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| DATE | SIGNATURE | DISCIPLINES |
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ITEM NO.: MA-01201
 NAME: INLET MANIFOLD
 SIZE/TYPE: 10N INCOMING LINES
 DESIGN CONDITIONS: 4.8 MPa(g) @ -4~85°C
 OPERATING CONDITIONS: 0.6 MPa(g) @ 7.6~51°C
 CAPACITY: NOR./MAX.

SE-01501
 TEST SEPARATOR (INTERNALLY COATED)
 2400mm I.D. x 7200mm SM/SM
 0.9 MPa(g)/PV @ -4~85°C
 0.5 MPa(g) @ 7.6~51°C
 LIQUID: 4.2~25.2/250m³/h
 GAS: 0.45~2.7x10⁴/23x10⁴ Nm³/d

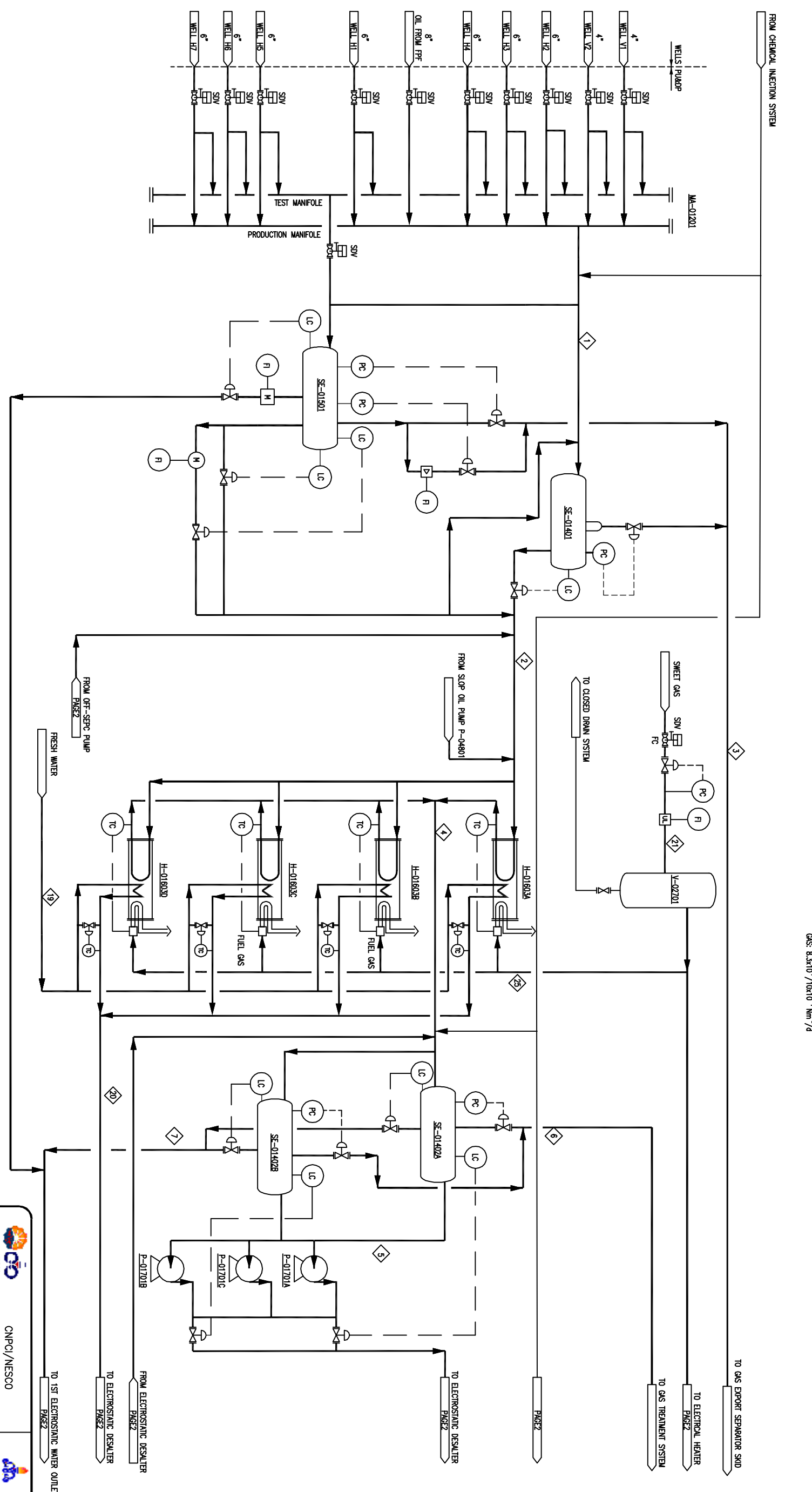
SE-01401
 TWO-PHASE SEPARATOR (INTERNALLY COATED)
 2400mm I.D. x 7200mm SM/SM
 0.9 MPa(g)/PV @ -4~85°C
 0.5 MPa(g) @ 7.6~51°C
 LIQUID: 210/250m³/h
 GAS: 19.1x10⁴/23x10⁴ Nm³/d

H-01603A/B/C/D
 PRODUCTION HEATER
 FIRE TUBE TYPE INDIRECT HEATER (3.0MM)
 CRUDE OIL TUBE: 1.6 MPa(g) @ 154°C SHELL: 0.44MPa(g)/PV @ 154°C FRESH WATER TUBE: 1.6 MPa(g) @ 154°C
 CRUDE OIL TUBE: 0.44MPa(g) @ 85°C SHELL: 0.35MPa(g) @ 147°C FRESH WATER TUBE: 0.6~0.8MPa(g) @ 85°C
 CRUDE OIL: 52.5/63m³/h
 FRESH WATER: 3.5m³/h

SE-01402A/B
 PRODUCTION SEPARATOR (INTERNALLY COATED)
 3000mm I.D. x 13200mm SM/SM
 0.8 MPa(g)/PV @ 100°C
 0.2 MPa(g) @ 85°C
 OIL: 83/100 m³/h
 LIQUID: 105/126 m³/h
 GAS: 3.3x10⁴/10x10⁴ Nm³/d

P-01701A/B/C
 DEGRADATION PUMPS
 HYDRAULIC HEAD: 80m
 CAPACITY: 35m³/h
 ELECTROMOTOR POWER: HOLD

V-02701
 GAS SCRUBBER
 1200mm I.D. x 4000mm
 0.85 MPa(g)/PV @ -4~85°C
 0.45 MPa(g) @ 7.6~51°C
 6x10⁴ Nm³/d



| REV. | DATE | DESCRIPTION | BY | CHECKED | REVIEWED | APPROVED | SCALE | PHASE | DETAIL |
|------|---------------|---------------------------|-------------|---------|-----------|----------|-------|--------|--------|
| DO | 01 Sep., 2009 | APPROVED FOR CONSTRUCTION | JUANG, H.W. | LUH | GENG Y.L. | JI Y.B. | ~ | DESIGN | |

DRAWING NO. REFERENCE DRAWINGS

CONTRACT No.: 0812008 SHEET: 1 of 2

DWG. No.: MS-PDP-PR-PF-0001 SIZE: A3 REV: 00

DOCUMENT TITLE: PU & DP PROCESS FLOW DIAGRAM OIL TREATMENT SYSTEM

MIS OIL FIELD DEVELOPMENT PROJECT

ONPC/NEESCO ONPC SICHUAN PETROLEUM

| DISCIPLINES | SIGNATURE | DATE | DISCIPLINES | SIGNATURE | DATE |
|-------------|-----------|------|-------------|-----------|------|
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| ITEM NO.: | MX-00101 | V-00102 | MX-00104 | V-00105A/00105B | TO-01403 | TK-01801A/B | E-01601 |
| NAME: | STATIC MIXER | 1ST STAGE ELECTROSTATIC DESALTERS (INTERMEDIATE COATED) | STATIC MIXER | 2ND STAGE ELECTROSTATIC DESALTERS (INTERMEDIATE COATED) | H/S REMOVAL TOWER(INTERMEDIATE COATED) | OIL FLASH /OFF-SPEC OIL TANKS(INTERMEDIATE COATED) | OIL/WATER HEAT EXCHANGER |
| SIZE/TYPE: | 12" | 3200mm I.D. x 17800mm SM/SM | 12" | 3200mm I.D. x 17800mm SM/SM | 1800mm I.D. x 30000mm SM/SM | 14900mm I.D. x 12640mm | 3500MM |
| DESIGN CONDITIONS: | 1.3 MPa(g) @ 100°C | 1.3 MPa(g)/PV @ 100°C | 1.3 MPa(g) @ 100°C | 1.3 MPa(g)/PV @ 100°C | 0.7 MPa(g)/PV @ 100°C | 0.0025 MPa(g)/(-0.0005MPa-d(g)) @ 90°C | SHELL PASS: 1.8 MPa(g) @ 85°C; SHELL PASS: 0.9 MPa(g)/PV @ 90°C |
| OPERATING CONDITIONS: | 0.8 MPa(g) @ 65°C | 0.65 MPa(g) @ 65°C | 0.6 MPa(g) @ 65°C | 0.45 MPa(g) @ 65°C | 0.20MPa(g) @ 65°C | ATM @ 60-65°C | TUBE PASS: 0.8 MPa(g) @ 65°C(INLET)/30-40°C(OUTLET);SHELL PASS: 0.5 MPa(g) @ 15°C-25°C(INLET)/28-38°C(OUTLET) |
| CAPACITY: NOR./MAX. | | LIQUID: 192/230 m ³ /h | | LIQUID: 90/110 m ³ /h | SWEET GAS: 2.4x10 ⁷ /2.8x10 ⁷ m ³ /d | | |
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ITEM NO.:

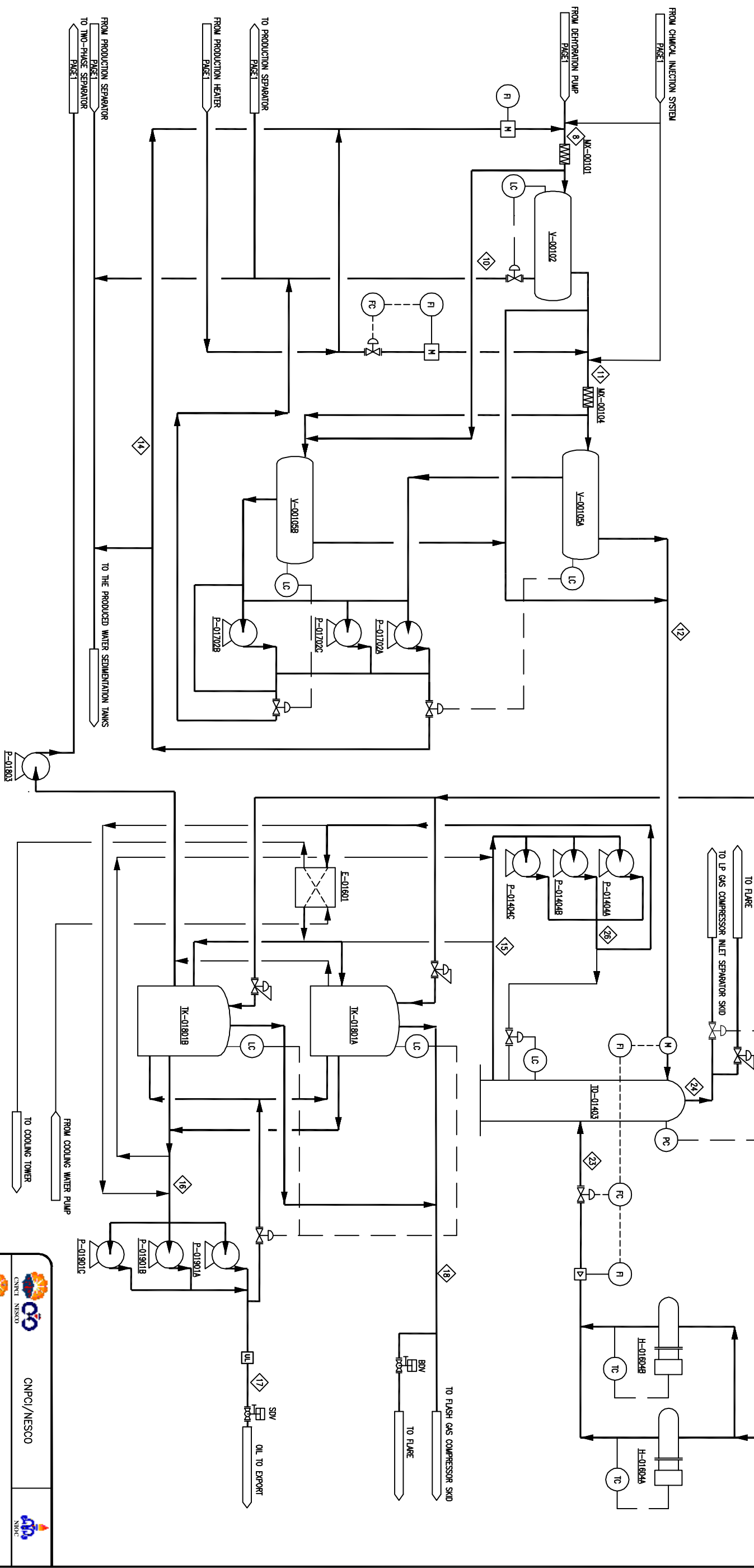
P-01702A/B/C: PRODUCED WATER RE-RUN PUMPS
 NAME: HYDRAULIC HEAD: 70m
 SIZE/TYPE: CAPACITY: 20m³/h
 DESIGN CONDITIONS: ELECTROMOTOR POWER: HOLD

P-01803: OFF-SPEC OIL PUMP
 NAME: HYDRAULIC HEAD: 70m
 SIZE/TYPE: CAPACITY: 40m³/h
 DESIGN CONDITIONS: ELECTROMOTOR POWER: HOLD

P-01901A/B/C: OIL EXPORT PUMPS
 NAME: HYDRAULIC HEAD: 550m
 SIZE/TYPE: CAPACITY: 95m³/h
 DESIGN CONDITIONS: ELECTROMOTOR POWER: HOLD

P-01404A/B/C: BOOSTER PUMP
 NAME: HYDRAULIC HEAD: 40m
 SIZE/TYPE: CAPACITY: 59m³/h
 DESIGN CONDITIONS: ELECTROMOTOR POWER: HOLD

H-01604A/B: ELECTRICAL HEATER
 NAME: 0.7MPa(g)/-4-100°C
 SIZE/TYPE: DATE: 70MW
 DESIGN CONDITIONS: SWEET GAS: 2.4x10⁷/2.8x10⁷ m³/d



| DRAWING NO. | REFERENCE DRAWINGS | REV. | DATE | DESCRIPTION | BY | CHECKED | REVIEWED | APPROVED | SCALE: | PHASE: | DETAIL: |
|-------------|--------------------|------|--------------|---------------------------|---------------|---------|-----------|----------|--------|--------|---------|
| | | 01 | 01 Sep. 2009 | APPROVED FOR CONSTRUCTION | JUANG, J.H.W. | LUJH | GENG Y.L. | JL Y.B. | ~ | DESIGN | |

MIS OIL FIELD DEVELOPMENT PROJECT
 PU & DP
 PROCESS FLOW DIAGRAM
 OIL TREATMENT SYSTEM

CONTRACT No.: MS-PDP-PR-PF-0001
 SHEET: 2 of 2
 SIZE: A3
 REV: 00

ONPC/NESCO
 ONPC SICHUAN PETROLEUM