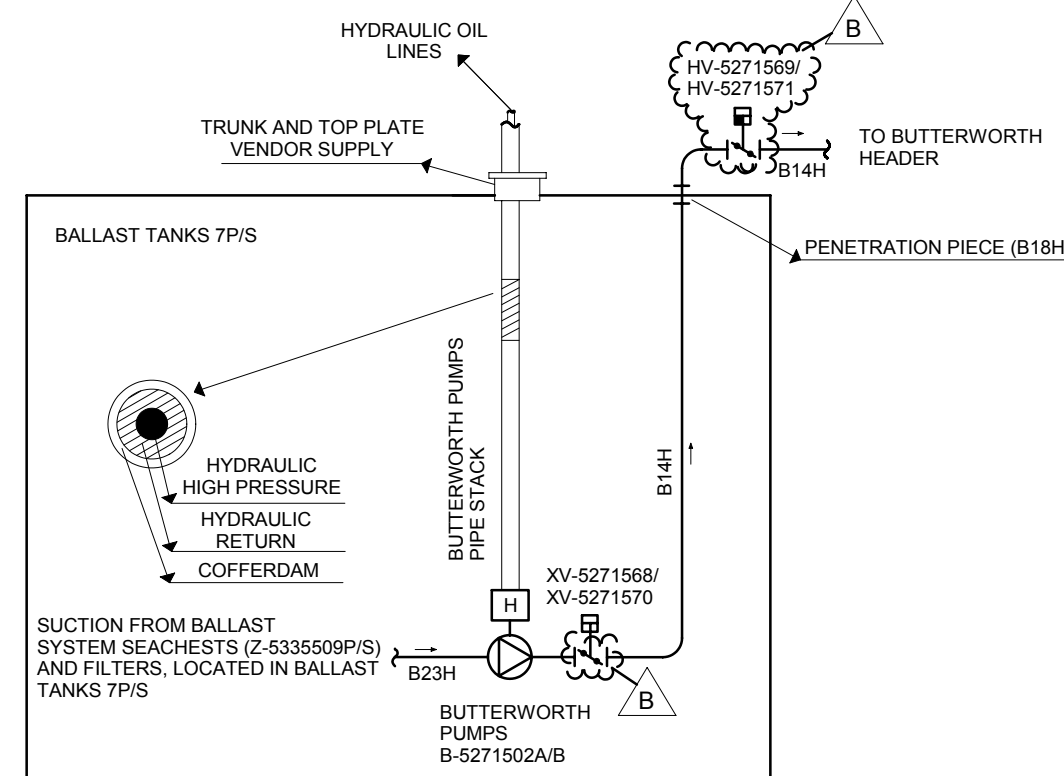
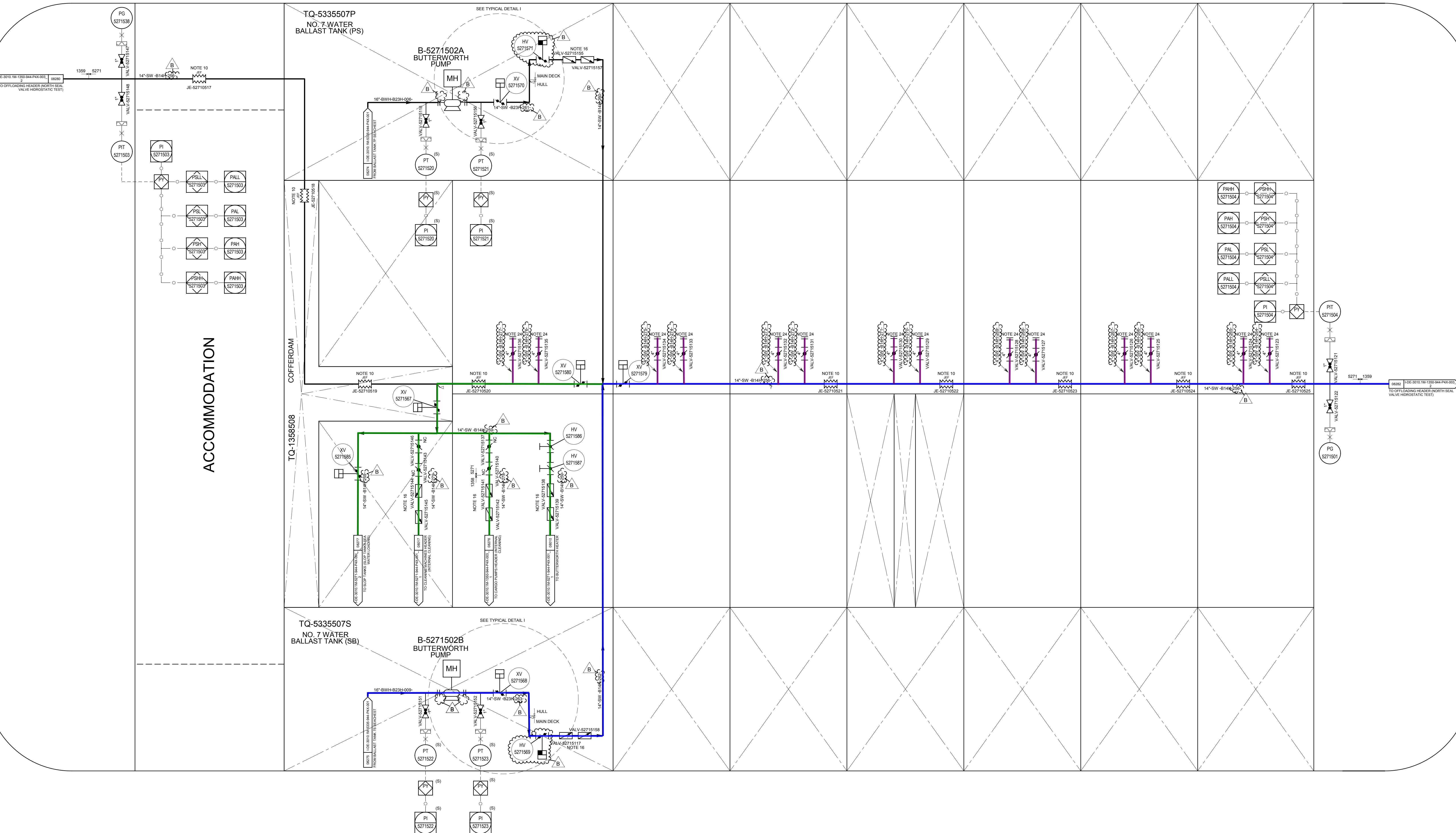


TYPICAL DETAIL I



NOTE 22



REFERENCE DOCUMENTS

I-DE-3010.1M-1200-940-P4X-017 - DESCRIPTIVE MEMORANDUM - GENERAL
I-DE-3010.1M-1200-944-P4X-001 - PIPING INSTRUMENT DIAGRAM - GENERAL NOTES
I-ET-3010.1M-1200-200-P4X-002 - PIPING SPECIFICATION FOR HULL
I-ET-3000.00-0000-940-P4X-002 - SYMBOLS FOR PRODUCTION UNITS DESIGN
I-ET-3000.00-1000-940-P4X-001 - TAGGING PROCEDURE FOR PRODUCTION UNITS DESIGN
I-DE-3010.1M-1200-940-P4X-002 - CAPACITIES PLAN
I-ET-3000.00-0000-940-P4X-002 - GENERAL CRITERIA FOR INSTRUMENTATION UNITS
I-ET-3010.00-1200-800-P4X-002 - AUTOMATION, CONTROL AND INSTRUMENTATION ON
I-ET-3010.00-1300-940-P4X-001 - SYSTEMS OPERATION PHILOSOPHY
I-DE-3010.1M-1200-944-P4X-001 - BALLAST SYSTEM
I-DE-3010.1M-5335-944-P4X-001 - BALLAST SYSTEM

EQUIPMENT

TAG	DESCRIPTION	TYPE	CAPACITY
B-5271502AB (2 x 100%)	BUTTERWORTH PUMP	VERTICAL SUBMERGED	


GENERAL NOTES

- NO VALVES OF THE TANKS CLEANING AND RECIRCULATION SYSTEM SHALL HAVE ANY KIND OF AUTOMATIC ACTUATION.
- THE TANKS CLEANING AND RECIRCULATION SYSTEM REMOTE ACTUATED VALVES SHALL BE ACTUATED AND SHALL HAVE THEIR STATUS MONITORED IN THE SCS-HMI.
- THE TANKS CLEANING AND RECIRCULATION SYSTEM MANUAL HV VALVES SHALL HAVE THEIR STATUS MONITORED IN THE SCS-HMI.
- DOUBLE PLATES SHALL BE WELDED TO THE HULL IN THE REGION OF ALL DISCHARGES AND SUCTIONS INSIDE THE CARGO SLOP AND PRODUCED WATER TANKS. THESE DOUBLE PLATES SHALL HAVE AT LEAST THE SAME THICKNESS OF THE HULL IN THE REGIONS WHERE THEY WILL BE INSTALLED AND THEY SHALL BE COATED WITH THE LOCAL COATING SCHEME PLUS A LAST LAYER OF ANTI-FRICTION COATING.
- THE TANKS CLEANING AND RECIRCULATION SYSTEM LONGITUDINAL HEADERS ON MAIN DECK ARE THE CLEANING MACHINES HEADERS (I-DE-3010.1M-5271-944-P4X-001), THE TRANSFERENCE HEADERS (I-DE-3010.1M-5271-944-P4X-001, 2) AND THE BUTTERWORTH PUMPS HEADERS (I-DE-3010.1M-5271-944-P4X-001, 3).
- THE TANKS CLEANING AND RECIRCULATION SYSTEM LONGITUDINAL HEADERS ON MAIN DECK SHALL BE LOCATED IN HULL SYSTEMS PIPE-STACK ON MAIN DECK.
- THE TANKS CLEANING AND RECIRCULATION SYSTEM PIPING ON MAIN DECK CARGO AREA AND FORWARD DECK SHALL HAVE ANTI-FRICTION PTFE PAD ON THE HORIZONTAL SUPPORTS TO AVOID PIPING WEARINGS.
- THE TANKS CLEANING AND RECIRCULATION SYSTEM PIPING ON MAIN DECK SHALL HAVE ELECTRICAL CONTINUITY AND SHALL BE GROUNDED ACCORDING CLASSIFICATION SOCIETY RULES.
- THE TANKS CLEANING AND RECIRCULATION SYSTEM PIPING ON MAIN DECK BOLTS, SCREWS, NUTS AND JAMNERS DEDICATED TO MAINTAIN THE CONTINUITY AND TO THE GROUNDING PROCEDURE SHALL BE CONSTRUCTED IN STAINLESS STEEL AISI 316 OR SIMILAR.
- THE TANKS CLEANING AND RECIRCULATION SYSTEM LONGITUDINAL HEADERS ON MAIN DECK SHALL HAVE THE EXPANSION PERFORMED ONLY BY DRESSER JOINTS. THE NUMBER AND LOCATION OF THE EXPANSION JOINTS SHALL BE DEFINED IN THE DETAILED ENGINEERING DESIGN PHASE FINAL PIPING FLEXIBILITY CALCULATION.
- THE TANKS CLEANING AND RECIRCULATION SYSTEM SPECTACLE FLANGES ON MAIN DECK SHALL BE MADE WITH STAINLESS STEEL AISI 316 OR SIMILAR MATERIAL.
- THE HYDRAULIC DRIVEN SUBMERSIBLE PUMPS AND OTHERS COMPONENTS INCLUDED IN THE HYDRAULIC DRIVEN SUBMERSIBLE PUMPS PACKAGE SHALL BE IDENTIFIED IN THE P&IDs (I-DE-3010.1M-5271-944-P4X-001, I-DE-3010.1M-5271-944-P4X-001, 2 AND I-DE-3010.1M-5271-944-P4X-001, 3) WITH 'ST'.
- IT IS NOT ALLOWED TO HAVE ANY PIPING OR VALVE INSIDE THE SLOP TANKS, EXCLUDING THE FOLLOWING ITEMS:
 - THE SLOP TANKS TRANSFERENCE DROPLINES
 - THE BALANCE LINE AND THEIR VALVES
 - THE PROCESS PLANT OPEN DRAIN (CLASSIFIED AREAS) DISCHARGE LINE IN THE SLOP TANKS
 - THE PROCESS PLANT OPEN DRAIN (NON CLASSIFIED AREAS) DISCHARGE LINE IN THE SLOP TANKS
 - THE MAIN DECK DRAINING SYSTEM DISCHARGE IN THE SLOP TANKS
 - THE ENGINE ROOM BILGE PUMPS AND SLOP PUMPS DISCHARGE IN THE SLOP TANKS
 - THE CHEMICAL PRODUCTS (BIOCIDES AND BIOSTATICS) INJECTION LINES IN THE SLOP TANKS
 - SLOP TANKS BOTTOM CLEANING MACHINES FEED PIPES, IF IT IS APPLICABLE
- IT IS NOT ALLOWED TO HAVE ANY PIPING OR VALVE INSIDE THE CARGO TANKS, EXCLUDING THE CARGO TANKS TRANSFERENCE DROPLINES AND THE LOADING SYSTEM DROPLINES.
- THE BUTTERWORTH PUMPS HEADER ON MAIN DECK SHALL BE DIMENSIONED TO THE MAXIMUM FLOWRATE OF ONE BUTTERWORTH PUMP.
- THE BUTTERWORTH PUMPS ARE INCLUDED IN THE HYDRAULIC DRIVEN SUBMERSIBLE PUMPS PACKAGE.
- THE BUTTERWORTH PUMPS SHALL HAVE THEIR OWN PIPE STACK LOCATED INSIDE THE BALLAST TANKS 7 PORT AND STARBOARD. FOR MORE INFORMATIONS SEE TYPICAL DETAIL I.
- THE BUTTERWORTH PUMPS PIPE STACKS MATERIAL SHALL BE DEFINED BY THE HYDRAULIC DRIVEN SUBMERSIBLE PUMPS PACKAGE VENDOR.
- THE BUTTERWORTH PUMPS TOP PLATE ON MAIN DECK SHALL HAVE ALL INTERFACE BETWEEN PIPE STACK AND THE CARGO SYSTEM PIPE STACKS IN NITROGEN PURGING SYSTEM AND CARGO TANKS HYDRAULIC ACTUATION SYSTEM ON MAIN DECK. THIS TOP PLATES SHALL BE SUPPLIED BY HYDRAULIC DRIVEN SUBMERSIBLE PUMPS PACKAGE VENDOR. FOR MORE INFORMATIONS SEE TYPICAL DETAIL I.
- EACH BUTTERWORTH PUMP SHALL BE DIMENSIONED TO COMPLY WITH THE FOLLOWING DESIGN POINT OF OPERATION:
 - 24.1.1 - 150 m³/h or
 - 24.1.2 - THE NECESSARY HEAD TO SUPPLY SEA WATER TO DRIVE SIMULTANEOUSLY TWO DESGASIFICATION EXHAUST FANS (FOR CARGO SLOP AND PRODUCED WATER TANKS) WITH CAPACITY OF 10000 (TEN THOUSAND) m³/h OF GAS, OR
 - 24.1.3 - THE NECESSARY HEAD TO FEED SEA WATER TO THE CLEANING MACHINES OF ONE SLOP TANK OR
 - 24.1.4 - THE NECESSARY HEAD FOR ONE OFFLOADING HOSE INTERNAL CLEANING, WHICHEVER IS THE GREATER
 - 24.2.1 - THE NECESSARY FLOWRATE TO SUPPLY SEA WATER TO DRIVE SIMULTANEOUSLY TWO DESGASIFICATION EXHAUST FANS (FOR CARGO SLOP AND PRODUCED WATER TANKS) WITH CAPACITY OF 10000 (TEN THOUSAND) m³/h OF GAS, OR
 - 24.2.2 - THE NECESSARY FLOWRATE TO SUPPLY SEA WATER TO THE CLEANING MACHINES OF ONE SLOP TANK OR
 - 24.2.3 - THE NECESSARY FLOWRATE TO FEED SEA WATER TO THE CLEANING MACHINES OF ONE SLOP TANK, WHICHEVER IS THE GREATER
- PORTABLE EXHAUST FANS CONNECTIONS
- SYSTEM DATA:
 - WORKING PRESSURE: 1770.0 kPa
 - DESIGN PRESSURE: 1770.0 kPa
 - TEST PRESSURE: 1.40P = 2478.0 kPa
 - WORKING TEMPERATURE: 50.0 °C
 - DESIGN TEMPERATURE: 50.0 °C
- THE P&IDs (I-DE-3010.1M-5271-944-P4X-001, I-DE-3010.1M-5271-944-P4X-001, 2 AND I-DE-3010.1M-5271-944-P4X-001, 3) SHALL BE UPDATED DURING DETAILED DESIGN PHASE FOLLOWING ALL EQUIPMENT MANUFACTURERS RECOMMENDATIONS.

HOLD TABLE

REV	DESCRIPTION	DATE	EXEC.	CHECK	APPROV.
B	REVISED WHERE INDICATED ACCORDING TO HAZOP COMMENTS	27 Jun 2019	DAKINERO	EC0047	CHESINRO
A	REVISED WHERE INDICATED	01 May 2019	DAKINERO	EC0047	CHESINRO
1	ORIGINAL ISSUE	14 Apr 2019	DAKINERO	EC0047	CHESINRO

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 PETROBRAS		DP&T-SRGE					
CLIENT: SRGE							
JOB: REFERENCE BASIC DESIGN							
AREA: BÚZIOS							
TITLE: PIPING AND INSTRUMENT DIAGRAM TANKS CLEANING AND RECIRCULATION SYSTEM							
DESIGN	ESUP	EXEC	CMONTEIRO	CHECK	ALVARDES	APPROV.	CHRIS
SCALE	NO SCALE	DRAWING			100105398 0010	SHEET	
DATE	5/23/2019	No.	I-DE-3010.1M-5271-944-P4X-001				