



REFERENCE DOCUMENTS

I-ET-3010.63-1200-941-PPC-002 REV.G - SYMBOLS AND ABBREVIATIONS.
I-DE-3010.63-5330-943-PPC-601 REV.D - PRODUCED WATER AND DRAINAGE

EQUIPMENT

| TAG | DESCRIPTION | TYPE | CAPACITY |
|----------------------------------|--|------------------------|-------------------------|
| B-533601A/B (14x100Z) | SLOP VESSEL PUMP | (NOTE 6) | 60 m ³ /h |
| B-533602A/B (2x100Z) | OPEN DRAIN CAISSON OIL PUMP CLASSIFIED AREA | VERTICAL | 10 m ³ /h |
| B-533603A/B (2x100Z) | OPEN DRAIN CAISSON OIL PUMP NON-CLASSIFIED AREA | VERTICAL | 10 m ³ /h |
| CI-533101A/B (2x50Z) | PRODUCTION SEPARATOR HYDROCYCLONE | - | 12500 m ³ /d |
| CI-533102A/B (2x50Z) | OIL DEHYDRATOR HYDROCYCLONE | - | 4000 m ³ /d |
| FL-533101A/B (2x50Z) | GAS FLOTATION UNIT | VERTICAL | 12500 m ³ /d |
| TD-533601 (1x100Z) | OPEN DRAIN CAISSON CLASSIFIED AREA | CYLINDRICAL | 40 m ³ |
| V-533601A/B (2x100Z) | SLOP VESSEL | HORIZONTAL | 32 m ³ |
| TD-533602 (1x100Z) | OPEN DRAIN CAISSON NON CLASSIFIED AREA | CYLINDRICAL | 40 m ³ |
| B-FL-533101A/B-01W/B (14x50Z) | PRODUCED WATER RECIRCULATION PUMP | CENTRIFUGAL | (NOTE 8) |
| FT-533601A/B (2x100Z) | OPEN DRAIN FILTER CLASSIFIED AREA | BASKET, SIMPLEX | 600 m ³ /h |
| FT-533602A/B (2x100Z) | OPEN DRAIN FILTER NON-CLASSIFIED AREA | BASKET, SIMPLEX | 72 m ³ /h |
| FT-533604A/B (2x100Z) | OPEN DRAIN FILTER CLASSIFIED AREA | BASKET, TUBES SMPLX | 120 m ³ /h |
| V-533602 (1x100Z) | SLOP VESSEL FOR SPIDER DECK | HORIZONTAL | 2.6 m ³ |
| B-533608A/B (2x100Z) | SLOP VESSEL FOR SPIDER DECK PUMP | PNEUMATIC | 10 m ³ /h |

GENERAL NOTES

- 1 - NORMALLY WITHOUT FLOW, EVENTUAL LIQUID FLOW IS NOT INCLUDED ON THE MASS BALANCE.
- 2 - PERFORMANCE CHARACTERISTICS OF EQUIPMENT AND SYSTEMS ARE DESIGN DATA AND MAY NOT AGREE WITH THE MASS BALANCE.
- 3 - FLOW RATES AND SIZING FOR THESE LINES BY THE CONTRACTOR.
- 4 - THE HYDROCYCLONES INLET FLOW RATES ARE BASED ON PRODUCED WATER STREAM (6) SHOWN IN PROCESS FLOW DIAGRAM I-DE-3010.63-1223-943-TKP-002 (MAXIMUM WATER).
- 5 - GAS INJECTION SIZING FOR FLOTATION UNIT WILL BE DEFINED BY VENDOR.
- 6 - PROGRESSIVE CAVITY TYPE PUMPS.
- 7 - THE NOMINAL CAPACITY OF OILY WATER SYSTEM IS 12500 m³ / d.
- 8 - MAXIMUM FLOW, NORMAL FLOW ~ 60 m³ / h.

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|------|-----------------|-----------|-----------|----------|----------|
| 0 | FOR INFORMATION | 24/FEB/05 | BWNGUEIRA | RSAMPAIO | RBARROSO |
| REV. | DESCRIPTION | DATE | EXEC. | CHECK | APPROV. |

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REV. F - ANNEX A

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|  FSTP Pte. Ltd. |  TECHNIP ENGENHARIA S/A | | TKP Nr.: B20257-T00T-UFD-5330-001 | |
| | | | CONTRACT Nr.: 899.2.010.03-9 | |
| TECHNICAL RESP.: Roberto Jourdan Aquino | | | INITIALS: RAQ | |
| File N.º: Microstation T,0\1-DE-3010,63-5330-843-TKP-001_0.DSN | | | CREA REG. Nº: 48748-D | |

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NETHERLANDS B.V.

CLIENT OR USER: UN - RIO / ATP - MLS

JOB OR PROJECT: MARLIM SUL FIELD DEVELOPMENT

AREA OR UNIT: PETROBRAS 51 (P-51)

TITLE: UTILITY FLOW DIAGRAM
PRODUCED WATER AND DRAINAGE

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|----------------|----------------------|----------------------|-----------------------|
| DESIGN BY: TKP | DRAWN BY: BMNOGUEIRA | CHECKED BY: RSAMPAIO | APPROVED BY: RBARROSO |
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| SCALE: NO SCALE | DRAWING TYPE: A1 | CC: | SHEET 1 of 1 |
| DATE: | PB Nr.: 05 7848 07 5770 017 T1P 001 | | |

24/FEB/05 | 1-DE-3010.63-5330-943-1KP-001