGENCY SHUT DOWN            |           |      |        | -   | -   | -    | -    |        |          |
| 11PPF02 | T11505    | TAH11505.A   | Temp. gradient R1105 (For TOC) | 0         | 600  | °C     | -   | -   | 520  | -    |        |          |
| 11PPF02 | T11505    | TAH11505.B   | Temp. gradient R1105 (For TOC) | 0         | 600  | °C     | -   | -   | 520  | -    |        |          |
| 11PPF02 | T11505    | TAH11505.C   | Temp. gradient R1105 (For TOC) | 0         | 600  | °C     | -   | -   | 520  | -    |        |          |
| 11PPF02 | T11505    | TAH11505.D   | Temp. gradient R1105 (For TOC) | 0         | 600  | °C     | -   | -   | 520  | -    |        |          |
| 11PPF02 | T11505    | TAH11505.E   | Temp. gradient R1105 (For TOC) | 0         | 600  | °C     | -   | -   | 520  | -    |        |          |
| 11PPF02 | T11505    | TAH11505.F   | Temp. gradient R1105 (For TOC) | 0         | 600  | °C     | -   | -   | 520  | -    |        |          |
| 11PPF02 | T11505    | TAH11505.G   | Temp. gradient R1105 (For TOC) | 0         | 600  | °C     | -   | -   | 520  | -    |        |          |
| 11PPF02 | T11505    | TAH11505.H   | Temp. gradient R1105 (For TOC) | 0         | 600  | °C     | -   | -   | 520  | -    |        |          |
| 11PPF02 | T11505    | TAH11505.I   | Temp. gradient R1105 (For TOC) | 0         | 600  | °C     | -   | -   | 520  | -    |        |          |
| 11PPF02 | T11505    | TAH11505.J   | Temp. gradient R1105 (For TOC) | 0         | 600  | °C     | -   | -   | 520  | -    |        |          |
| 11PPF02 | T11505    | TAH11505.K   | Temp. gradient R1105 (For TOC) | 0         | 600  | °C     | -   | -   | 520  | -    |        |          |
| 11PPF02 | T11505    | TAH11505.L   | Temp. gradient R1105 (For TOC) | 0         | 600  | °C     | -   | -   | 520  | -    |        |          |
| 11PPF02 | T11505    | TAH11505.M   | Temp. gradient R1105 (For TOC) | 0         | 600  | °C     | -   | -   | 520  | -    |        |          |
| 11PPF02 | T11505    | TAH11505.N   | Temp. gradient R1105 (For TOC) | 0         | 600  | °C     | -   | -   | 520  | -    |        |          |
| 11PPF02 | T11505    | TAH11505.O   | Temp. gradient R1105 (For TOC) | 0         | 600  | °C     | -   | -   | 520  | -    |        |          |
| 11PPF02 | T11505    | TAH11505.P   | Temp. gradient R1105 (For TOC) | 0         | 600  | °C     | -   | -   | 520  | -    |        |          |
| 11PPF02 | T11505    | TAH11505.Q   | Temp. gradient R1105 (For TOC) | 0         | 600  | °C     | -   | -   | 520  | -    |        |          |
| 11PPF02 | T11505    | TAH11505.R   | Temp. gradient R1105 (For TOC) | 0         | 600  | °C     | -   | -   | 520  | -    |        |          |
| 11PPF02 | T11505    | TAH11505.S   | Temp. gradient R1105 (For TOC) | 0         | 600  | °C     | -   | -   | 520  | -    |        |          |
| 11PPF02 | T11505    | TAH11505.T   | Temp. gradient R1105 (For TOC) | 0         | 600  | °C     | -   | -   | 520  | -    |        |          |
| 12PPF02 | E12001    | EL12001      | Running ME1216.1               |           |      |        | -   | -   | -    | -    |        |          |
| 12PPF02 | P12001    | PAH12001.A   | REF. GAS INLET T1401           | 0         | 40   | barg   | -   | -   | 34   | -    |        |          |
| 12PPF02 | P12001    | PAL12001.A   | REF. GAS INLET T1401           | 0         | 40   | barg   | -   | 27  | -    | -    |        |          |
| 14PPF02 | T12001    | TAH12001     | REF. GAS INLET TEMP. OF E1412  | 0         | 300  | °C     | -   | -   | 205  | -    |        |          |
| 14PPF02 | T12001    | TAL12001     | REF. GAS INLET TEMP. OF E1412  | 0         | 300  | °C     | -   | 150 | -    | -    |        |          |
| 12PPF02 | E12002    | EAL12002     | Fault ME1216.1                 |           |      |        | -   | -   | -    | -    |        |          |



## HyCO Alarm&Trip setting (Main Plant)

Update SEP'2019

| PID    | LOOP_NAME | Tag_number  | Description                    | DVS RANGE |       |        |       |       |     |     | Delay  | Effect           |
|--------|-----------|-------------|--------------------------------|-----------|-------|--------|-------|-------|-----|-----|--------|------------------|
|        |           |             |                                | MIN       | MAX   | UNIT   | ALL   | AL    | AH  | AHH |        |                  |
| 12PP01 | L12002    | LALL12002   | Level of D1231                 | 0         | 100   | %      | 50    | -     | -   | -   | 5 sec. |                  |
| 12PP01 | L12002    | LSLL12002   | Level of D1231                 | 0         | 100   | %      | 50    | -     | -   | -   | 5 sec. |                  |
| 12PP01 | T12002    | TAH12002    | Outlet temp. of E1212          | 0         | 300   | °C     | -     | -     | 250 | -   |        |                  |
| 12PP01 | T12002    | TAL12002    | Outlet temp. of E1212          | 0         | 300   | °C     | -     | 150   | -   | -   |        |                  |
| 12PP02 | E12003    | EL12003     | Running ME1216.2               |           |       |        | -     | -     | -   | -   |        |                  |
| 12PP01 | L12003    | LAH12003    | Level Control of D1231         | 0         | 100   | %      | -     | -     | 64  | -   |        |                  |
| 12PP01 | L12003    | LAL12003    | Level Control of D1231         | 0         | 100   | %      | -     | 24    | -   | -   |        |                  |
| 12PP02 | T12003    | TAH12003    | REF.GAS INLET TEMP. OF D1232   | 0         | 120   | °C     | -     | -     | 80  | -   |        |                  |
| 12PP02 | E12004    | EAL12004    | Fault ME1216.2                 |           |       |        | -     | -     | -   | -   |        |                  |
| 12PP02 | P12004    | PDH12004    | Pres.DROP OF XV12001           | 0         | 300   | mbar g | -     | -     | 120 | -   |        |                  |
| 12PP02 | P12004    | PDH12004    | Pres.DROP OF XV12001           | 0         | 300   | mbar g | -     | -     | -   | 200 | 5 sec. |                  |
| 12PP02 | P12004    | PDSH12004   | Pres.DROP OF XV12001           | 0         | 300   | mbar g | -     | -     | -   | -   | 5 sec. |                  |
| 12PP02 | L12005    | LALL12005   | Level of D1232                 | 0         | 100   | %      | 50    | -     | -   | -   | 5 sec. |                  |
| 12PP02 | L12005    | LSLL12005   | Level of D1232                 | 0         | 100   | %      | 50    | -     | -   | -   | 5 sec. |                  |
| 12PP02 | L12006    | LAH12006    | Level Control. Of D1232        | 0         | 100   | %      | -     | -     | 64  | -   |        |                  |
| 12PP02 | L12006    | LAL12006    | Level Control. Of D1232        | 0         | 100   | %      | -     | 44    | -   | -   |        |                  |
| 12PP02 | T12007    | TAHH12007   | REF. GAS OUTLET TEMP. OF D1232 |           |       |        | -     | -     | -   | -   |        |                  |
| 12PP02 | T12007    | TAH12007.A  | REF. GAS OUTLET TEMP. OF D1232 | 0         | 120   | °C     | -     | -     | 65  | -   |        |                  |
| 12PP02 | T12007    | TAHH12007.A | REF. GAS OUTLET TEMP. OF D1232 | 0         | 120   | °C     | -     | -     | -   | 90  | 5 sec. |                  |
| 12PP02 | T12007    | TSHH12007.A | REF. GAS OUTLET TEMP. OF D1232 | 0         | 120   | °C     | -     | -     | -   | -   | 5 sec. |                  |
| 12PP02 | T12007    | TAH12007.B  | REF. GAS OUTLET TEMP. OF D1232 | 0         | 120   | °C     | -     | -     | 65  | -   |        |                  |
| 12PP02 | T12007    | TAHH12007.B | REF. GAS OUTLET TEMP. OF D1232 | 0         | 120   | °C     | -     | -     | -   | 90  | 5 sec. |                  |
| 12PP02 | T12007    | TSHH12007.B | REF. GAS OUTLET TEMP. OF D1232 | 0         | 120   | °C     | -     | -     | -   | -   | 5 sec. |                  |
| 12PP02 | T12007    | TAH12007.C  | REF. GAS OUTLET TEMP. OF D1232 | 0         | 120   | °C     | -     | -     | 65  | -   |        |                  |
| 12PP02 | T12007    | TAHH12007.C | REF. GAS OUTLET TEMP. OF D1232 | 0         | 120   | °C     | -     | -     | -   | 90  | 5 sec. |                  |
| 12PP02 | T12007    | TSHH12007.C | REF. GAS OUTLET TEMP. OF D1232 | 0         | 120   | °C     | -     | -     | -   | -   | 5 sec. |                  |
| 12PP02 | H12012    | HAAUTO12012 | AUTO Status Indic. ME1216A     |           |       |        | -     | -     | -   | -   |        |                  |
| 12PP02 | H12014    | HAAUTO12014 | AUTO Status Indic. ME1216B     |           |       |        | -     | -     | -   | -   |        |                  |
| 13PP02 | A13001    | AAH13001    | Demin. Water conductivity      | 0         | 2     | µs/cm  | -     | -     | 0.9 | -   |        |                  |
| 13PP01 | E13001    | EAL13001    | Fault PM1371A                  |           |       |        | -     | L     | -   | -   |        |                  |
| 13PP01 | L13001    | LAH13001    | Level in D1332                 |           |       |        | -     | -     | 50  | -   |        |                  |
| 13PP01 | L13001    | LSH13001    | Level in D1333                 |           |       |        | -     | -     | -   | -   |        |                  |
| 13PP02 | Z13001    | ZA13001     | Fault conductivity measurem.   |           |       |        | -     | -     | -   | -   |        |                  |
| 13PP01 | E13002    | EL13002     | Running PM1371A                |           |       |        | -     | -     | -   | -   |        |                  |
| 14PP02 | F13002    | FAH13002    | HP steam flow control          | 0         | 1200  | kg/h   | -     | -     | 950 | -   |        |                  |
| 13PP01 | H13002    | HAAUTO13002 | Remote/local indic. P1371A     |           |       |        | -     | -     | -   | -   |        |                  |
| 13PP01 | X13002    | XS13002     |                                |           |       |        | -     | -     | -   | -   |        |                  |
| 13PP01 | E13003    | EAL13003    | Fault PM1371B                  |           |       |        | -     | L     | -   | -   |        |                  |
| 13PP02 | P13003    | PAH13003    | Peres. Control of D1331        | 0         | 600   | mbar g | -     | -     | 500 | -   |        |                  |
| 13PP01 | P13003    | PAL13004    | Peres. Control of D1331        | 0         | 600   | mbar g | -     | 200   | -   | -   |        |                  |
| 13PP01 | P13017    | PAL13017    | Press. Discharge PM1371A       | 0         | 60    | barg   | -     | 48    | -   | -   |        |                  |
| 13PP01 | P13018    | PAL13018    | Press. Discharge PM1371B       | 0         | 60    | barg   | -     | 48    | -   | -   |        |                  |
| 13PP01 | E13004    | EL13004     | Running PM1371B                |           |       |        | -     | -     | -   | -   |        |                  |
| 13PP02 | L13004    | LALL13004   | Level in D1331                 |           |       | %      | 40    | -     | -   | -   | 1 min. |                  |
| 13PP02 | L13004    | LSLL13004   | Level in D1331                 |           |       | %      | -     | -     | -   | -   | 1 min. |                  |
| 13PP01 | E13005    | EAL13005    | Running PM1371B                |           |       |        | -     | -     | -   | -   |        |                  |
| 13PP01 | H13005    | HAAUTO13005 | Remote/local indic. P1371B     |           |       |        | -     | -     | -   | -   |        |                  |
| 13PP02 | L13005    | LAH13005    | Level control of D1331         | 0         | 100   | %      | -     | -     | 80  | -   |        |                  |
| 13PP02 | L13005    | LAL13005    | Level control of D1332         | 0         | 100   | %      | -     | 40    | -   | -   |        |                  |
| 13PP03 | T13005    | TAL13005    | HP-steam temp.                 | 0         | 350   | °C     | -     | 240   | -   | -   |        |                  |
| 13PP01 | E13008    | EAL13008    | EMERGENCY Steam                |           |       |        | -     | -     | -   | -   |        |                  |
| 13PP02 | F13008    | FAL13008    | Demin water sampling flow      |           |       | kg/h   | -     | 30    | -   | -   |        |                  |
| 13PP02 | F13008    | FSL13008    | Demin water sampling flow      |           |       | kg/h   | -     | -     | -   | -   |        |                  |
| 14PP03 | E14001    | EL14001     | Running PM1474A                |           |       |        | -     | -     | -   | -   |        |                  |
| 14PP01 | F14001    | FAL14001    | BFW flow to T1401              | 0         | 300   | kg/h   | -     | 180   | -   | -   |        |                  |
| 14PP03 | E14002    | EAL14002    | Fault PM1474A                  |           |       |        | -     | L     | -   | -   |        |                  |
| 14PP01 | F14002    | FAL14002    | Lean MDEA flow                 | 0         | 45000 | kg/h   | -     | 12000 | -   | -   |        |                  |
| 14PP01 | F14002    | FALL14002   | Lean MDEA flow                 | 0         | 45000 | kg/h   | 10000 | -     | -   | -   | 5 sec. | - XV12001, Dose  |
| 14PP01 | F14002    | FSLL14002   | Lean MDEA flow                 | 0         | 45000 | kg/h   | -     | -     | -   | -   | 5 sec. | - P1474A/B, Stop |
| 14PP01 | L14002    | LALL14002.A | Level in T1401                 | 0         | 100   | %      | 27.5  | -     | -   | -   | 5 sec. |                  |

## HyCO Alarm&Trip setting (Main Plant)

Update SEP'2019

| PID         | LOOP_NAME | Tag_number   | Description                        | DVS RANGE |     |        |       |      |      |     | Delay  | Effect           |
|-------------|-----------|--------------|------------------------------------|-----------|-----|--------|-------|------|------|-----|--------|------------------|
|             |           |              |                                    | MIN       | MAX | UNIT   | ALL   | AL   | AH   | AHH |        |                  |
| 14PP01      | L14002    | LSLL14002.A  | Level in T1401                     | 0         | 100 | %      | -     | -    | -    | -   | 5 sec. | LV14003A/B, Dose |
| 14PP01      | L14002    | LALL14002.B  | Level in T1401                     | 0         | 100 | %      | 27.5  | -    | -    | -   | 5 sec. |                  |
| 14PP01      | L14002    | LSLL14002.B  | Level in T1401                     | 0         | 100 | %      | -     | -    | -    | -   | 5 sec. |                  |
| 14PP01      | L14002    | LALL14002.B  | Level in T1401 ( Input of LI14003) | 0         | 100 | %      | 27.5  | -    | -    | -   | 5 sec. |                  |
| 14PP01      | L14002    | LSLL14002.B  | Level in T1401 ( Input of LI14003) | 0         | 100 | %      | -     | -    | -    | -   | 5 sec. |                  |
| 14PP03      | E14003    | EL14003      | Running PM1474B                    |           |     |        | -     | -    | -    | -   |        |                  |
| 14PP01      | L14003    | LAH14003     | Level control of T1401             | 0         | 100 | %      | -     | -    | 72.5 | -   |        |                  |
| 14PP01      | L14003    | LAL14003     | Level control of T1402             | 0         | 100 | %      | -     | 27.5 | -    | -   |        |                  |
| 14PP01      | P14003    | PDAH14003    | Pres. Drop of T1401                | 0         | 100 | mbar g | -     | -    | 60   | -   |        |                  |
| 14PP03      | E14004    | EAL14004     | Fault PM1474B                      |           |     |        | -     | L    | -    | -   |        |                  |
| 14PP03      | H14004    | HAAUTO14004  | Remote/local indic. P1474A         |           |     |        | -     | -    | -    | -   |        |                  |
| 14PP02      | L14004    | LAH14004     | Level in T1404                     | 0         | 100 | %      | -     | -    | 60.5 | -   |        |                  |
| 14PP02      | L14004    | LAL14004     | Level in T1405                     | 0         | 100 | %      | -     | 24.5 | -    | -   |        |                  |
| 14PP01      | P14004    | PDAH14004    | Pres. Drop of MDEA filters         | 0         | 4   | bar    | -     | -    | 2.2  | -   |        |                  |
| 14PP04      | E14005    | EL14005      | Running PM1473A                    |           |     |        | -     | -    | -    | -   |        |                  |
| 14PP02      | L14005    | LALL14005    | Level in T1404                     | 0         | 100 | %      | 24.5  | -    | -    | -   | 5 sec. | P1474A/B, Stop   |
| 14PP02      | L14005    | LALL14005.A  | Level in T1404                     | 0         | 100 | %      | 24.5  | -    | -    | -   | 5 sec. |                  |
| 14PP02      | L14005    | LSLL14005.A  | Level in T1404                     | 0         | 100 | %      | -     | -    | -    | -   | 5 sec. |                  |
| 14PP02      | L14005    | LALL14005.B  | Level in T1404                     | 0         | 100 | %      | 24.5  | -    | -    | -   | 5 sec. |                  |
| 14PP02      | L14005    | LSLL14005.B  | Level in T1404                     | 0         | 100 | %      | -     | -    | -    | -   | 5 sec. |                  |
| 14PP02      | L14005    | LALL14005.C  | Level in T1404                     | 0         | 100 | %      | 24.5  | -    | -    | -   | 5 sec. |                  |
| 14PP02      | L14005    | LSLL14005.C  | Level in T1404                     | 0         | 100 | %      | -     | -    | -    | -   | 5 sec. |                  |
| 14PP04      | E14006    | EAL14006     | Fault PM1473A                      |           |     |        | -     | L    | -    | -   |        |                  |
| 14PP02      | T14006    | TAH14006     | Temp. control of T1404             | 0         | 150 | °C     | -     | -    | 130  | -   |        |                  |
| 14PP02      | T14006    | TAL14006     | Temp. control of T1404             | 0         | 150 | °C     | -     | 60   | -    | -   |        |                  |
| 14PP04      | E14007    | EL14007      | Running PM1473B                    |           |     |        | -     | -    | -    | -   |        |                  |
| 14PP03      | H14007    | HAAUTO14007  | Remote/local indic. P1474A         |           |     |        | -     | -    | -    | -   |        |                  |
| 14PP04      | E14008    | EAL14008     | Fault PM1473B                      |           |     |        | -     | L    | -    | -   |        |                  |
| 14PP04      | L14008    | LAHH14008    | High level AL of D1441             | 0         | 100 | %      | -     | -    | -    | 60  |        |                  |
| 14PP04      | L14008    | LSHH14008    | High level AL of D1441             | 0         | 100 | %      | -     | -    | -    | -   |        |                  |
| 14PP02      | T14008    | TAH14008     | CO2 outlet temp. of T1404          | 0         | 150 | °C     | -     | 120  | -    | -   |        |                  |
| 14PP04      | L14009    | LALL14009    | Low level AL of D1441              | 0         | 100 | %      | 40    | -    | -    | -   |        |                  |
| 14PP04      | L14009    | LSLL14009    | Low level AL of D1442              | 0         | 100 | %      | -     | -    | -    | -   |        |                  |
| 14PP02      | P14009    | PDAH14009    | Pres. Drop of T1404                | 0         | 100 | mbar   | -     | -    | 60   | -   |        |                  |
| 14PP02      | T14009    | TAH14009     | Ref. gas outlet temp. of E1412     | 0         | 250 | °C     | -     | -    | 230  | -   |        |                  |
| 14PP04      | L14010    | LAH14010     | Level control of D1441             | 0         | 100 | %      | -     | -    | 60   | -   |        |                  |
| 14PP04      | L14010    | LAL14010     | Level control of D1441             | 0         | 100 | %      | -     | 40   | -    | -   |        |                  |
| 99PP01      | E14011    | EL14011      | Running CM1408A                    |           |     |        | -     | -    | -    | -   |        |                  |
| 14PP04      | H14011    | HAAUTO140011 | Remote/local indic. P1474A         |           |     |        | -     | -    | -    | -   |        |                  |
| 99PP01      | E14012    | EAL14012     | Running CM1408B                    |           |     |        | -     | -    | -    | -   |        |                  |
| 14PP05      | T14012    | TAH14012     | Inlet temp. of C1408               | 0         | 120 | °C     | -     | -    | 60   | -   |        |                  |
| 99PP01      | E14013    | EL14013      | Running CM1408B                    |           |     |        | -     | -    | -    | -   |        |                  |
| 99PP01      | E14014    | EAL14014     | Fault alarm CM14008B               |           |     |        | -     | L    | -    | -   |        |                  |
| 14PP04      | H14014    | HAAUTO140014 | Remote/local indic. P1473B         |           |     |        | -     | -    | -    | -   |        |                  |
| 14PP05      | P14015    | PAH14015     | Release CO2 pres. Control          | 0         | 1   | bar g  | -     | -    | 0.7  | -   |        |                  |
| 14PP05      | P14015    | PAL14015     | Release CO2 pres. Control          | 0         | 1   | bar g  | -     | 0.3  | -    | -   |        |                  |
| 14PP05      | P14020    | PAH14020     | CO2 COMP Suct. Press. CONTROL      | 0         | 1   | bar g  | -     | -    | 0.7  | -   |        |                  |
| 14PP05      | P14020    | PAL14020     | CO2 COMP Suct. Press. CONTROL      | 0         | 1   | bar g  | -     | 0.3  | -    | -   |        |                  |
| KR00-12-026 | P14310    | PAH14310     | 1 STG. SUC. GAS PRESS              | 0         | 6   | bar g  | -     | 0.3  | -    | -   |        |                  |
| KR00-12-026 | P14310    | PAH14310     | 1 STG. SUC. GAS PRESS              | 0         | 6   | bar g  | 0.001 | -    | -    | -   |        |                  |
| 14PP03      | T14021    | TAH14021     | MDEA outlet temp. of E1414         | 0         | 120 | °C     | -     | -    | 60   | -   |        |                  |
| 14PP04      | T14022    | TAH14022     | QWR temp. of E1415                 | 0         | 120 | °C     | -     | -    | 60   | -   |        |                  |
| 14PP01      | H14025    | HA14025      | Override                           |           |     |        | -     | -    | -    | -   |        |                  |
| KR00-12-026 | P14312    | PAH14312     | 3 STG. DIS. GAS PRESS              | 0         | 60  | bar g  | -     | -    | 43   | -   |        |                  |
| KR00-12-026 | P14312    | PAH14312     | 3 STG. DIS. GAS PRESS              | 0         | 60  | bar g  | -     | -    | -    | 46  |        |                  |
| KR00-12-026 | T14315    | TAH14315     | CO2 comp 1st stagedisch            | 0         | 200 | °C     | -     | -    | 155  | -   |        |                  |
| KR00-12-026 | T14315    | TAHH14315    | CO2 comp 1st stagedisch            | 0         | 200 | °C     | -     | -    | -    | 165 |        |                  |
| KR00-12-026 | T14317    | TAH14317     | CO2 comp 2nd stagedisch            | 0         | 200 | °C     | -     | -    | 155  | -   |        |                  |
| KR00-12-026 | T14317    | TAHH14317    | CO2 comp 2nd stagedisch            | 0         | 200 | °C     | -     | -    | -    | 165 |        |                  |
| KR00-12-026 | T14319    | TAH14319     | CO2 comp 3th stagedisch            | 0         | 200 | °C     | -     | -    | 155  | -   |        |                  |

## HyCO Alarm&Trip setting (Main Plant)

Update SEP'2019

| PID         | LOOP_NAME | Tag_number   | Description                    | DVS RANGE |      |       |     |      |      |     | Delay  | Effect |
|-------------|-----------|--------------|--------------------------------|-----------|------|-------|-----|------|------|-----|--------|--------|
|             |           |              |                                | MIN       | MAX  | UNIT  | ALL | AL   | AH   | AAH |        |        |
| KR00-12-026 | T14319    | TAHH14319    | CO2 comp 3th stagedisch        | 0         | 200  | °C    | -   | -    | -    | 165 |        |        |
| 99PP01      | H14031    | HAAUTO140031 | Auto status indic. CM1408A     |           |      |       | -   | -    | -    | -   |        |        |
| 99PP01      | H14035    | HAAUTO140035 | Auto status indic. CM1408B     |           |      |       | -   | -    | -    | -   |        |        |
| 15PP02      | F15001    | FAH15001.A   | SG inlet flow drying stat      | 0         | 9000 | Nm3/h | -   | -    | 8000 | -   |        |        |
| 15PP02      | F15001    | FAH15001.B   | SG inlet flow drying stat      | 0         | 3500 | kg/h  | -   | -    | -    | -   |        |        |
| 15PP02      | F15001    | FAL15001.B   | SG inlet flow drying stat      | 0         | 3500 | kg/h  | -   | -    | -    | -   |        |        |
| 15PP02      | F15001    | FAH15001.C   | SG inlet flow drying stat      | 0         | 7500 | Nm3/h | -   | -    | 7000 | -   |        |        |
| 15PP02      | F15001    | FAL15001.C   | SG inlet flow drying stat      | 0         | 7500 | Nm3/h | -   | 3000 | -    | -   |        |        |
| 15PP01      | T15001    | TAH15001     | SG outlet temp. of D1531       | 0         | 100  | °C    | -   | -    | 60   | -   |        |        |
| 15PP01      | T15001    | TAL15001     | SG outlet temp. of D1531       | 0         | 100  | °C    | -   | 10   | -    | -   |        |        |
| 15PP02      | U15001    | UA15001      | Monitoring time expired        |           |      |       | -   | -    | -    | -   |        |        |
| 15PP01      | L15002    | LAH15002     | Level AL of D1531              |           |      |       | -   | -    | H    | -   |        |        |
| 15PP01      | L15002    | LSH15002     | Level AL of D1532              |           |      |       | -   | -    | H    | -   |        |        |
| 15PP02      | P15002    | PDAH15002.A  | Pressure diff. PI15004-PI15002 |           |      |       | -   | -    | 1    | -   |        |        |
| 15PP02      | P15002    | PDSH15002.A  | Pressure diff. PI15004-PI15002 |           |      |       | -   | -    | -    | -   |        |        |
| 15PP02      | P15002    | PDAH15002.A  | Pressure diff. PI15004-PI15002 |           |      |       | -   | -    | -    | 3   | 5 sec. |        |
| 15PP02      | P15002    | PDSH15002.A  | Pressure diff. PI15004-PI15002 |           |      |       | -   | -    | -    | -   | 5 sec. |        |
| 15PP02      | P15002    | PDAH15002.B  | Pressure diff. PI15002-PI15013 |           |      |       | -   | -    | 3    | -   |        |        |
| 15PP02      | P15002    | PDSH15002.B  | Pressure diff. PI15002-PI15013 |           |      |       | -   | -    | -    | -   |        |        |
| 15PP02      | T15002    | TAH15002     | SG inlet temp. of A15001A      | 0         | 200  | °C    | -   | -    | 50   | -   |        |        |
| 15PP02      | T15002    | TSH15002     | SG inlet temp. of A15001A      | 0         | 200  | °C    | -   | -    | -    | -   |        |        |
| 15PP02      | T15002    | TAL15002     | SG inlet temp. of A15001A      | 0         | 200  | °C    | -   | 120  | -    | -   |        |        |
| 15PP02      | T15002    | TSL15002     | SG inlet temp. of A15001A      | 0         | 200  | °C    | -   | -    | -    | -   |        |        |
| 15PP02      | U15002    | UA15002      | ADS stop                       |           |      |       | -   | -    | -    | -   |        |        |
| 15PP02      | F15003    | FAL15003     | H2 Reg. gas flow control       | 0         | 150  | kg/h  | -   | 13   | -    | -   |        |        |
| 15PP02      | T15003    | TAH15003     | SG outlet temp. of A1501A      | 0         | 200  | °C    | -   | -    | 70   | -   |        |        |
| 15PP02      | T15003    | TSH15003     | SG outlet temp. of A1501A      | 0         | 200  | °C    | -   | -    | -    | -   |        |        |
| 15PP02      | T15003    | TAL15003     | SG outlet temp. of A1501A      | 0         | 200  | °C    | -   | 130  | -    | -   |        |        |
| 15PP02      | T15003    | TSL15003     | SG outlet temp. of A1501A      | 0         | 200  | °C    | -   | -    | -    | -   |        |        |
| 15PP02      | P15004    | PDAH15004.A  | PRESSURE DIFF. PI15002-PI15004 | 0         | 10   | bar   | -   | -    | 1    | -   |        |        |
| 15PP02      | P15004    | PDSH15004.A  | PRESSURE DIFF. PI15002-PI15004 | 0         | 10   | bar   | -   | -    | -    | -   |        |        |
| 15PP02      | P15004    | PDAH15004.A  | PRESSURE DIFF. PI15002-PI15004 | 0         | 10   | bar   | -   | -    | -    | 3   | 5 sec. |        |
| 15PP02      | P15004    | PDSH15004.A  | PRESSURE DIFF. PI15002-PI15004 | 0         | 10   | bar   | -   | -    | -    | -   | 5 sec. |        |
| 15PP02      | P15004    | PDAH15004.B  | PRESSURE DIFF. PI15004-PI15013 | 0         | 10   | bar   | -   | -    | 3    | -   |        |        |
| 15PP02      | P15004    | PDSH15004.B  | PRESSURE DIFF. PI15004-PI15013 | 0         | 10   | bar   | -   | -    | -    | -   |        |        |
| 15PP02      | T15004    | TAH15004     | SG INLET TEMP. of A1501B       | 0         | 200  | °C    | -   | -    | 50   | -   |        |        |
| 15PP02      | T15004    | TSH15004     | SG INLET TEMP. of A1501B       | 0         | 200  | °C    | -   | -    | -    | -   |        |        |
| 15PP02      | T15004    | TAL15004     | SG INLET TEMP. of A1501B       | 0         | 200  | °C    | -   | 120  | -    | -   |        |        |
| 15PP02      | T15004    | TSL15004     | SG INLET TEMP. of A1501B       | 0         | 200  | °C    | -   | -    | -    | -   |        |        |
| 15PP03      | F15005    | FAL15005     | Start- up N2 Flow              | 0         | 1300 | Nm3/h | -   | 450  | -    | -   |        |        |
| 15PP03      | P15005    | PDAH15005    | PRES. DROP OF XV15002          | 0         | 1    | bar   | -   | -    | 0.2  | -   |        |        |
| 15PP03      | P15005    | PDSH15005    | PRES. DROP OF XV15002          | 0         | 1    | bar   | -   | -    | -    | -   |        |        |
| 15PP02      | T15005    | TAH15005     | SG OUTLET TEMP. OF A1501B      | 0         | 200  | °C    | -   | -    | 70   | -   |        |        |
| 15PP02      | T15005    | TSH15005     | SG OUTLET TEMP. OF A1501B      | 0         | 200  | °C    | -   | -    | -    | -   |        |        |
| 15PP02      | T15005    | TAL15005     | SG OUTLET TEMP. OF A1501B      | 0         | 200  | °C    | -   | 130  | -    | -   |        |        |
| 15PP02      | T15005    | TSL15005     | SG OUTLET TEMP. OF A1501B      | 0         | 200  | °C    | -   | -    | -    | -   |        |        |
| 15PP04      | L15006    | LAH15006     | Level AL of D1541              |           |      |       | -   | -    | -    | 50  | 5 sec  |        |
| 15PP04      | L15006    | LSH15006     | Level AL of D1542              |           |      |       | -   | -    | -    | -   | 5 sec  |        |
| 15PP01      | L15007    | LAL15007     | Switch alarm of D1531          |           |      |       | 35  | -    | -    | -   | 5 sec  |        |
| 15PP01      | L15007    | LSL15007     | Switch alarm of D1531          |           |      |       | -   | -    | -    | -   | 5 sec  |        |
| 15PP04      | L15008    | LAL15008     | Switch alarm of D1541          |           |      |       | 35  | -    | -    | -   | 5 sec  |        |
| 15PP04      | L15008    | LSL15008     | Switch alarm of D1541          |           |      |       | -   | -    | -    | -   | 5 sec  |        |
| 15PP03      | T15012    | TAHH15012    | SG OUTLET TEMP. OF E1526       | 0         | 60   | °C    | -   | -    | -    | -   | 5 sec  |        |
| 15PP03      | T15012    | TAH15012.A   | SG OUTLET TEMP. OF E1526       | 0         | 60   | °C    | -   | -    | 45   | -   |        |        |
| 15PP03      | T15012    | TAHH15012.A  | SG OUTLET TEMP. OF E1526       | 0         | 60   | °C    | -   | -    | -    | 50  | 5 sec  |        |
| 15PP03      | T15012    | TSHH15012.A  | SG OUTLET TEMP. OF E1526       | 0         | 60   | °C    | -   | -    | -    | -   | 5 sec  |        |
| 15PP03      | T15012    | TAH15012.B   | SG OUTLET TEMP. OF E1526       | 0         | 60   | °C    | -   | -    | 45   | -   |        |        |
| 15PP03      | T15012    | TAHH15012.B  | SG OUTLET TEMP. OF E1526       | 0         | 60   | °C    | -   | -    | -    | 50  | 5 sec  |        |
| 15PP03      | T15012    | TSHH15012.B  | SG OUTLET TEMP. OF E1526       | 0         | 60   | °C    | -   | -    | -    | -   | 5 sec  |        |
| 15PP03      | T15012    | TAH15012.C   | SG OUTLET TEMP. OF E1526       | 0         | 60   | °C    | -   | -    | 45   | -   |        |        |

- KV15010 and KV15011, Do  
- XV15002, Dose

## HyCO Alarm&Trip setting (Main Plant)

Update SEP'2019

| PID    | LOOP_NAME | Tag_number  | Description                   | DVS RANGE |      |      |       |      |       |      | Delay | Effect         |
|--------|-----------|-------------|-------------------------------|-----------|------|------|-------|------|-------|------|-------|----------------|
|        |           |             |                               | MIN       | MAX  | UNIT | ALL   | AL   | AH    | ASHI |       |                |
| 15PP03 | T15012    | TAHH15012.C | SG OUTLET TEMP .OF E1526      | 0         | 60   | °C   | -     | -    | -     | 50   | 5 sec |                |
| 15PP03 | T15012    | TSHH15012.C | SG OUTLET TEMP .OF E1526      | 0         | 60   | °C   | -     | -    | -     | -    | 5 sec |                |
| 15PP04 | T15014    | TAH15014    | REGEN.GAS INLET TEMP.OF D1541 | 0         | 150  | °C   | -     | -    | 50    | 60   |       | PN 18004 Close |
| 16PP07 | E16001    | EL16001     | QM 16008 RUNNING              |           |      |      | -     | -    | -     | -    |       |                |
| 16PP03 | L16001    | LAH16001    | LevelControl.T1601 (LV16001)  | 0         | 100  | %    | -     | -    | 60    | -    |       |                |
| 16PP03 | L16001    | LAL16001    | LevelControl.T1601 (LV16001)  | 0         | 100  | %    | -     | 40   | -     | -    |       |                |
| 16PP03 | P16001    | PDAH16001   | PRES.DROP OF T1601            | 0         | 400  | mbar | -     | -    | 280   | -    |       |                |
| 16PP07 | E16002    | EAL16002    | FAULT QM1608                  |           |      |      | -     | -    | -     | -    |       |                |
| 16PP03 | L16002    | LAH16002    | LEVEL CONTROL.T1601 (LV16002) | 0         | 100  | %    | -     | -    | 60    | -    |       |                |
| 16PP03 | L16002    | LAL16002    | LEVEL CONTROL.T1601 (LV16002) | 0         | 100  | %    | -     | 40   | -     | -    |       |                |
| 16PP04 | P16002    | PDAH16002   | PRES.DROP OF T1602            | 0         | 100  | mbar | -     | -    | 50    | -    |       |                |
| 16PP06 | E16003    | EAL16003    | FAULT PM1671A                 |           |      |      | -     | -    | -     | -    |       |                |
| 16PP03 | F16003    | FAL16003    | GH4 WASH FLOW CONTROL.T1601   | 0         | 1300 | kg/h | -     | 450  | -     | -    |       |                |
| 16PP04 | L16003    | LAH16003    | LEVEL CONTROL.OF T1602        | 0         | 100  | %    | -     | -    | 60    | -    |       |                |
| 16PP04 | L16003    | LAL16003    | LEVEL CONTROL.OF T1602        | 0         | 100  | %    | -     | 40   | -     | -    |       |                |
| 16PP04 | P16003    | PAH16003    | TAIL GAS PRES. CONTROL        | 0         | 12   | Bar  | -     | -    | 8.5   | -    |       |                |
| 16PP04 | P16003    | PAL16003    | TAIL GAS PRES. CONTROL        | 0         | 12   | Bar  | -     | 6    | -     | -    |       |                |
| 16PP06 | E16004    | EL16004     | RUNNING PM1671A               |           |      |      | -     | -    | -     | -    |       |                |
| 16PP10 | P16004    | PAH16004.A  | TAIL GAS FLARE PRES.CONTROL   | 0         | 1    | Bar  | -     | -    | 0.8   | -    |       |                |
| 16PP06 | E16005    | EAL16005    | FAULT PM1671B                 |           |      |      | -     | -    | -     | -    |       |                |
| 16PP05 | L16005    | LDA16005    | LEVEL CONTROL.OF T1603        |           |      |      | -     | 8    | -     | -    |       |                |
| 16PP05 | L16005    | LAL16005    | LEVEL CONTROL.OF T1603        | 0         | 100  | %    | -     | 25   | -     | -    |       |                |
| 16PP05 | L16005    | LALL16005   | LEVEL CONTROL.OF T1603        | 0         | 100  | %    | 5     | -    | -     | -    | 5 sec |                |
| 16PP05 | L16005    | LAL16005.A  | LEVEL CONTROL.OF T1603        | 0         | 100  | %    | -     | 25   | -     | -    |       |                |
| 16PP05 | L16005    | LALL16005.A | LEVEL CONTROL.OF T1603        | 0         | 100  | %    | 5     | -    | -     | -    | 5 sec |                |
| 16PP05 | L16005    | LSL16005.A  | LEVEL CONTROL.OF T1603        | 0         | 100  | %    | -     | -    | -     | -    | 5 sec |                |
| 16PP05 | L16005    | LAL16005.B  | LEVEL CONTROL.OF T1603        | 0         | 100  | %    | -     | 25   | -     | -    |       |                |
| 16PP05 | L16005    | LALL16005.B | LEVEL CONTROL.OF T1603        | 0         | 100  | %    | 5     | -    | -     | -    | 5 sec |                |
| 16PP05 | L16005    | LSL16005.B  | LEVEL CONTROL.OF T1603        | 0         | 100  | %    | -     | -    | -     | -    | 5 sec |                |
| 16PP05 | L16005    | LAL16005.C  | LEVEL CONTROL.OF T1603        | 0         | 100  | %    | -     | 25   | -     | -    |       |                |
| 16PP05 | L16005    | LALL16005.C | LEVEL CONTROL.OF T1603        | 0         | 100  | %    | 5     | -    | -     | -    | 5 sec |                |
| 16PP05 | L16005    | LSL16005.C  | LEVEL CONTROL.OF T1603        | 0         | 100  | %    | -     | -    | -     | -    | 5 sec |                |
| 16PP05 | P16005    | PDAH16005   | PRES.DROP OF T1603            | 0         | 250  | mbar | -     | -    | 210   | -    |       |                |
| 16PP06 | E16006    | EL16006     | RUNNING PM1671B               |           |      |      | -     | -    | -     | -    |       |                |
| 16PP03 | L16006    | LAH16006    | LEVEL D1633                   | 0         | 100  | %    | -     | -    | 95    | -    |       |                |
| 16PP03 | L16006    | LAL16006    | LEVEL D1633                   | 0         | 100  | %    | -     | 85   | -     | -    |       |                |
| 98PP02 | A16009    | AAH16009    | GH4 ANALYZER                  | 0         | 200  | ppm  | -     | -    | 7,8,9 | -    |       |                |
| 98PP02 | A16009    | AAHH16009   | GH4 ANALYZER                  | 0         | 200  | ppm  | -     | -    | -     | 10   |       |                |
| 98PP02 | A16009    | ASHH16009   | GH4 ANALYZER                  | 0         | 200  | ppm  | -     | -    | -     | -    |       | PN16020 Close  |
| 98PP02 | A16010    | AAH16010    | H2 ANALYZER                   | 0         | 3000 | ppm  | -     | -    | 1500  | -    |       |                |
| 98PP02 | A16010    | AAHH16010   | H2 ANALYZER                   | 0         | 3000 | ppm  | -     | -    | -     | 2000 |       |                |
| 98PP02 | A16010    | ASHH16010   | H2 ANALYZER                   | 0         | 3000 | ppm  | -     | -    | -     | -    |       | PN16020 Close  |
| 16PP01 | SI6101    | SI6101      | X1606 SPEED                   |           |      | Hz   | 390   | -    | -     | -    |       |                |
| 16PP02 | SI6101    | PDH16101    | X1606                         |           |      | bar  |       |      | 1.5   | 2.5  |       |                |
|        |           |             |                               |           |      |      |       |      |       |      |       |                |
| 98PP02 | A16011    | AAL16011    | CO purity ANALYZER            | 0         | 100  | %    | -     | 97.8 | -     | -    |       |                |
| 98PP02 | A16011    | ASLL16011   | CO purity ANALYZER            | 0         | 100  | %    | 97.62 | -    | -     | -    |       |                |
| 98PP02 | A16011    | AALL16011   | CO purity ANALYZER            | 0         | 100  | %    | -     | -    | -     | -    |       | PN16020 Close  |
| 98PP02 | A16013    | AAH16013    | GH4 ANALYZER                  | 0         | 100  | ppm  | -     | -    | 9     | -    |       |                |
| 98PP02 | A16013    | AAHH16013   | GH4 ANALYZER                  | 0         | 100  | ppm  | -     | -    | -     | 10   |       |                |
| 98PP02 | A16013    | ASHH16013   | GH4 ANALYZER                  | 0         | 100  | %    | -     | -    | -     | -    |       | PN16020 Close  |
| 99PP01 | E16010    | EL16010     | RUNNING QM1608A               |           |      |      | -     | -    | -     | -    |       |                |
| 99PP01 | E16011    | EAL16011    | FAULT QM1608A                 |           |      |      | -     | -    | -     | -    |       |                |
| 16PP05 | F16011    | FAL16011    | N2 PURGING OF COLD BOX INSUL. |           |      |      | -     | 10   | -     | -    |       |                |
| 16PP05 | F16011    | FSL16011    | N2 PURGING OF COLD BOX INSUL. |           |      |      | -     | -    | -     | -    |       |                |
| 99PP01 | E16012    | EL16012     | RUNNING QM1608B               |           |      |      | -     | -    | -     | -    |       |                |
| 16PP10 | T16012    | TALL16012   | H2 fraction temp.             |           |      |      | -     | -    | -     | -    | 5 sec |                |
| 16PP10 | T16012    | TAL16012.A  | H2 fraction temp.             | 0         | 60   | °C   | -     | 20   | -     | -    |       |                |

## HyCO Alarm&Trip setting (Main Plant)

Update SEP'2019

| PID     | LOOP_NAME | Tag_number  | Description                   | DVS RANGE |     |        |     |      |     |     | Delay | Effect   |
|---------|-----------|-------------|-------------------------------|-----------|-----|--------|-----|------|-----|-----|-------|--|
|         |           |             |                               | MIN       | MAX | UNIT   | ALL | AL   | AH  | AHH |       |  |
| 16PPF10 | T16012    | TALL16012.A | H2 fraction temp.             | 0         | 60  | °C     | 10  | -    | -   | -   | 5 sec | - P1671A/B, Stop<br>- KV15015 and KV15017, Dos |
| 16PPF10 | T16012    | TSLL16012.A | H2 fraction temp.             | 0         | 60  | °C     | -   | -    | -   | -   | 5 sec |  |
| 16PPF10 | T16012    | TAH16012.A  | H2 fraction temp.             | 0         | 60  | °C     | -   | -    | 50  | -   |       |  |
| 16PPF10 | T16012    | TAL16012.B  | H2 fraction temp.             | 0         | 60  | °C     | -   | 20   | -   | -   |       |  |
| 16PPF10 | T16012    | TALL16012.B | H2 fraction temp.             | 0         | 60  | °C     | 10  | -    | -   | -   | 5 sec | - P1671A/B, Stop<br>- KV15015 and KV15017, Dos |
| 16PPF10 | T16012    | TSLL16012.B | H2 fraction temp.             | 0         | 60  | °C     | -   | -    | -   | -   | 5 sec |  |
| 16PPF10 | T16012    | TAH16012.B  | H2 fraction temp.             | 0         | 60  | °C     | -   | -    | 50  | -   |       |  |
| 16PPF10 | T16012    | TAL16012.C  | H2 fraction temp.             | 0         | 60  | °C     | -   | 20   | -   | -   |       |  |
| 16PPF10 | T16012    | TALL16012.C | H2 fraction temp.             | 0         | 60  | °C     | 10  | -    | -   | -   | 5 sec | - P1671A/B, Stop<br>- KV15015 and KV15017, Dos |
| 16PPF10 | T16012    | TSLL16012.C | H2 fraction temp.             | 0         | 60  | °C     | -   | -    | -   | -   | 5 sec |  |
| 16PPF10 | T16012    | TAH16012.C  | H2 fraction temp.             | 0         | 60  | °C     | -   | -    | 50  | -   |       |  |
| 99PPF01 | E16013    | EAL16013    | FAULT CM1608B                 |           |     |        | -   | -    | -   | -   |       |  |
| 16PPF05 | F16013    | FALL16013   | N2 PURGING OF COLD BOX INSUL. |           |     |        | -   | 10   | -   | -   |       |  |
| 16PPF05 | F16013    | FSL16013    | N2 PURGING OF COLD BOX INSUL. |           |     |        | -   | -    | -   | -   |       |  |
| 99PPF01 | E16014    | EL16014     | RUNNING CM1608B               |           |     |        | -   | -    | -   | -   |       |  |
| 99PPF01 | E16015    | EAL16015    | FAULT CM1608C                 |           |     |        | -   | -    | -   | -   |       |  |
| 16PPF10 | T16016    | TALL16016   | Tail gas temp.                |           |     |        | -   | -    | -   | -   |       |  |
| 16PPF10 | T16016    | TAL16016.A  | Tail gas temp.                | -20       | 60  | °C     | -   | 10   | -   | -   |       |  |
| 16PPF10 | T16016    | TALL16016.A | Tail gas temp.                | -20       | 60  | °C     | -10 | -    | -   | -   | 5 sec | HN16003 and PN16003, Dos                       |
| 16PPF10 | T16016    | TSLL16016.A | Tail gas temp.                | -20       | 60  | °C     | -   | -    | -   | -   | 5 sec |  |
| 16PPF10 | T16016    | TAL16016.B  | Tail gas temp.                | -20       | 60  | °C     | -   | 10   | -   | -   |       |  |
| 16PPF10 | T16016    | TALL16016.B | Tail gas temp.                | -20       | 60  | °C     | -10 | -    | -   | -   | 5 sec | HN16003 and PN16003, Dos                       |
| 16PPF10 | T16016    | TSLL16016.B | Tail gas temp.                | -20       | 60  | °C     | -   | -    | -   | -   | 5 sec |  |
| 16PPF10 | T16016    | TAL16016.C  | Tail gas temp.                | -20       | 60  | °C     | -   | 10   | -   | -   |       |  |
| 16PPF10 | T16016    | TALL16016.C | Tail gas temp.                | -20       | 60  | °C     | -10 | -    | -   | -   | 5 sec | HN16003 and PN16003, Dos                       |
| 16PPF10 | T16016    | TSLL16016.C | Tail gas temp.                | -20       | 60  | °C     | -   | -    | -   | -   | 5 sec |  |
| 16PPF07 | T16024    | TALL16024   | CO temp. suction side C1608   |           |     |        | -   | -    | -   | -   | 5 sec |  |
| 16PPF07 | T16024    | TAL16016.A  | CO temp. suction side C1608   | -20       | 60  | °C     | -   | 10   | -   | -   |       |  |
| 16PPF07 | T16024    | TALL16016.A | CO temp. suction side C1608   | -20       | 60  | °C     | -10 | -    | -   | -   | 5 sec |  |
| 16PPF07 | T16024    | TSLL16016.A | CO temp. suction side C1608   | -20       | 60  | °C     | -   | -    | -   | -   | 5 sec |  |
| 16PPF07 | T16024    | TAL16016.B  | CO temp. suction side C1608   | -20       | 60  | °C     | -   | 10   | -   | -   |       |  |
| 16PPF07 | T16024    | TALL16016.B | CO temp. suction side C1608   | -20       | 60  | °C     | -10 | -    | -   | -   | 5 sec |  |
| 16PPF07 | T16024    | TSLL16016.B | CO temp. suction side C1608   | -20       | 60  | °C     | -   | -    | -   | -   | 5 sec |  |
| 16PPF07 | T16024    | TAL16016.C  | CO temp. suction side C1608   | -20       | 60  | °C     | -   | 10   | -   | -   |       |  |
| 16PPF07 | T16024    | TALL16016.C | CO temp. suction side C1608   | -20       | 60  | °C     | -10 | -    | -   | -   | 5 sec |  |
| 16PPF07 | T16024    | TSLL16016.C | CO temp. suction side C1608   | -20       | 60  | °C     | -   | -    | -   | -   | 5 sec |  |
| 16PPF05 | T16023    | TSLL16023   | T1603 - TOP COL. TEMP.        | -200      | 50  | °C     | -   | -183 | -   | -   |       |  |
| 16PPF05 | P16026    | PAH16026    | Pres. AL of cold boxinsul.    |           |     | mbar g | -   | -    | 5   | -   |       |  |
| 16PPF05 | P16026    | PSH16026    | Pres. AL of cold boxinsul.    |           |     | mbar g | -   | -    | -   | -   |       |  |
| 16PPF05 | P16027    | PAL16027    | Pres. AL of cold boxinsul.    |           |     | mbar g | -   | 0    | -   | -   |       |  |
| 16PPF05 | P16027    | PSL16027    | Pres. AL of cold boxinsul.    |           |     | mbar g | -   | -    | -   | -   |       |  |
| 16PPF02 | T16031    | TAL16031    | Tail gas inlet temp. Of E1611 | -200      | 50  | °C     | -   | -170 | -   | -   |       |  |
| 16PPF10 | P16033    | PAH16033    | LP CO FLARE PRES. CONTROL     | 0         | 3   | Bar    | -   | -    | 2.9 | -   |       |  |
| 16PPF02 | T16032    | TAL16032    | CO inlet temp. of E1611       | -200      | 50  | °C     | -   | -170 | -   | -   |       |  |
| 16PPF07 | T16035    | TAH16035    | CO outlet temp. C1608         | 0         | 60  | °C     | -   | -    | 50  | -   |       |  |
| 16PPF08 | T16040    | TAHH16040   | Outlet temp. 4th stage C1608  |           |     |        | -   | -    | -   | -   | 5 sec |  |
| 16PPF08 | T16040    | TAH16040.A  | Outlet temp. 4th stage C1608  | 0         | 60  | °C     | -   | -    | 45  | -   |       |  |
| 16PPF08 | T16040    | TAHH16040.A | Outlet temp. 4th stage C1608  | 0         | 60  | °C     | -   | -    | -   | 50  | 5 sec |  |
| 16PPF08 | T16040    | TSHH16040.A | Outlet temp. 4th stage C1608  | 0         | 60  | °C     | -   | -    | -   | -   | 5 sec |  |
| 16PPF08 | T16040    | TAH16040.A  | Outlet temp. 4th stage C1608  | 0         | 60  | °C     | -   | -    | 45  | -   |       |  |
| 16PPF08 | T16040    | TAHH16040.A | Outlet temp. 4th stage C1608  | 0         | 60  | °C     | -   | -    | -   | 50  | 5 sec |  |
| 16PPF08 | T16040    | TSHH16040.A | Outlet temp. 4th stage C1608  | 0         | 60  | °C     | -   | -    | -   | -   | 5 sec |  |
| 16PPF08 | T16040    | TAH16040.A  | Outlet temp. 4th stage C1608  | 0         | 60  | °C     | -   | -    | 45  | -   |       |  |
| 16PPF08 | T16040    | TAHH16040.A | Outlet temp. 4th stage C1608  | 0         | 60  | °C     | -   | -    | -   | 50  | 5 sec |  |
| 16PPF08 | T16040    | TSHH16040.A | Outlet temp. 4th stage C1608  | 0         | 60  | °C     | -   | -    | -   | -   | 5 sec |  |
| 16PPF06 | H16041    | HAAUTO16041 | Remote/local indic. P1671A    |           |     |        | -   | -    | -   | -   |       |  |
| 16PPF06 | H16043    | HAAUTO16043 | Remote/local indic. P1671A    |           |     |        | -   | -    | -   | -   |       |  |

## HyCO Alarm&Trip setting (Main Plant)

Update SEP'2019

| PID    | LOOP_NAME | Tag_number  | Description                      | DVS RANGE |      |       |     |      |      |       | Delay | Effect         |
|--------|-----------|-------------|----------------------------------|-----------|------|-------|-----|------|------|-------|-------|----------------|
|        |           |             |                                  | MIN       | MAX  | UNIT  | ALL | AL   | AH   | AAH   |       |                |
| 16PP02 | T16047    | TAH16047    | H2 Outlet temp.E1612             | -150      | -130 | °C    | -   | -    | -130 | -     |       |                |
| 16PP02 | T16047    | TAL16047    | H2 Outlet temp.E1613             | -150      | -130 | °C    | -   | -150 | -    | -     |       |                |
| 16PP09 | T16050    | TALL16050   | Temp.of CO Export from D1633     |           |      |       | -   | -    | -    | -     | 5 sec |                |
| 16PP09 | T16050    | TAL16050.A  | Temp.of CO Export from D1633     | -20       | 60   | °C    | -   | 10   | -    | -     |       |                |
| 16PP09 | T16050    | TALL16050.A | Temp.of CO Export from D1633     | -20       | 60   | °C    | -10 | -    | -    | -     | 5 sec |                |
| 16PP09 | T16050    | TSL16050.A  | Temp.of CO Export from D1633     | -20       | 60   | °C    | -   | -    | -    | -     | 5 sec |                |
| 16PP09 | T16050    | TAL16050.B  | Temp.of CO Export from D1633     | -20       | 60   | °C    | -   | 10   | -    | -     |       |                |
| 16PP09 | T16050    | TALL16050.B | Temp.of CO Export from D1633     | -20       | 60   | °C    | -10 | -    | -    | -     | 5 sec |                |
| 16PP09 | T16050    | TSL16050.B  | Temp.of CO Export from D1633     | -20       | 60   | °C    | -   | -    | -    | -     | 5 sec |                |
| 16PP09 | T16050    | TAL16050.C  | Temp.of CO Export from D1633     | -20       | 60   | °C    | -   | 10   | -    | -     |       |                |
| 16PP09 | T16050    | TALL16050.C | Temp.of CO Export from D1633     | -20       | 60   | °C    | -10 | -    | -    | -     | 5 sec |                |
| 16PP09 | T16050    | TSL16050.C  | Temp.of CO Export from D1633     | -20       | 60   | °C    | -   | -    | -    | -     | 5 sec |                |
| 16PP10 | T16059    | TALL16059   | CO Product Temp.                 |           |      |       | -   | -    | -    | -     | 5 sec |                |
| 16PP10 | T16059    | TAL16059.A  | CO Product Temp.                 | -20       | 60   | °C    | -   | 10   | -    | -     |       |                |
| 16PP10 | T16059    | TALL16059.A | CO Product Temp.                 | -20       | 60   | °C    | -10 | -    | -    | -     | 5 sec |                |
| 16PP10 | T16059    | TSL16059.A  | CO Product Temp.                 | -20       | 60   | °C    | -   | -    | -    | -     | 5 sec |                |
| 16PP10 | T16059    | TAL16059.B  | CO Product Temp.                 | -20       | 60   | °C    | -   | 10   | -    | -     |       |                |
| 16PP10 | T16059    | TALL16059.B | CO Product Temp.                 | -20       | 60   | °C    | -10 | -    | -    | -     | 5 sec |                |
| 16PP10 | T16059    | TSL16059.B  | CO Product Temp.                 | -20       | 60   | °C    | -   | -    | -    | -     | 5 sec |                |
| 16PP10 | T16059    | TAL16059.C  | CO Product Temp.                 | -20       | 60   | °C    | -   | 10   | -    | -     |       |                |
| 16PP10 | T16059    | TALL16059.C | CO Product Temp.                 | -20       | 60   | °C    | -10 | -    | -    | -     | 5 sec |                |
| 16PP10 | T16059    | TSL16059.C  | CO Product Temp.                 | -20       | 60   | °C    | -   | -    | -    | -     | 5 sec |                |
| 99PP01 | H16062    | HAAUTO16062 | Remote/local indic. CM1608A      |           |      |       | -   | -    | -    | -     |       |                |
| 16PP06 | T16063    | TAL16063    | N2 coupling purging of P1671A    | 0         | 60   | °C    | -   | 10   | -    | -     |       |                |
| 16PP06 | T16064    | TAL16064    | N2 coupling purging of P1671B    | 0         | 60   | °C    | -   | 10   | -    | -     |       |                |
| 99PP01 | H16066    | HAAUTO16066 | Remote/local indic. CM1608B      |           |      |       | -   | -    | -    | -     |       |                |
| 99PP01 | H16070    | HAAUTO16070 | Remote/local indic. CM1608C      |           |      |       | -   | -    | -    | -     |       |                |
| 16PP09 | P16109    | PALL16109   | Pres. Of CO Export from D1633    | 0         | 16   | bar g | 7   | -    | -    | -     |       |                |
| 16PP09 | P16109    | PAL16109    | Pres. Of CO Export from D1633    | 0         | 16   | bar g | -   | 12.8 | -    | -     |       |                |
| 16PP09 | P16109    | PAH16109    | Pres. Of CO Export from D1633    | 0         | 16   | bar g | -   | -    | 13.5 | -     |       |                |
| 16PP01 | P16104    | PDAH16104   | Break Pres. Diff                 | 0         | 15   | bar g | -   | -    | 9.5  |       |       |                |
| 16PP02 | P16105    | PDAH16104   | Break Pres. Diff                 | 0         | 15   | bar g | -   | -    | -    | 10.05 |       |                |
| 16PP08 | P16500A   | PAH         | C1608 DISCH. PRESS. 4TH STAGE    | 0         | 50   | bar g | -   | -    | 27.5 | -     |       |                |
| 16PP08 | P16500A   | PAHH        | C1608 DISCH. PRESS. 4TH STAGE    | 0         | 50   | bar g | -   | -    | -    | 29    |       |                |
| 16PP08 | P16500B   | PAH         | C1608 DISCH. PRESS. 4TH STAGE    | 0         | 50   | bar g | -   | -    | 27.5 | -     |       |                |
| 16PP08 | P16500B   | PAHH        | C1608 DISCH. PRESS. 4TH STAGE    | 0         | 50   | bar g | -   | -    | -    | 29    |       |                |
| 16PP08 | P16500C   | PAH         | C1608 DISCH. PRESS. 4TH STAGE    | 0         | 50   | bar g | -   | -    | 27.5 | -     |       |                |
| 16PP08 | P16500C   | PAHH        | C1608 DISCH. PRESS. 4TH STAGE    | 0         | 50   | bar g | -   | -    | -    | 29    |       |                |
| 18PP01 | P18001    | PAL18001    | PSA feed pres.                   | 0         | 40   | bar g | -   | 27   | -    | -     |       |                |
| 18PP01 | T18001    | TAH18001    | PSA feed temp.                   | 0         | 60   | °C    | -   | -    | 45   | -     |       |                |
| 18PP01 | T18001    | TSHH18001   | PSA feed temp.                   | 0         | 60   | °C    | -   | -    | -    | -     |       |                |
| 18PP01 | A18015    | AAH         | CO analyzer in H2 product        | 0         | 50   | ppm   | -   | -    | 0.5  | -     |       |                |
| 18PP01 | A18015    | AAHH        | CO analyzer in H2 product        | 0         | 50   | ppm   | -   | -    | -    | 1     |       | PN18002A Close |
| 18PP01 | A18016    | AAH         | CH4 analyzer in H2 product       | 0         | 50   | ppm   | -   | -    | 5    | -     |       |                |
| 18PP01 | A18016    | AAHH        | CH4 analyzer in H2 product       | 0         | 50   | ppm   | -   | -    | -    | 10    |       | PN18002A Close |
| 18PP01 | X18001    | XAL18001    | Status PSA S/D logic             |           |      |       | -   | -    | -    | -     |       |                |
| 18PP01 | F18002    | FAL18002    | PSA N2 purging flow AL           |           |      | kg/h  | -   | 0.7  | -    | -     |       |                |
| 18PP01 | F18002    | FSL18002    | PSA N2 purging flow AL           |           |      | kg/h  | -   | -    | -    | -     |       |                |
| 18PP01 | P18003    | PAH18003    | Purge gas to flare pres. Control | 0         | 1.2  | bar g | -   | -    | 0.8  | -     |       |                |
| 89PP01 | A89001    | AAH89001.A  | GAS DETECT. (BUT. H2) C1 408     |           |      |       | -   | -    | H    | -     |       |                |
| 89PP01 | A89001    | ASH89001.A  | GAS DETECT. (BUT. H2) C1 408     |           |      |       | -   | -    | -    | H     |       |                |
| 89PP01 | A89001    | AAHH89001.B | GAS DETECT. (BUT. H2) C1 408     |           |      |       | -   | -    | -    | HH    |       |                |
| 89PP01 | A89001    | ASHH89001.B | GAS DETECT. (BUT. H2) C1 408     |           |      |       | -   | -    | -    | HH    |       |                |
| 89PP01 | U89001    | UA89001     | GAS DETECT. (BUT. H2) C1 408     |           |      |       | -   | -    | -    | -     |       |                |
| 89PP01 | A89002    | AAL89002    | GAS DETECT. (O2) C1 408          |           |      |       | -   | L    | -    | -     |       |                |
| 89PP01 | A89002    | ASL89002    | GAS DETECT. (O2) C1 408          |           |      |       | -   | L    | -    | -     |       |                |
| 89PP01 | U89002    | UA89002     | GAS DETECT. (O2) C1 408          |           |      |       | -   | -    | -    | -     |       |                |
| 89PP01 | A89003    | AAHH89003   | GAS DETECT.(CO)MDEA REGEN.       |           |      |       | -   | -    | -    | HH    |       |                |
| 89PP01 | A89003    | ASHH89003   | GAS DETECT.(CO)MDEA REGEN.       |           |      |       | -   | -    | -    | HH    |       |                |
| 89PP01 | U89003    | UA89003     | GAS DETECT.(CO)MDEA REGEN.       |           |      |       | -   | -    | -    | -     |       |                |

## HyCO Alarm&Trip setting (Main Plant)

Update SEP'2019

| PID     | LOOP_NAME | Tag_number  | Description                    | DVS RANGE |     |      |     |    |    |     | Delay | Effect |
|---------|-----------|-------------|--------------------------------|-----------|-----|------|-----|----|----|-----|-------|--------|
|         |           |             |                                | MIN       | MAX | UNIT | ALL | AL | AH | ANN |       |        |
| 89FPF01 | A89004    | AAH89004    | GAS DETECT.(BUT., H2 ) R1001   |           |     |      | -   | -  | H  | -   |       |        |
| 89FPF01 | A89004    | ASHH89004   | GAS DETECT.(BUT., H2 ) R1001   |           |     |      | -   | -  | -  | HH  |       |        |
| 89FPF01 | U89004    | UA89004     | GAS DETECT.(BUT., H2 ) R1001   |           |     |      | -   | -  | -  | -   |       |        |
| 89FPF01 | A89005    | AAH89005    | GAS DETECT.(CO) D1331          |           |     |      | -   | -  | -  | HH  |       |        |
| 89FPF01 | A89005    | ASHH89005   | GAS DETECT.(CO) D1331          |           |     |      | -   | -  | -  | HH  |       |        |
| 89FPF01 | U89005    | UA89005     | GAS DETECT.(CO) D1331          |           |     |      | -   | -  | -  | -   |       |        |
| 89FPF01 | A89006    | AAH89006    | GAS DETECT.(CO) FURNACE        |           |     |      | -   | -  | -  | HH  |       |        |
| 89FPF01 | A89006    | ASHH89006   | GAS DETECT.(CO) FURNACE        |           |     |      | -   | -  | -  | HH  |       |        |
| 89FPF01 | U89006    | UA89006     | GAS DETECT.(CO) FURNACE        |           |     |      | -   | -  | -  | -   |       |        |
| 89FPF01 | A89007    | AAH89007    | GAS DETECT.(BUT., H2 ) FURNACE |           |     |      | -   | -  | -  | HH  |       |        |
| 89FPF01 | A89007    | ASHH89007   | GAS DETECT.(BUT., H2 ) FURNACE |           |     |      | -   | -  | -  | HH  |       |        |
| 89FPF01 | U89007    | UA89007     | GAS DETECT.(BUT., H2 ) FURNACE |           |     |      | -   | -  | -  | -   |       |        |
| 89FPF01 | A89008    | AAH89008.A  | GAS DETECT.(H2 ) CONT.         |           |     |      | -   | -  | H  | -   |       |        |
| 89FPF01 | A89008    | ASHH89008.A | GAS DETECT.(H2 ) CONT.         |           |     |      | -   | -  | H  | -   |       |        |
| 89FPF01 | A89008    | AAH89008.B  | GAS DETECT.(H2 ) CONT.         |           |     |      | -   | -  | -  | HH  |       |        |
| 89FPF01 | A89008    | ASHH89008.B | GAS DETECT.(H2 ) CONT.         |           |     |      | -   | -  | -  | HH  |       |        |
| 89FPF01 | U89008    | UA89008     | GAS DETECT.(H2 ) CONT.         |           |     |      | -   | -  | -  | -   |       |        |
| 89FPF01 | A89009    | AAH89009.A  | GAS DETECT.(CO ) CONT.         |           |     |      | -   | -  | H  | -   |       |        |
| 89FPF01 | A89009    | ASHH89009.A | GAS DETECT.(CO ) CONT.         |           |     |      | -   | -  | H  | -   |       |        |
| 89FPF01 | A89009    | AAH89009.B  | GAS DETECT.(CO ) CONT.         |           |     |      | -   | -  | -  | HH  |       |        |
| 89FPF01 | A89009    | ASHH89009.B | GAS DETECT.(CO ) CONT.         |           |     |      | -   | -  | -  | HH  |       |        |
| 89FPF01 | U89009    | UA89009     | GAS DETECT.(CO ) CONT.         |           |     |      | -   | -  | -  | -   |       |        |
| 89FPF01 | A89010    | AAH89010.A  | GAS DETECT.(BUT., H2 ) CONT.   |           |     |      | -   | -  | H  | -   |       |        |
| 89FPF01 | A89010    | ASHH89010.A | GAS DETECT.(BUT., H2 ) CONT.   |           |     |      | -   | -  | -  | HH  |       |        |
| 89FPF01 | A89010    | AAH89010.B  | GAS DETECT.(BUT., H2 ) CONT.   |           |     |      | -   | -  | -  | HH  |       |        |
| 89FPF01 | A89010    | ASHH89010.B | GAS DETECT.(BUT., H2 ) CONT.   |           |     |      | -   | -  | -  | HH  |       |        |
| 99FPF02 | U89010    | UAL89010    | SYSTEM FAULT HYCO-C-GD01       |           |     |      | -   | -  | -  | -   |       |        |
| 99FPF02 | U89010    | USL89010    | SYSTEM FAULT HYCO-C-GD01       |           |     |      | -   | -  | -  | -   |       |        |
| 89FPF01 | A89011    | AAL89011    | GAS DETECT.(O2 ) CONT.         |           |     |      | -   | L  | -  | -   |       |        |
| 89FPF01 | A89011    | ASL89011    | GAS DETECT.(O2 ) CONT.         |           |     |      | -   | -  | -  | HH  |       |        |
| 89FPF01 | A89012    | AAH89012    | GAS DETECT.(H2 ) PSA UNIT      |           |     |      | -   | -  | -  | HH  |       |        |
| 89FPF01 | A89012    | ASHH89012   | GAS DETECT.(H2 ) PSA UNIT      |           |     |      | -   | -  | -  | HH  |       |        |
| 89FPF01 | A89013    | AAH89013    | GAS DETECT.(H2 ) PSA UNIT      |           |     |      | -   | -  | -  | HH  |       |        |
| 89FPF01 | A89013    | ASHH89013   | GAS DETECT.(H2 ) PSA UNIT      |           |     |      | -   | -  | -  | HH  |       |        |
| 89FPF01 | A89014    | AAH89014    | GAS DETECT.(H2 ) H2 RECYCLE    |           |     |      | -   | -  | -  | HH  |       |        |
| 89FPF01 | A89014    | ASHH89014   | GAS DETECT.(H2 ) H2 RECYCLE    |           |     |      | -   | -  | -  | HH  |       |        |
| 89FPF01 | A89015    | AAH89015    | GAS DETECT.(H2 ) H2 RECYCLE    |           |     |      | -   | -  | -  | HH  |       |        |
| 89FPF01 | A89015    | ASHH89015   | GAS DETECT.(H2 ) H2 RECYCLE    |           |     |      | -   | -  | -  | HH  |       |        |
| 89FPF01 | A89016    | AAH89016    | GAS DETECT.(CO ) DRYING STAT.  |           |     |      | -   | -  | -  | HH  |       |        |
| 89FPF01 | A89016    | ASHH89016   | GAS DETECT.(CO ) DRYING STAT.  |           |     |      | -   | -  | -  | HH  |       |        |
| 89FPF01 | A89017    | AAH89017    | GAS DETECT.(H2 ) DRYING STAT.  |           |     |      | -   | -  | -  | HH  |       |        |
| 89FPF01 | A89017    | ASHH89017   | GAS DETECT.(H2 ) DRYING STAT.  |           |     |      | -   | -  | -  | HH  |       |        |
| 89FPF01 | A89018    | AAH89018    | GAS DETECT.(CH4 ) P1671A       |           |     |      | -   | -  | -  | HH  |       |        |
| 89FPF01 | A89018    | ASHH89018   | GAS DETECT.(CH4 ) P1671A       |           |     |      | -   | -  | -  | HH  |       |        |
| 89FPF01 | A89019    | AAH89019    | GAS DETECT.(CH4 ) P1671B       |           |     |      | -   | -  | -  | HH  |       |        |
| 89FPF01 | A89019    | ASHH89019   | GAS DETECT.(CH4 ) P1671B       |           |     |      | -   | -  | -  | HH  |       |        |
| 89FPF01 | A89020    | AAH89020    | GAS DETECT.(CO ) COLD BOX      |           |     |      | -   | -  | -  | HH  |       |        |
| 89FPF01 | A89020    | ASHH89020   | GAS DETECT.(CO ) COLD BOX      |           |     |      | -   | -  | -  | HH  |       |        |
| 89FPF01 | A89021    | AAH89021    | GAS DETECT.(H2 ) COLD BOX      |           |     |      | -   | -  | -  | HH  |       |        |
| 89FPF01 | A89021    | ASHH89021   | GAS DETECT.(H2 ) COLD BOX      |           |     |      | -   | -  | -  | HH  |       |        |
| 89FPF01 | A89022    | AAH89022.A  | GAS DETECT.(CO ) C1606         |           |     |      | -   | -  | H  | -   |       |        |
| 89FPF01 | A89022    | ASHH89022.A | GAS DETECT.(CO ) C1606         |           |     |      | -   | -  | -  | HH  |       |        |
| 89FPF01 | A89022    | AAH89022.B  | GAS DETECT.(CO ) C1606         |           |     |      | -   | -  | -  | HH  |       |        |
| 89FPF01 | A89022    | ASHH89022.B | GAS DETECT.(CO ) C1606         |           |     |      | -   | -  | -  | HH  |       |        |
| 89FPF01 | A89023    | AAH89023.A  | GAS DETECT.(CO ) C1608         |           |     |      | -   | -  | H  | -   |       |        |
| 89FPF01 | A89023    | ASHH89023.A | GAS DETECT.(CO ) C1608         |           |     |      | -   | -  | H  | -   |       |        |
| 89FPF01 | A89023    | AAH89023.B  | GAS DETECT.(CO ) C1608         |           |     |      | -   | -  | -  | HH  |       |        |
| 89FPF01 | A89023    | ASHH89023.B | GAS DETECT.(CO ) C1608         |           |     |      | -   | -  | -  | HH  |       |        |
| 89FPF01 | A89024    | AAH89024    | GAS DETECT.(CO ) CO COMPR.     |           |     |      | -   | -  | -  | HH  |       |        |
| 89FPF01 | A89024    | ASHH89024   | GAS DETECT.(CO ) CO COMPR.     |           |     |      | -   | -  | -  | HH  |       |        |

## HyCO Alarm&Trip setting (Main Plant)

Update SEP'2019

| PID     | LOOP_NAME | Tag_number | Description                   | DVS RANGE |     |       |     |     |     |     | Delay | Effect              |
|---------|-----------|------------|-------------------------------|-----------|-----|-------|-----|-----|-----|-----|-------|---------------------|
|         |           |            |                               | MIN       | MAX | UNIT  | ALL | AL  | AH  | ASH |       |                     |
| 89FPF01 | A89025    | AAHH89025  | GAS DETECT.(CO)CO EXPANDER    |           |     |       | -   | -   | -   | HH  |       |                     |
| 89FPF01 | A89025    | ASHH89025  | GAS DETECT.(CO)CO EXPANDER    |           |     |       | -   | -   | -   | HH  |       |                     |
| 89FPF01 | A89028    | ASHH89028  | GAS DETECT.(CO2)CO2 COMPR.    |           |     |       | -   | -   | 0.5 | 1.5 |       | UA89000_Y/UA89000_R |
| 89FPF01 | A89029    | ASHH89029  | GAS DETECT.(CO2)CO2 COMPR.    |           |     |       | -   | -   | 0.5 | 1.5 |       | UA89000_Y/UA89000_R |
| 90FPF01 | F90001    | FAL90001   | WARM FLARE GAS HEAD.PURG.AL   |           |     |       | -   | 25  | -   | -   |       |                     |
| 90FPF01 | F90001    | FSL90001   | WARM FLARE GAS HEAD.PURG.AL   |           |     |       | -   | -   | -   | -   |       |                     |
| 90FPF02 | L90001    | LAH90001   | LEVEL STAND PIPE WARM FLARE   |           |     |       | -   | -   | 50  | -   |       |                     |
| 90FPF02 | L90001    | LSH90001   | LEVEL STAND PIPE WARM FLARE   |           |     |       | -   | -   | -   | -   |       |                     |
| 90FPF02 | T90001    | TAL90001.A | FLAME TEMP.PILOT BURNER       |           |     |       | -   | 250 | -   | -   |       |                     |
| 90FPF02 | T90001    | TSL90001.A | FLAME TEMP.PILOT BURNER       |           |     |       | -   | -   | -   | -   |       |                     |
| 90FPF02 | T90001    | TAL90001.B | FLAME TEMP.PILOT BURNER       |           |     |       | -   | 250 | -   | -   |       |                     |
| 90FPF02 | T90001    | TSL90001.B | FLAME TEMP.PILOT BURNER       |           |     |       | -   | -   | -   | -   |       |                     |
| 90FPF02 | T90001    | TAL90001.C | FLAME TEMP.PILOT BURNER       |           |     |       | -   | 250 | -   | -   |       |                     |
| 90FPF02 | T90001    | TSL90001.C | FLAME TEMP.PILOT BURNER       |           |     |       | -   | -   | -   | -   |       |                     |
| 90FPF02 | U90001    | UA90001    | FAULT IGNITION PANEL          |           |     |       | -   | -   | -   | -   |       |                     |
| 90FPF02 | F90002    | FAL90002   | LPG PILOT GAS FLOW AL.        | 0         | 14  | Nm3/h | -   | 2   | -   | -   |       |                     |
| 90FPF02 | F90002    | FAH90002   | LPG PILOT GAS FLOW AL.        | 0         | 14  | Nm3/h | -   | -   | 7   | -   |       |                     |
| 90FPF02 | P90002    | PAL90002   | IMPORT PRES.LPG PILOT GAS     | 0         | 10  | bar g | -   | 1   | -   | -   |       |                     |
| 90FPF02 | P90002    | PAH90002   | IMPORT PRES.LPG PILOT GAS     | 0         | 10  | bar g | -   | -   | 8   | -   |       |                     |
| 90FPF02 | L90003    | LAH90003   | LEVEL AL. FLARE               |           |     |       | -   | 80  | -   | -   |       |                     |
| 90FPF02 | L90003    | LSH90003   | LEVEL AL. FLARE               |           |     |       | -   | -   | -   | -   |       |                     |
| 91FPF01 | F91001    | FAL91001   | COLD FLARE GAS HEAD. PURG. AL |           |     |       | -   | 2   | -   | -   |       |                     |
| 91FPF01 | F91001    | FSL91001   | COLD FLARE GAS HEAD. PURG. AL |           |     |       | -   | -   | -   | -   |       |                     |
| 91FPF01 | L91001    | LAH91001   | LEVEL AL. OF D9131            |           |     |       | -   | -   | 50  | -   |       |                     |
| 91FPF01 | L91001    | LSH91001   | LEVEL AL. OF D9131            |           |     |       | -   | -   | -   | -   |       |                     |
| 91FPF01 | F91002    | FAL91002   | COLD LIQUID DRAIN HEADER .AL  |           |     | Nm3/h | -   | 3   | -   | -   |       |                     |
| 91FPF01 | F91002    | FSL91002   | COLD LIQUID DRAIN HEADER .AL  |           |     |       | -   | -   | -   | -   |       |                     |
| 94FPF01 | P94001    | PAL94001   | N2 IMPORT PRESS. FROM. B.L.   | 0         | 25  | bar g | -   | 4   | -   | -   |       |                     |
| 14FPF01 | U94001    | UA94001    |                               |           |     |       | -   | -   | -   | -   |       |                     |
| 95FPF01 | P95001    | PAL95001   | Intrument air import press.F  | 0         | 10  | bar g | -   | 2   | -   | -   |       |                     |
| 98FPF01 | H98001    | HA98001    | Shut down cont.               |           |     |       | -   | -   | -   | -   |       |                     |
| 98FPF02 | U98001    | UAL98001   | Analyzer status AT16009/16010 |           |     |       | -   | L   | -   | -   |       |                     |
| 98FPF02 | U98001    | USL98001   | Analyzer status AT16009/16011 |           |     |       | -   | L   | -   | -   |       |                     |
| 98FPF02 | Z98001    | ZA98001    | Maintenance AL. AT16009       |           |     |       | -   | -   | -   | -   |       |                     |
| 98FPF02 | Z98001    | ZS98001    | Maintenance AL. AT16010       |           |     |       | -   | -   | -   | -   |       |                     |
| 98FPF02 | F98002    | FSL98002   |                               |           |     |       | -   | L   | -   | -   |       |                     |
| 98FPF02 | U98002    | UAL98002   |                               |           |     |       | -   | L   | -   | -   |       |                     |
| 98FPF02 | U98002    | USL98002   |                               |           |     |       | -   | L   | -   | -   |       |                     |
| 98FPF02 | Z98002    | ZA98002    | Maintenance AL. AT16010       |           |     |       | -   | -   | -   | -   |       |                     |
| 98FPF02 | Z98002    | ZS98002    | Maintenance AL. AT16010       |           |     |       | -   | -   | -   | -   |       |                     |
| 98FPF03 | U98003    | UAL98003   | Analyzer status AT15001/15003 |           |     |       | -   | L   | -   | -   |       |                     |
| 98FPF03 | U98003    | USL98003   | Analyzer status AT15001/15003 |           |     |       | -   | L   | -   | -   |       |                     |
| 98FPF03 | Z98003    | ZA98003    | Maintenance AL. AT15003       |           |     |       | -   | -   | -   | -   |       |                     |
| 98FPF03 | Z98003    | ZS98003    | Maintenance AL. AT15003       |           |     |       | -   | -   | -   | -   |       |                     |
| 98FPF02 | F98004    | FSL98004   |                               |           |     |       | -   | L   | -   | -   |       |                     |
| 98FPF03 | U98004    | UAL98004   | Analyzer status AT15006/15007 |           |     |       | -   | L   | -   | -   |       |                     |
| 98FPF03 | U98004    | USL98004   | Analyzer status AT15006/15007 |           |     |       | -   | L   | -   | -   |       |                     |
| 98FPF03 | Z98004    | ZA98004    | Maintenance AL. AT15006       |           |     |       | -   | -   | -   | -   |       |                     |
| 98FPF03 | Z98004    | ZS98004    | Maintenance AL. AT15006       |           |     |       | -   | -   | -   | -   |       |                     |
| 98FPF03 | U98005    | UAL98005   | Analyzer status AT15002       |           |     |       | -   | L   | -   | -   |       |                     |
| 98FPF03 | U98005    | USL98005   | Analyzer status AT15002       |           |     |       | -   | L   | -   | -   |       |                     |
| 98FPF04 | U98006    | UAL98006   | Analyzer status AT16013       |           |     |       | -   | L   | -   | -   |       |                     |
| 98FPF04 | U98006    | USL98006   | Analyzer status AT16013       |           |     |       | -   | L   | -   | -   |       |                     |
| 98FPF04 | Z98006    | ZA98006    | Maintenance AL. AT15001       |           |     |       | -   | -   | -   | -   |       |                     |
| 98FPF04 | Z98006    | ZS98006    | Maintenance AL. AT15001       |           |     |       | -   | -   | -   | -   |       |                     |
| 98FPF03 | F98007    | FSL98007   |                               |           |     |       | -   | L   | -   | -   |       |                     |
| 98FPF04 | Z98007    | ZA98007    | Calibr. And zero gas AP11003A |           |     |       | -   | -   | -   | -   |       |                     |
| 98FPF04 | Z98007    | ZS98007    | Calibr. And zero gas AP11003A |           |     |       | -   | -   | -   | -   |       |                     |
| 98FPF04 | Z98008    | ZA98008    | Calibr. And zero gas AP11003B |           |     |       | -   | -   | -   | -   |       |                     |
| 98FPF04 | Z98008    | ZS98008    | Calibr. And zero gas AP11003B |           |     |       | -   | -   | -   | -   |       |                     |



## HyCO Alarm&Trip setting (Main Plant)

Update SEP'2019

| PID     | LOOP_NAME | Tag_number | Description                   | DCS RANGE |     |      | ALL | AL | AH | AHH | Delay | Effect |
|---------|-----------|------------|-------------------------------|-----------|-----|------|-----|----|----|-----|-------|--------|
|         |           |            |                               | MIN       | MAX | UNIT |     |    |    |     |       |        |
| 98PFP03 | F98009    | FSL98009   |                               |           |     |      | -   | L  | -  | -   |       |        |
| 98PFP03 | Z98009    | ZS98009    | 1=A15002 aktiv,0=A16012 aktiv |           |     |      | -   | -  | -  | -   |       |        |
| 98PFP03 | F98010    | FSL98010   |                               |           |     |      | -   | L  | -  | -   |       |        |
| 98PFP01 | U98010    | UA98010    |                               |           |     |      | -   | -  | -  | -   |       |        |
| 98PFP03 | Z98010    | ZA98010    | Maintenance AL AT15007        |           |     |      | -   | -  | -  | -   |       |        |
| 98PFP03 | Z98010    | ZS98010    | Maintenance AL AT15007        |           |     |      | -   | -  | -  | -   |       |        |
| 98PFP03 | F98011    | FAL98011   | Flow AL input AT15002         |           |     |      | -   | L  | -  | -   |       |        |
| 98PFP03 | F98011    | FSL98011   | Flow AL input AT15002         |           |     |      | -   | L  | -  | -   |       |        |
| 98PFP03 | U98011    | UAL98011   |                               |           |     |      | -   | L  | -  | -   |       |        |
| 98PFP03 | U98011    | USL98011   |                               |           |     |      | -   | -  | -  | -   |       |        |
| 98PFP04 | F98013    | FSL98013   |                               |           |     |      | -   | -  | -  | -   |       |        |
| 98PFP03 | F98019    | FSL98019   |                               |           |     |      | -   | -  | -  | -   |       |        |
| 99PFP02 | U99000    | UAL99000   | System fault HyCO-C-DCS01     |           |     |      | -   | L  | -  | -   |       |        |
| 99PFP02 | U99000    | USL99000   | System fault HyCO-C-DCS01     |           |     |      | -   | L  | -  | -   |       |        |
| 99PFP02 | U99001    | UAL99001   | System fault HyCO-C-M01       |           |     |      | -   | L  | -  | -   |       |        |
| 99PFP02 | U99001    | USL99001   | System fault HyCO-C-M01       |           |     |      | -   | L  | -  | -   |       |        |
| 99PFP02 | U99002    | UAL99002   |                               |           |     |      | -   | L  | -  | -   |       |        |
| 99PFP02 | U99002    | USL99002   |                               |           |     |      | -   | L  | -  | -   |       |        |
| 99PFP02 | U99003    | UAL99003   | System fault HyCO-C-ESD01     |           |     |      | -   | L  | -  | -   |       |        |
| 99PFP02 | U99003    | USL99003   | System fault HyCO-C-ESD01     |           |     |      | -   | L  | -  | -   |       |        |
| 99PFP02 | U99004    | UAL99004   |                               |           |     |      | -   | L  | -  | -   |       |        |
| 99PFP02 | U99004    | USL99004   |                               |           |     |      | -   | L  | -  | -   |       |        |
| 99PFP02 | U99005    | UAL99005   | Switch gear 1-PMCC-A          |           |     |      | -   | L  | -  | -   |       |        |
| 99PFP02 | U99005    | USL99005   | Switch gear 1-PMCC-A          |           |     |      | -   | L  | -  | -   |       |        |
| 99PFP02 | U99006    | UAL99006   | Switch gear 1-PMCC-B          |           |     |      | -   | L  | -  | -   |       |        |
| 99PFP02 | U99006    | USL99006   | Switch gear 1-PMCC-B          |           |     |      | -   | L  | -  | -   |       |        |
| 99PFP02 | U99007    | UAL99007   | Switch gear 1-HV-A            |           |     |      | -   | L  | -  | -   |       |        |
| 99PFP02 | U99007    | USL99007   | Switch gear 1-HV-A            |           |     |      | -   | L  | -  | -   |       |        |
| 99PFP02 | U99008    | UAL99008   | Switch gear 1-HV-B            |           |     |      | -   | L  | -  | -   |       |        |
| 99PFP02 | U99008    | USL99008   | Switch gear 1-HV-B            |           |     |      | -   | L  | -  | -   |       |        |
| 99PFP02 | U99015    | UAL99015   | Switch gear 1-PMCC-A          |           |     |      | -   | L  | -  | -   |       |        |
| 99PFP02 | U99015    | USL99015   | Switch gear 1-PMCC-A          |           |     |      | -   | L  | -  | -   |       |        |
| 99PFP02 | U99016    | UAL99016   | Switch gear 1-PMCC-B          |           |     |      | -   | L  | -  | -   |       |        |
| 99PFP02 | U99016    | USL99016   | Switch gear 1-PMCC-B          |           |     |      | -   | L  | -  | -   |       |        |
| 99PFP02 | U99017    | UAL99017   | Switch gear 1-HV-A            |           |     |      | -   | L  | -  | -   |       |        |
| 99PFP02 | U99017    | USL99017   | Switch gear 1-HV-A            |           |     |      | -   | L  | -  | -   |       |        |
| 99PFP02 | U99018    | UAL99018   | Switch gear 1-HV-B            |           |     |      | -   | L  | -  | -   |       |        |
| 99PFP02 | U99018    | USL99018   | Switch gear 1-HV-B            |           |     |      | -   | L  | -  | -   |       |        |
| 99PFP02 | U99019    | UAL99019   |                               |           |     |      | -   | L  | -  | -   |       |        |
| 99PFP02 | U99019    | USL99019   |                               |           |     |      | -   | L  | -  | -   |       |        |
| 99PFP02 | U99020    | UAL99020   | UPS FAULT                     |           |     |      | -   | L  | -  | -   |       |        |
| 99PFP02 | U99020    | USL99020   | UPS FAULT                     |           |     |      | -   | L  | -  | -   |       |        |
| 99PFP02 | U99021    | UAL99021   | UPS FAULT DC- DISTRIBUTION    |           |     |      | -   | L  | -  | -   |       |        |
| 99PFP02 | U99021    | USL99021   | UPS FAULT DC- DISTRIBUTION    |           |     |      | -   | L  | -  | -   |       |        |
| 99PFP02 | U99022    | UAL99022   | UPS FAULT AC- DISTRIBUTION    |           |     |      | -   | L  | -  | -   |       |        |
| 99PFP02 | U99022    | USL99022   | UPS FAULT AC- DISTRIBUTION    |           |     |      | -   | L  | -  | -   |       |        |
| 99PFP02 | U99023    | UAL99023   |                               |           |     |      | -   | L  | -  | -   |       |        |
| 99PFP02 | U99023    | USL99023   |                               |           |     |      | -   | L  | -  | -   |       |        |
| 99PFP02 | U99024    | UAL99024   |                               |           |     |      | -   | L  | -  | -   |       |        |
| 99PFP02 | U99024    | USL99024   |                               |           |     |      | -   | L  | -  | -   |       |        |
| 99PFP02 | U99025    | UAL99025   |                               |           |     |      | -   | L  | -  | -   |       |        |
| 99PFP02 | U99025    | USL99025   |                               |           |     |      | -   | L  | -  | -   |       |        |
| 99PFP02 | U99026    | UAL99026   |                               |           |     |      | -   | L  | -  | -   |       |        |
| 99PFP02 | U99026    | USL99026   |                               |           |     |      | -   | L  | -  | -   |       |        |
| 99PFP02 | U99027    | UAL99027   |                               |           |     |      | -   | L  | -  | -   |       |        |
| 99PFP02 | U99027    | USL99027   |                               |           |     |      | -   | L  | -  | -   |       |        |

# HyCO Alarm&Trip setting (UT)

Update SEP'2019

| Tag_In_WW  | Tag_PL_C_AB  | Description                                 | Alarm(Limit) |            |            |         |
|------------|--------------|---|--------------|------------|------------|---------|
|            |              |   | ALL          | AL         | AH         | AHH     |
| PT81-1     | PT81_1       | T81 LINTANK PRESSURE                        | -            | 35 BarG    | 44 BarG    | -       |
| FT101_1    | FT101_1      | GAN - UT TO SMR PLANT - LOW RANGE FLOW      | -            | -          | 145 Nm2/H  | -       |
| FT101_2    | FT101_2      | GAN - UT TO SMR PLANT - HIGH RANGE FLOW     | -            | -          | -          | -       |
| PT101      | PT101        | GAN SUPPLY PRESSURE                         | -            | 10 BarG    | -          | -       |
| FT201      | FT201        | INSTRUMENT GAS TO SMR FLOW                  | -            | 100 Nm2/Hr | 550 Nm2/Hr | -       |
| PT201      | PT201        | INSTRUMENT GAS TO SMR PRESSURE              | -            | 4 BarG     | -          | -       |
| LT81-1     | LT81_1       | T81 LINTANK LEVEL                           | -            | 30%        | 85%        | -       |
| PT1301     | PT1301       | R-938 SUPPLY PRESSURE                       | -            | -          | -          | -       |
| PT1303     | PT1303       | NG > FUEL SUPPLY PRESSURE                   | -            | 18 BarG    | -          | -       |
| PT1308     | PT1308       | NG > FEED SUPPLY PRESSURE                   | -            | 39 BarG    | -          | -       |
| GAS0109    | GAS0109      | %LEL AT LPG TANK                            |              |            |            |         |
| PT611      | PT611        | LPG T611 PRESSURE                           | -            | 4.5 BarG   | -          | -       |
| TT611B     | PT612        | P90611B - BEARING TEMP                      | -            | -          | -          | -       |
| PT613      | PT613        | LPG PUMP DISCH. PRESSURE                    | -            | -          | -          | -       |
| PT614      | PT614        | LPG PRESSURE SUCTION P90611A                | 2 BarG       | -          | -          | -       |
| PT615      | PT615        | LPG PRESSURE SUCTION P90611B                | 2 BarG       | -          | -          | -       |
| LT611      | LT611        | LPG TANK LEVEL                              | -            | -          | -          | 85%     |
| FT612      | FT612        | LPG PUMP RECIR. FLOWRATE                    | -            | -          | -          | -       |
| FT611A     | FT611A       | LPG PUMP RECIR. FLOW A                      | 1025 Kg/Hr   | -          | -          | -       |
| FT611B     | FT611B       | LPG PUMP RECIR. FLOW B                      | 1026 Kg/Hr   | -          | -          | -       |
| FT611C     | FT611C       | LPG PUMP RECIR. FLOW C                      | 1027 Kg/Hr   | -          | -          | -       |
| TT611      | TT611 No use | LPG TANK TEMPERATURE                        | -            | -          | -          | -       |
| TT611A     | TT611A       | P90611A - BEARING TEMP                      | -            | -          | -          | -       |
| GAS0101    | GAS0101      | %LEL PIPELINE NEAR REFORMER                 | -            | -          | -          | -       |
| GAS0110    | GAS0110      | %LEL AT TOP OF TANK LPG                     | -            | -          | -          | -       |
| TT911C-1   | TT911C_1     | TEMP CW SUPPLY TO HYCO                      | -            | 20 C       | 45 C       | -       |
| TT91C-1    | TT91C_1      | TEMP CW RETURN                              | -            | -          | 50 C       | -       |
| PT911C-1   | PT911C_1     | CW SUPPLY PRESSURE                          | -            | 3.5 BarG   | -          | -       |
| GAS0111    | GAS0111      | %LEL AT NG COMP                             | -            | -          | -          | -       |
| FT911C-1   | FT911C_1     | CW SUPPLY FLOWRATE                          | -            | 350 M3/Hr  | 790 M3/Hr  | -       |
| GAS102     | GAS102       | %LEL H2 VALVE STATION 1                     | -            | -          | 20         | -       |
| GAS103     | GAS103       | %LEL H2 VALVE STATION 2                     | -            | -          | 20         | -       |
| GAS104     | GAS104       | %LEL AT T611 OUTLET                         | -            | -          | 20         | -       |
| GAS105     | GAS105       | %LEL AT T611 OUTSIDE AREA                   | -            | -          | 20         | -       |
| GAS106     | GAS106       | %LEL AT LPG PUMP                            | -            | -          | 20         | -       |
| GAS107     | GAS107       | %LEL AT COOLING TOWER                       | -            | -          | 20         | -       |
| GAS108     | GAS108       | %LEL AT LPG CYLINDER 1                      | -            | -          | 20         | -       |
| PY1303     | PY1303       | NG > FUEL SUPPLY PRESSURE CONTROL VALVE     | -            | -          | -          | -       |
| PY1308     | PY1308       | NG > FEED SUPPLY PRESSURE CONTROL VALVE     | -            | -          | -          | -       |
| LYV611     | LYV611       | LPG > T611 SUPPLY VALVE SOV90611            | -            | -          | -          | -       |
| FYV612     | FYV612       | LPG PUMP RECIR. FLOW CONTROL SOV90612       | -            | -          | -          | -       |
| PT613A     | PT613A       | Pressure Control VSD P90611A                |              |            |            |         |
| PT613B     | PT613B       | Pressure Control VSD P90611B                |              |            |            |         |
| LT91C_1    | LT91C_1      | WATER LEVEL CT9091C                         | 60           | 85         | 90         | 95      |
| FT100      | FT100        | MAIN GAN SUPPLY TO HYCO                     | -            | -          | -          | -       |
| P611A_CT   | P611A_CT     | LPG PUMP P90611A CURRENT HIGH               | -            | -          | -          | -       |
| P611B_CT   | P611B_CT     | LPG PUMP P90611B CURRENT HIGH               | -            | -          | -          | -       |
| LT911      | LT911        | LEVEL RAW WATER TANK                        | -            | -          | -          | -       |
| PT85B-1    | PT85B_1      | T85B HP TANK PRESSURE                       | 38 BarG      | -          | -          | 42 BarG |
| PT851-1    | PT851_1      | LCO2 DISC PUMP PRESSURE                     | -            | -          | 44 BarG    | 45 BarG |
| PT85A-1    | PT85A_1      | T85A LP TANK PRESSURE                       | -            | 15 BarG    | 20.5 BarG  | -       |
| LT85B-1    | LT85B-1      | T85A LP TANK LEVEL                          | 20%          | 30%        | 85%        | 95%     |
| LT85A-1    | LT85A-1      | T85B HP TANK LEVEL                          | 20%          | 30%        | 85%        | -       |
| TT901202   | TT901202     | E852 VAP TEMPERATURE                        | -            | 60 C       | 90 C       | -       |
| TT851-A    | TIS851A_1    | P90851A DISC TEMPERATURE                    | -            | -          | -5 C       | 0 C     |
| TISL851A-2 | TAH851A_RTD  | P90851A DISTANCE PIECE TEMPERATURE          | 0 C          | -          | -          | -       |
| FT1202     | FT1202       | NG FUEL > PACKAGE BOILER                    | -            | -          | -          | -       |
| PT1202     | PT1202       | STEAM > CO2 VAPORIZER PRESSRE               | -            | -          | -          | -       |
| PT1201     | PT1201       | STEAM PACKAGE BOILER PRESSURE               | -            | -          | -          | -       |
| FT1201-1   | FT1201_1     | STEAM PACKAGE BOILER FLOW 1                 | -            | -          | -          | -       |
| TT1201     | TT1201       | STEAM PACKAGE BOILER TEMP.                  | -            | -          | -          | -       |
| FT1201-2   | FT1201_2     | STEAM PACKAGE BOILER FLOW 2                 | -            | -          | -          | -       |
| TI851B_1   | TI851B_1     | P90851B DISC TEMPERATURE                    | -            | -          | -5 C       | 0 C     |
| TISL851B-2 | TAH851B_RTD  | P90851B DISTANCE PIECE TEMPERATURE          | 0 C          | -          | -          | -       |
| PY851-1    | PY851_1      | CO2 RECIRC. T85A < HP PUMP VALVE PCV90851-1 | -            | -          | -          | -       |

| Tag_In_WW     | Tag_PLC_AB    | Description                                 | Alarm(Limit) |         |     |     |
|---------------|---------------|---|--------------|---------|-----|-----|
|               |               |   | ALL          | AL      | AH  | AHH |
| PY1202        | PY1202        | STEAM > CO2 VAPORIZER PRESSRE CONTROL VALVE | -            | -       | -   | -   |
| PT81-1        | PT81-1_F      |   | -            | -       | -   | -   |
| LT81-1        | LT81-1_F      |   | -            | -       | -   | -   |
|               | TT0105        | TEMP STREAM HEADER                          | -            | -       | -   | -   |
| EYV612-1      | EYV612-1      | LPG P90611B SUCTION VALVE ECV90612-1 COMM   | -            | -       | -   | -   |
| FIC612        | FIC612        | LPG PUMP RECIR. FLOWRATE CONTROL            | -            | -       | -   | -   |
| LAHH91C_1_OUT | LAHH91C_1_OUT | CW TOWER LEVEL HIGH HIGH                    | -            | -       | Yes | -   |
| PIC1303       | PIC1303       | NG > FUEL SUPPLY PRESSURE CONTROL           | -            | 18 BarG | -   | -   |
| FY612         | FY612         | LPG PUMP RECIR. FLOWRATE CONTROL VALVE      | -            | -       | -   | -   |
| PIC1308       | PIC1308       | NG FEED SUPPLY PRESSURE                     | -            | 39 BarG | -   | -   |
| PIC1202       | PIC1202       | STEAM > CO2 VAPORIZER PRESSRE CONTROL       | -            | -       | -   | -   |
| PIC851-1      | PIC851_1      | CO2 RECIRC. T85A < HP PUMP CONTROL          | -            | -       | -   | -   |
| LIT914        |               | DMW TANK LEVEL                              | -            | -       | -   | -   |
| LI90916       | L90916        | Waster water tank                           | 5            | 10      | 85  | 90  |

**C10501 Alarm And Trip Setting**

Update SEP'2019

| PID                 | LOOP_NAME          | Tag_Number | Description                               | Normal | DCS RANGE |      |        |     |     |     |     | Delay   | Effect          |                 |
|---------------------|--------------------|------------|---|--------|-----------|------|--------|-----|-----|-----|-----|---------|-----------------|-----------------|
|                     |                    |            |   |        | MIN       | MAX  | UNIT   | ALL | AL  | AH  | AHH |         |                 |                 |
| BD50.001            | TI10539<br>(10o2D) | TAH10539A  | Temperature discharge side                | 70     | 0         | 160  | °c     | -   | -   | 80  | -   | No      | C10501 SHUTDOWN |                 |
|                     |                    | TAH10539B  |   |        |           |      |        | -   | -   | 80  | -   | No      |                 |                 |
|                     |                    | TAHH10539A |   |        |           |      |        | -   | -   | -   | 110 | No      |                 |                 |
|                     |                    | TAHH10539B |   |        |           |      |        | -   | -   | -   | 110 | No      |                 |                 |
| BD50.001            | PI10535<br>(10o2D) | PAH10535A  | Pressure discharge side                   | 44     | 0         | 60   | Barg   | -   | -   | 48  | -   | No      | C10501 SHUTDOWN |                 |
|                     |                    | PAH10535B  |   |        |           |      |        | -   | -   | 48  | -   | No      |                 |                 |
|                     |                    | PAHH10535A |   |        |           |      |        | -   | -   | -   | 49  | No      |                 |                 |
|                     |                    | PAHH10535B |   |        |           |      |        | -   | -   | -   | 49  | No      |                 |                 |
| BD50.001            | PI10534<br>(10o2D) | PAL10534A  | Pressure suction side                     | 27.5   | 0         | 60   | Barg   | -   | 26  | -   | -   | No      | C10501 SHUTDOWN |                 |
|                     |                    | PAL10534B  |   |        |           |      |        | -   | 26  | -   | -   | No      |                 |                 |
|                     |                    | PALL10534A |   |        |           |      |        | 25  | -   | -   | -   | No      |                 |                 |
|                     |                    | PALL10534B |   |        |           |      |        | 25  | -   | -   | -   | No      |                 |                 |
| BD50.001            | TI10543<br>(10o2D) | TAH10543A  | Temperature discharge side                | 40     | 0         | 100  | °c     | -   | -   | 50  | -   | No      | C10501 SHUTDOWN |                 |
|                     |                    | TAH10543B  |   |        |           |      |        | -   | -   | 50  | -   | No      |                 |                 |
|                     |                    | TAHH10543A |   |        |           |      |        | -   | -   | -   | 55  | No      |                 |                 |
|                     |                    | TAHH10543B |   |        |           |      |        | -   | -   | -   | 55  | No      |                 |                 |
| BD50.001            | TI10551            | TAH10551   | Temperature cooling water outlet          | 35     | 0         | 60   | °c     | -   | -   | 50  | -   | No      |                 |                 |
|                     |                    | TAHH10551  |   |        |           |      |        | -   | -   | -   | 55  | No      | C10501 SHUTDOWN |                 |
| BD50.001            | FS10550            | FAL10550   | Flow switch low cooling water outlet      | -      | 0         | 15   | qum/hr | -   | 6   | -   | -   | No      |                 |                 |
| BD50.001            | PI10571            | PAL10571   | N2 purge packing                          | 1      | 0         | 2.5  | Barg   | -   | 0.7 | -   | -   | No      |                 |                 |
| BD50.001            | PI10572            | PAL10572   | N2 purge inter piece                      | 1      | 0         | 2.5  | Barg   | -   | 0.7 | -   | -   | No      |                 |                 |
| BD50.001            | PI10561<br>(10o2D) | PAL10561A  | Crank case oil pressure                   | 3      | 0         | 6    | Barg   | -   | 2   | -   | -   | No      |                 | C10501 SHUTDOWN |
|                     |                    | PAL10561B  |   |        |           |      |        | -   | 2   | -   | -   | No      |                 |                 |
|                     |                    | PALL10561A |   |        |           |      |        | 1.5 | -   | -   | -   | No      |                 |                 |
|                     |                    | PALL10561B |   |        |           |      |        | 1.5 | -   | -   | -   | No      |                 |                 |
| BD50.001            | TI10562            | TAH10562   | Crank case oil temp                       | 42     | 0         | 100  | °c     | -   | -   | 55  | -   | No      |                 |                 |
|                     |                    | TAHH10562  |   |        |           |      |        | -   | -   | -   | 65  | No      | C10501 SHUTDOWN |                 |
| BD50.001            | VT10570            | VAH10570   | Vibration transmitter                     | 1      | 0         | 12.7 | mm/s   | -   | -   | 8   | -   | No      |                 |                 |
| BD50.001            | TS10591            | TAH10591   | Thermistor Temperature Motor              | -      |           |      | °c     | -   | -   | 120 | -   | No      |                 |                 |
|                     |                    | TAHH10591  |   |        |           |      |        | -   | -   | -   | 130 | No      | C10501 SHUTDOWN |                 |
| 16002312-T-D-101-01 | DPI10594           | DPAL10594  | Differential pressure indicator of M-1905 | 50     | 0         | 1500 | mbar   | -   | 35  | -   | -   | No      |                 |                 |
|                     |                    | DPAH10594  |   |        |           |      |        | -   | -   | 500 | -   | No      |                 |                 |
|                     |                    | DPALL10594 |   |        |           |      |        | 25  | -   | -   | -   | No      |                 | C10501 SHUTDOWN |
| 16002312-T-D-101-01 | PI10594            | PAL10594   | Pressure outlet M-1905                    | 30     | 0         | 60   | Barg   | -   | 26  | -   | -   | No      |                 |                 |
| 16002312-T-D-101-01 | FI10595            | FAL10595   | H2 feed mixing                            | 8      | 0         | 25   | kg/hr  | -   | 5   | -   | -   | 2 mins. |                 |                 |
|                     |                    | FAH10595   |   |        |           |      |        | -   | -   | 18  | -   |         |                 |                 |
|                     |                    | FALL10595  |   |        |           |      |        | 3   | -   | -   | -   |         |                 |                 |
|                     |                    |            |   |        |           |      |        |     |     |     |     |         |                 |                 |

**C10502 Alarm And Trip Setting**

Update

SEP'2019

| PID                          | LOOP_NAME          | Tag_Number | Description                               | Normal | DCS RANGE |      |        |     |     |     |     | Delay   | Effect          |
|------------------------------|--------------------|------------|---|--------|-----------|------|--------|-----|-----|-----|-----|---------|-----------------|
|                              |                    |            |   |        | MIN       | MAX  | UNIT   | ALL | AL  | AH  | AHH |         |                 |
| 637400-01-02<br>Sheet 1 of 4 | TI10540<br>(1002D) | TAH10540A  | Temperature discharge side                | 70     | 0         | 160  | °C     | -   | -   | 80  | -   | No      | C10502 SHUTDOWN |
|                              |                    | TAH10540B  |   |        |           |      |        | -   | -   | 80  | -   | No      |                 |
|                              |                    | TAHH10540A |   |        |           |      |        | -   | -   | -   | 110 | No      |                 |
|                              |                    | TAHH10540B |   |        |           |      |        | -   | -   | -   | 110 | No      |                 |
| 637400-01-02<br>Sheet 1 of 4 | PI10537<br>(1002D) | PAH10537A  | Pressure discharge side                   | 44     | 0         | 60   | Barg   | -   | -   | 48  | -   | No      | C10502 SHUTDOWN |
|                              |                    | PAH10537B  |   |        |           |      |        | -   | -   | 48  | -   | No      |                 |
|                              |                    | PAHH10537A |   |        |           |      |        | -   | -   | -   | 49  | No      |                 |
|                              |                    | PAHH10537B |   |        |           |      |        | -   | -   | -   | 49  | No      |                 |
| 637400-01-02<br>Sheet 1 of 4 | PI10536<br>(1002D) | PAL10536A  | Pressure suction side                     | 27.5   | 0         | 60   | Barg   | -   | 26  | -   | -   | No      | C10502 SHUTDOWN |
|                              |                    | PAL10536B  |   |        |           |      |        | -   | 26  | -   | -   | No      |                 |
|                              |                    | PALL10536A |   |        |           |      |        | 25  | -   | -   | -   | No      |                 |
|                              |                    | PALL10536B |   |        |           |      |        | 25  | -   | -   | -   | No      |                 |
| 637400-01-02<br>Sheet 1 of 4 | TI10544<br>(1002D) | TAH10544A  | Temperature discharge side                | 40     | 0         | 100  | °C     | -   | -   | 50  | -   | No      | C10502 SHUTDOWN |
|                              |                    | TAH10544B  |   |        |           |      |        | -   | -   | 50  | -   | No      |                 |
|                              |                    | TAHH10544A |   |        |           |      |        | -   | -   | -   | 55  | No      |                 |
|                              |                    | TAHH10544B |   |        |           |      |        | -   | -   | -   | 55  | No      |                 |
| 637400-01-02<br>Sheet 3 of 4 | TI10553            | TAH10553   | Temperature cooling water outlet          | 35     | 0         | 60   | °C     | -   | -   | 50  | -   | No      | C10502 SHUTDOWN |
|                              |                    | TAHH10553  |   |        |           |      |        | -   | -   | -   | 55  | No      |                 |
| 637400-01-02<br>Sheet 3 of 4 | FS10552            | FAL10552   | Flow switch low cooling water outlet      | -      | 0         | 15   | gum/hr | -   | 6   | -   | -   | No      | C10502 SHUTDOWN |
| 637400-01-02<br>Sheet 4 of 4 | PI10573            | PAL10573   | N2 purge packing                          | 1      | 0         | 2.5  | Barg   | -   | 0.7 | -   | -   | No      |                 |
| 637400-01-02<br>Sheet 4 of 4 | PI10574            | PAL10574   | N2 purge inter piece                      | 1      | 0         | 2.5  | Barg   | -   | 0.7 | -   | -   | No      |                 |
| 637400-01-02<br>Sheet 2 of 4 | PI10563<br>(1002D) | PAL10563A  | Crank case oil pressure                   | 3      | 0         | 6    | Barg   | -   | 2   | -   | -   | No      |                 |
|                              |                    | PAL10563B  |   |        |           |      |        | -   | 2   | -   | -   | No      | C10502 SHUTDOWN |
|                              |                    | PALL10563A |   |        |           |      |        | 1.5 | -   | -   | -   | No      |                 |
|                              |                    | PALL10563B |   |        |           |      |        | 1.5 | -   | -   | -   | No      | C10502 SHUTDOWN |
| 637400-01-02<br>Sheet 2 of 4 | TI10565            | TAH10565   | Crank case oil temp                       | 42     | 0         | 100  | °C     | -   | -   | 55  | -   | No      | C10502 SHUTDOWN |
|                              |                    | TAHH10565  |   |        |           |      |        | -   | -   | -   | 65  | No      |                 |
| 637400-01-02<br>Sheet 4 of 4 | VT10572            | VAH10572   | Vibration transmitter                     | 1      | 0         | 12.7 | mm/s   | -   | -   | 8   | -   | No      | C10502 SHUTDOWN |
| 637400-01-02<br>Sheet 3 of 4 | TS10593            | TAH10593   | Thermistor Temperature Motor              | -      |           |      | °C     | -   | -   | 120 | -   | No      |                 |
|                              |                    | TAHH10593  |   |        |           |      |        | -   | -   | -   | 130 | No      | C10502 SHUTDOWN |
| 16002312-T-D-101-01          | DPI10594           | DPAL10594  | Differential pressure indicator of M-1905 | 50     | 0         | 1500 | mbar   | -   | 35  | -   | -   | No      | C10502 SHUTDOWN |
|                              |                    | DPAH10594  |   |        |           |      |        | -   | -   | 500 | -   | No      |                 |
|                              |                    | DPALL10594 |   |        |           |      |        | 25  | -   | -   | -   | No      |                 |
| 16002312-T-D-101-01          | PI10594            | PAL10594   | Pressure outlet M-1905                    | 30     | 0         | 60   | Barg   | -   | 26  | -   | -   | No      |                 |
| 16002312-T-D-101-01          | FI10595            | FAL10595   | H2 feed mixing                            | 8      | 0         | 25   | kg/hr  | -   | 5   | -   | -   | 2 mins. | Close FV10595   |
|                              |                    | FAH10595   |   |        |           |      |        | -   | -   | 18  | -   |         |                 |
|                              |                    | FALL10595  |   |        |           |      |        | 3   | -   | -   | -   |         |                 |

# ภาคผนวก ข-31

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การตรวจสอบ



NEW TATTON LIMITED PARTNERSHIP

# Valve Function Test & Calibration Report

Customer: **Linde Thailand Public Co., Ltd.**  
Plant: **HyCO-TAR23**

Job No. **2310-0091**  
Report No. **CAL-NTT23-0310**  
Date Entered: **21/10/2023**

Tag No. **14.FV-11006**

|                     |  |          |             |
|---------------------|--|----------|-------------|
| Manufacturer        | Samson   | S/N      | 454806/01   |
| Valve Model         | 3241   | Type     | Globe valve |
| Size x Port x Cv    | 4" x CV 190 ME   | Class    | ANSI 300 RF |
| Plug characteristic | EQ%  | Trim F.  | Un-balanced |
| Body Material       | A216 WCB   | Trim     | 1.4006      |
| Gland Packing       | MFGR's std.  | Gasket   | Graphite    |
| Failure Position    | <input checked="" type="radio"/> Fail Closed <input type="radio"/> Fail Open <input type="radio"/> Fail Hold <input type="radio"/> Other |          |             |
| Actuator Model      | 3271   | Maker    | Samson      |
| Actuator Type       | Spring-Diaphragm   | act.size | 700 cm2     |
| Spring Range        | 0.8 - 2.4 Bar  | Supply   | 4.0 Bar     |
| Max/Min. Stopper    | None   | Stroke   | 30 mm.      |
| Positioner maker    | SIEMENS  | Input    | 4 - 20 mA   |
| Model               | PS2-6DR5010  | Type     | I/P         |

## Scope Of Work

- ☒ Overhaul body
- ☐ Overhaul actuator
- ☐ Re-gland packing
- ☒ Seat leakage test
- ☒ Body pressure test
- ☒ Calibration
- ☒ Function test



| STD                     | FCI 70-2 CL. IV   | AS FOUND   | AS LEFT     |
|-------------------------|-------------------|------------|-------------|
| Seat Leakage Test Table | Test Media        | Air        | Air         |
|                         | Test Designation  | P1         | P1          |
|                         | Test Pressure     | 4.0 Bar    | 4.0 Bar     |
|                         | Supply air to Act | 0 Bar      | 0 Bar       |
|                         | Allowance         | 22.5 l/min | 22.5 l/min  |
|                         | Actual read       | 6 l/min    | 10.00 l/min |
|                         | Test Result       | Passed     |             |

## Performance Testing Table

| Standard Value(s)      |        |         | Reading Data ( % )   |       |      |       |                |       |       |       |
|------------------------|--------|---------|--|-------|------|-------|----------------|-------|-------|-------|
| STD                    | Source | Opening | BEFORE   |       |      |       | AFTER(AS Left) |       |       |       |
|                        | ( mA ) | ( % )   | UP   | Error | DOWN | Error | UP             | Error | DOWN  | Error |
| 0                      | 4      | 0       | -0.7   | -0.7  | -0.7 | -0.7  | 0              | 0.0   | 0     | 0.0   |
| 25                     | 8      | 25      | 24.4   | -0.6  | 25.1 | 0.1   | 24.9           | -0.1  | 25    | 0.0   |
| 50                     | 12     | 50      | 49.9   | -0.1  | 50.1 | 0.1   | 50             | 0.0   | 50.1  | 0.1   |
| 75                     | 16     | 75      | 74.9   | -0.1  | 75.4 | 0.4   | 75             | 0.0   | 75.2  | 0.2   |
| 100                    | 20     | 100     | 99.8   | -0.2  | 99.8 | -0.2  | 100            | 0.0   | 100.9 | 0.9   |
| Stroke Time (SEC.)     |        |         | Shut-Open  |       | 7.12 |       | Shut-Open      |       | 6.29  |       |
|                        |        |         | Open-Shut  |       | 8.95 |       | Open-Shut      |       | 9.47  |       |
| Starting Point         |        |         | 4.400 mA   |       |      |       | 4.100 mA       |       |       |       |
| Opening Characteristic |        |         | <input checked="" type="checkbox"/> Linear <input type="checkbox"/> Customized |       |      |       |                |       |       |       |
|                        |        |         | <input type="checkbox"/> EQ% <input type="checkbox"/> On-Off                   |       |      |       |                |       |       |       |
|                        |        |         | <input type="checkbox"/> QO  |       |      |       |                |       |       |       |

## Actuator Leak Test

|             |               |             |               |
|-------------|---------------|-------------|---------------|
| Test Media  | Air           | Test Media  | Nitrogen      |
| Test Press. | 4.0 Bar       | Test Press. | 47.0 Bar      |
| Period      | 2.0 Minute(s) | Period      | 5.0 Minute(s) |
| Result      | Passed        | Result      | Passed        |

## Body Pressure Test

## Part Replacement Table

| Part name      | Description        | Q'ty  |
|----------------|--------------------|-------|
| Gland packing  | V-Teflon           | 1 set |
| Body gasket    | Graphite           | 1     |
| Feedback       | PTFE (Pin Bushing) | 1     |
| PRESSURE GAUGE | 0 - 6.0 Bar        | 1     |
|                |                    |       |
|                |                    |       |
|                |                    |       |

## Valve Accessories

- ☐ Booster Relay
- ☐ Quick Exhaust
- ☐ Min./Max.stopper
- ☐ Handwheel
- ☐ Lock-up valve
- ☐ FB Transmitter
- ☐ Prox.switches
- ☐ Speed Controller
- ☐ Limit Switches
- ☒ Solenoid Valve

| Reference Test Tools | Tester | Model    | Serial No. | Cert.No. |
|----------------------|--------|----------|------------|----------|
|                      | Fluke  | 789      | 42970108   | E230018  |
|                      | Kobold | 0-10 BAR | 1105389402 | P230022  |

## Work Activities

- ☒ External parts visual check
- ☒ Air tubing/fitting leak check
- ☒ Valve movement & travel check
- ☒ Function check
- ☒ Fail Safe Action check
- ☒ Cable connection tightness check
- ☒ Loop Test
- ☒ Sealed device's cover for waterproof

## Solenoid Valve Spec.

Maker **HERION**  
Model   
Voltage **24 VDC**  
Port conn. **12 mm.**  
No.Port **3/2**  
Pilot

Note

Result Of Testing

All Function Test are correctly & passed

Done By

Checked By

Loop Test By

21/10/2023

21/10/2023

Feedback Transmitter Table

| Feedback /IOUT Reading ( mA ) |         |          |       |      |       |         |       |      |       |
|-------------------------------|---------|----------|-------|------|-------|---------|-------|------|-------|
| IOUT                          |         | AS FOUND |       |      |       | AS LEFT |       |      |       |
| STD                           | Command | UP       | Error | DOWN | Error | UP      | Error | DOWN | Error |
| 0                             | 4       |          |       |      |       |         |       |      |       |
| 25                            | 8       |          |       |      |       |         |       |      |       |
| 50                            | 12      |          |       |      |       |         |       |      |       |
| 75                            | 16      |          |       |      |       |         |       |      |       |
| 100                           | 20      |          |       |      |       |         |       |      |       |

| ACCESSORIES | Maker                              | De-energized   | Energized  |
|-------------|------------------------------------|--|--|
|             | HERION                             | <input checked="" type="radio"/> Valve CLOSE<br><input type="radio"/> Valve OPEN | <input type="radio"/> Valve CLOSE<br><input checked="" type="radio"/> Valve OPEN |
|             | SOV.model                          | From _____<br>To _____   | From _____<br>To _____   |
|             | Limit Switches<br>Function Display | Position Close <input type="radio"/> YES <input type="radio"/> NO                |  |
|             |                                    | Position Open <input type="radio"/> YES <input type="radio"/> NO                 |  |

Add recommend for further information

Picture of Inspection



A condition of valve body before clean.



The condition of the inner of valve body after clean and recondition.



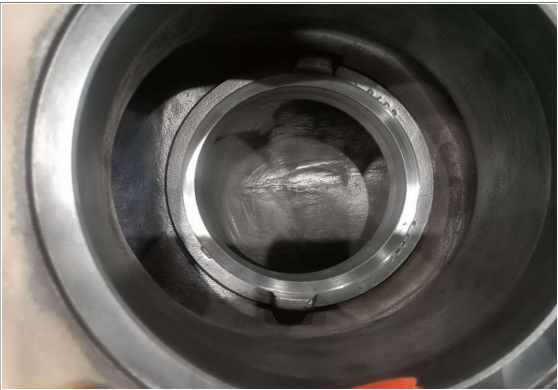
A condition of plug before clean & lapping.



The metal touch surface of seat ring was good after clean and lapping.



A condition of seat ring before clean & lapping.



The metal touch surface of seat ring was good after clean and lapping.





Bonnet before clean.



Bonnet was good after clean and polish.



The new soft parts of body were inspected before replacement on this maintenance period.



The new PRESSURE GAUGE.



This valve has a seat leakage tested and executed a body pressure test, the result of tested was good.



This valve has a seat leakage tested and executed a body pressure test, the result of tested was good.



Overall view of valve before maintenance.



Overall view of valve after maintenance.