REVISION	DRAWN DATE	CHECKED DATE	APPD BY DATE	ENG. 1 DATE	ENG. 2 DATE	DETAILS OF REVISION
Ø	E.R.S. 11.03.04	D.C. 02.04.04	E.R.S. 02.04.04	D.C. 02.04.04	B.C. 02.04.04	FOR APPROVAL.
1	J.H. 10.07.04	B.C. 16.07.04	E.R.S. 20.07.04	M.L. 16.07.04	D.C. 19.07.04	SHEETS 2 & 3 REDRAWN. SHEET 4 TAG NUMBERS AMENDED/ADDED. PART NUMBERS ADDED FOR ITEMS 101, 152 & 169. ITEMS 101 & 169 MODEL NUMBER AMENDED. ITEM 134 WAS QTY 1. ITEM 152 WAS QTY 2. ITEM 153 ADDED. ITEM 156 PART NUMBER WAS UK492-112-006. ITEM 169 WAS QTY 1. ITEM 172 WAS QTY 1. ITEMS 173 ONWARDS TRANSFERED TO NEW SHEET 5. SHEET 5 SHEET ADDED. ITEM 252 WAS QTY 1. PART NUMBERS ADDED/MODIFIED FOR ITEMS 198, 210, 216 & 252. TAG NUMBERS ADDED/MODIFIED. ITEM 253 ADDED. SHEET 6 WAS SHEET 5. CONNECTION M617 DELETED. CONNECTION M206A WAS 12". TAG FOR 050M WAS HB-M-B-GE-·601A. TAG FOR 880M B-GE·601A. TAG FOR 950M WAS HS-M-B-GE-·601A. 63QMG1 & 63QMG2 WERE TRANSMITTERS & WERE MON/ALM. 050M VOLTAGE WAS 220/2/60 & IS NOW START/STOP. SHEET 7 WAS SHEET 6. NOTES 18, 19 & 20 ADDED. NOTES 2 & 17 MODIFIED. REFER TO ECO 2004-2258.
2	J.H. 17.08.04	M.L. 17.08.04	E.R.S. 17.08.04	B.C. 17.08.04	R.M. 17.08.04	FINAL DECAL ADDED ALL SHEETS. SHEET 2 TE-·618A NOW SHOWN AS DUPLEX DEVICE (8,B). TAGS FOR ITEMS 191 & 192 ADDED. TAGS FOR 63QMG1&2 ADDED. 3" LINES WERE 4" AT G.R. F3/4. FI-·613A WAS FI-·612A. COOLDOWN TANK WAS TQ-UH-GE-·01A-04. SHEET 3 DEVICE CODE 26CWR1 WAS 26CWRI (14,L). DEVICE CODE 26CWS1 WAS 26CWSI (14,J). ITEMS 110 TE-·620A (14,L), TE-·622A (14,J), TE-·623A (11,L) & TE-·625A (11,H) NOW SHOWN AS DUPLEX DEVICE. ITEM 156 TAG NO WAS HS-M-B-GE-·601A (11,F). ELECTRICAL CONNECTION REFS ADDED (11,F/G). ITEM 112 TE-·628A NOW SHOWN AS DUPLEX DEVICE (4,D). PSV-·649A & M616 DELETED. 1" LINE AT G.R. F7 WAS 1/2". TAG ADDED FOR ITEM 190 AT G.R. H8. CONNECTIONS M229, M230, M231 & M232 ADDED. SHEET 4 ITEM 96 ADDED. ITEM 110 WAS PART NO. Y2-05C-176-017 & WAS M20 ELEC CONN. ITEM 137 & 138 PART NO.S ADDED. ITEM 153 DELETED. SHEET 5 ITEM 192 PART NO. WAS UK487-001-026. FO-206 WAS FO-205. ITEM 210 MODEL FRAME SIZE ADDED FOR MOTOR. FT-UH-GE-·01A-03 WAS FT-UH-GE-01A-03. SHEET 6 DEVICE CODE 26CWR1 WAS 26CWRI. DEVICE CODE 26CWS1 WAS 26CWSI. M218 WAS 1/2". M229-M232 ADDED. TAGS PS-·669A & 670A ADDED. PDT-·619A WAS MON/ALM ONLY. 71QMT1/2 & 71QMRDT WERE I/S. 26QMGBO WAS 26QMBGO. SHEET 7 NOTE 21 ADDED. NOTE 14 MODIFIED. MODIFIED IN LINE WITH ECO 2004-2951.
3	M.B. 10.02.05	M.L. 03.03.05	S.VD.H. 03.03.05	M.L. 03.03.05	D.E. 03.03.05	PNBV DECAL AMENDED ALL SHEETS. PB REV WAS C - ALL SHEETS SHT 2 CONNECTION POINTS M617 & M618 ADDED (F.5 & H.11). P&ID NO.....11.3 AMENDED THROUGHOUT. (D/E4) 2 NEEDLE VALVES REMOVED. 2 ORIFICES ADDED. (B11) NOTE WAS 'LEAK BY DRAIN'. SHT 3 SPARE FLANGE FOR HEATER ADDED AT TOP OF TANK (7,D). NOTE DELETED (3,D). ITEM 70 AMENDED. CONN. M674 ADDED. ITEMS 163 ADDED TO FILTER. P&ID NO. ...11.2 AMENDED THROUGHOUT. CONNS. M217A & M217B REVERSED. ITEM 110 WAS 105 (14,J).ITEM 156 PN-M-B-UH-TS-GE-·01A-03 WAS PN-M-B-UH-GE-·01A-03. CONN. POINT MOVED FROM 10,J TO 4,J. (H,8) VALVE V5-207A WAS CLOSED. (B,12) DEPTH A WAS 296 & VOLUME WAS 7076. F2070A MOVED FROM GRID REF. (12K TO 13K.) SHT 4 ITEM 70 WATER FLOW RATE ADDED. ITEM 71, V6-201 ADDED, PART NO. WAS ...040, DESCRIPTION AMENDED. ITEMS 76, 77, 172 & 173 PREFIX 'Y' ADDED TO PART NO. ITEM 151 MODEL NO WAS JTL-J0S-IS-J. ITEM 152 MODEL NO WAS 951111MA. ITEM 156 TAG NO WAS HS-M-B-GE-·601A. ITEM 163 TAG NOS. 218- 223 ADDED. REQD. WAS 10. ITEM 237 DRAIN CONN. WAS 0.5"NPT. ITEM 95 WAS Y2-11T-189-224 & WITH LCD SUPPLY NOTE ADDED. ITEM 101 WAS Y2-11T-187-236 & WITH LCD SUPPLY NOTE ADDED ITEM 171 V5-207A DETAILS ADDED SHT 6 050M TAG NO WAS HS-M-B-GE-·601A. CONN M694 INTERFACE POINT ADDED. SHT 7 NOTE 11 COOLDOWN TANK WAS 6000MM ABOVE CENTRELINE. NOTE 12 SCHEDULE NO. ADDED. NOTES 8, 22, 23 & 24 ADDED. IT NO116 REMARK MODIFIED 'ISSUED FOR CONSTRUCTION'

REVISION ECO NO	DRAWN DATE	CHECKED DATE	APPD BY DATE	ENG. 1 DATE	ENG. 2 DATE	DETAILS OF REVISION
4 14338.01	C.N.W. 30.04.05	M.W. 05.05.05	S.VD.H 05.05.05	M.W. 05.05.05	R.M. 05.05.05	SHEET 2:LOC D4,D2:- ORIFICES REPOSITIONED, 5MM ANOTATION ADDED. TAG NOS. FO-·624A & FO-·625A ADDED TO ORIFICES. SHEET 5: ITEM 200, FO-624A & FO-625A ADDED.
5 14651.01	C.N.W. 19.05.05					ALL SHEETS: AS BUILT DRAWING. SHEET 2: LOC F5. AC GENERATOR COOLANT RELIEF FLAGS REMOVED. F3. 1166 LITRE/MIN WAS 350L/M. 583 L/M WAS 350 L/M. D3 & 4. NOTE 25 ADDED. SHEET 3: ZONE L/K 12/13. VALVE TAGS ADDED. VALVE V5-203A & ORIFICE MOVED TO OTHER SIDE OF COOLERS. SHEET 4: ZONE G12: FO 208A WAS FO 206A. ITEM 70 TAG NUMBERS ADDED. WATER FLOW 681 WAS 651 L/MIN. TEMP 32·/42· WAS 32·/40·. E10/C10: LCD ADDED. D10/B10: M6 ADDED TO MODEL. B8: PSV·694A WAS PSV·660A. SHEET 5: ITEM 200: REF TO NOTE 25 ADDED. SHEET 6: ITEMS 95 & 101 CHAR I ADDED TO PLANT TAG. SHEET 7: NOTE 8: ISO 17/15/12 WAS NAS6. NOTE 14 MAX TEMP WAS 13·C.
6 21903.30	A.F. 16.09.05	P.B. 16.09.05	B.C. 16.09.05	P.B. 16.09.05	B.C. 16.09.05	REDRAWN IN MICROSTATION ON PETROBRAS BORDER AND MODIFIED IN LINE WITH ADP-RRY-Ø0351. SHEET 2: ITEMS 95 WERE PT. M618 CONNECTION POINT MODIFIED. FLOW RATES ADDED TO CACW COOLERS. REF TO NOTE 25 ADDED TO ITEM 200. SHEET 3: ITEMS 152 RELOCATED. ITEMS 95 WERE PT. ITEM 101 WAS PDT. DUPLEX COOLER VALVES NUMBERED. FO-208A WAS FO-206A. PSV-·694A WAS PSV-·660A. DUPLEX FILTER FLOW ORIFICE NUMBERED. SHEET 4: TAG NOS ADDED. MODIFIED ITEMS 70, 71, 95, 101 & 152. SHEET 5: ANTI-COND POWER RATING MODIFIFED. SHEET 6: ITEMS 95 WERE PT. LOW ALARM ACTION SETTING ADDED TO ITEMS 95. ITEM 101 WAS PDT. SHEET 7: NOTE 25 ADDED. NOTES 8,14 &18 MODIFIED. SYMBOL LEGEND DELETED. ISSUED FOR CONSTRUCTION.

RETAINED FOR INFORMATION ONLY

REFERENCE DOCUMENTS

TOCP LOGIC BLOCK DIAGRAM Ø45-ØØ0-4971
I-DE-3ØØ.64-5140-8ØØ-RRY-ØØ3

CAUSE & EFFECT DIAGRAM Ø45-ØØ0-5001
I-DE-3ØØ.64-5140-8ØØ-RRY-ØØ4

GENERAL NOTES

REV.	DESCRIPTION	DATE	DRAWN	CHECK	APPROV.
E	RELEASED BY ADP-RRY-01173. REVERTED PAID ITEM 96 TO ALARM AS PER REV B. AS BUILT	26-MAY-09	GS	LAW	SA
D	MODIFIED IN ACCORDANCE WITH ADP-RRY-01130 & M.O.W. RTA-I-ERO-PES-PS-R2-0130-2007. ISSUED AS BUILT.	15-MAY-08	AF	ML	BC
C	SEE RR REVISION DETAILS.	16-SEP-05	AF	PB	BC
B	SEE RR REVISION DETAILS.	17-AUG-04	JH	ML	BC
A	SEE RR REVISION DETAILS.	19-JUL-04	JH	BC	ML
Ø	ISSUED FOR PNBV COMMENT.	02-APR-04	ERS	DC	BC

THIS DOCUMENT, WITH THE EXCEPTION OF INTELLECTUAL PROPERTY RIGHTS INCLUDED HEREIN THAT VEST IN ROLLS-ROYCE, IS PROPERTY OF PETROBRAS, BEING FORBIDDEN FOR USE OFF ITS PURPOSE. STANDARDIZED FORM BY N-381-(PETROBRAS) - REV.F - ANNEX A.

Rolls-Royce ABB

ROLLS-ROYCE N.I. RT62-46-UK437 Rev. B
CONTRACT N.I. 899.2.005.03-7
TECHNICAL REP. N.I. XXX
INITIALS
P.I.N. N.I. I-DE-3ØØ.64-5140-944-RRY-ØØ1E PDCØØØN
REGISTRY N.I. XXXXXX

PETROBRAS NETHERLANDS B.V.

ENGENHARIA / IERO

CLIENT OR USER: UN - RIO / ATP - RO

JOB OR PROJECT: RONCADOR FIELD DEVELOPMENT

AREA OR UNIT: PETROBRAS 52 (P-52)

DRAWING TITLE: MAIN LUBE OIL DIAGRAM (MINERAL)

DESIGN BY: RRY	DRAWN BY: ERS	CHECKED BY: DC	APPROVED BY: BC
SCALE: NTS	DRAWING TYPE: AD	CC: XXX	SHEET 1 of 7
DATE: 02-APR-04	PB N.I. I-DE-3010.64-5140-944-RRY-011		

SEE NOTE 17 FOR INSTRUMENT TAGGING DETAILS

REFERENCE DOCUMENTS

SEE SHEET 1

GENERAL NOTES

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REV.	DESCRIPTION	DATE	EXEC.	CHECK	APPROV.
E	SEE SHEET 1.	26-MAY-09	GS	LIM	SA
D	SEE SHEET 1.	14-MAY-09	AF	ML	BC
C	SEE SHEET 1.	16-SEP-05	AF	PB	BC
B	SEE SHEET 1.	17-AUG-04	JH	ML	BC
A	SEE SHEET 1.	19-JUL-04	JH	BC	ML
0	SEE SHEET 1.	02-APR-04	EMS	DC	BC

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Rolls-Royce ABB

ROLLS-ROYCE N.I. RT62-46-UK437 Rev. B

CONTRACT N.: 899.2.005.03-7

TECHNICAL REP.: XXX — DETAILS

ITEM N.: I-DE-3010.64-5140-944-RRY-011 PREDON

REVISION N.: XXXXXX

PETROBRAS NETHERLANDS B.V. — ENGENHARIA / IERO

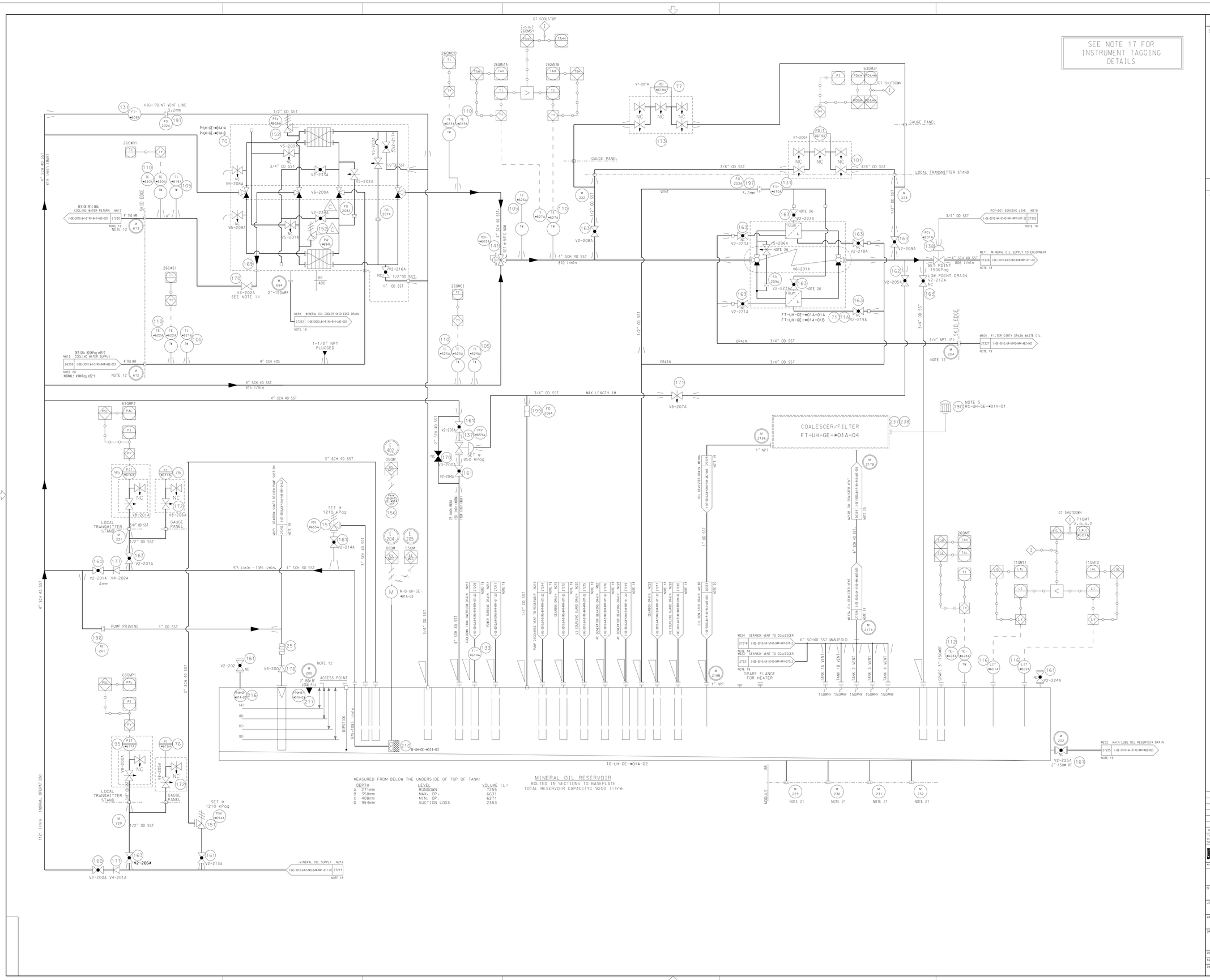
CLIENT OR USER: UN - RIO / ATP - RO

JOB OR PROJECT: RONCADOR FIELD DEVELOPMENT

AREA OR UNIT: PETROBRAS 52 (P-52)

DRAWING TITLE: MAIN LUBE OIL DIAGRAM (MINERAL)

DESIGN BY: RRY	DRAWN BY: EMS	CHECKED BY: DC	APPROVED BY: BC
SCALE: NTS	DRAWING TYPE: AO	CC: XXX	SHEET 2 of 7
DATE: 02-APR-04	PB N.: I-DE-3010.64-5140-944-RRY-011		



REFERENCE DOCUMENTS

SEE SHEET 1

GENERAL NOTES

REV.	DESCRIPTION	DATE	EXEC.	CHECK	APPROV.
E	SEE SHEET 1.	26-MAY-09	GS	LAM	SA
D	SEE SHEET 1.	14-MAY-08	AF	ML	BC
C	SEE SHEET 1.	16-SEP-05	AF	PB	BC
B	SEE SHEET 1.	17-AUG-04	JH	ML	BC
A	SEE SHEET 1.	19-JUL-04	JH	BC	ML
0	SEE SHEET 1.	02-APR-04	ERS	DC	BC

THIS DOCUMENT, WITH THE EXCEPTION OF INTELLECTUAL PROPERTY RIGHTS INCLUDED HEREIN THAT VESTS IN ROLLS-ROYCE, IS PROPERTY OF PETROBRAS, BEING FORBIDDEN FOR USE OFF ITS PURPOSE.
STANDARDIZED FORM BY N-381-PETROBRAS1 - REV.F - ANNEX A

Rolls-Royce ABB

ROLLS-ROYCE N.º	R762-46-UK437 Rev. 8
CONTRACT N.º	899.2.005.03-7
TECHNICAL REP.º	XXX
INITIALS	
FILE N.º	I-DE-3010.64-5140-944-RRY-011 E P003.DGN
REGISTRY N.º	XXXXXX

PETROBRAS NETHERLANDS B.V.

ENGENHARIA / IERO

CLIENT OR USER: UN - RIO / ATP - RO

JOB OR PROJECT: RONCADOR FIELD DEVELOPMENT

AREA OR UNIT: PETROBRAS 52 (P-52)

DRAWING TITLE: MAIN LUBE OIL DIAGRAM (MINERAL)

DESIGN BY: RRY	DRAWN BY: ERS	CHECKED BY: DC	APPROVED BY: BC
SCALE: NTS	DRAWING TYPE: AD	CC: XXX	SHEET 3 of 7
DATE: 02-APR-04	PB N.º: I-DE-3010.64-5140-944-RRY-011		

ITEM	TAG No.	RRPE PART No.	REQD.	DESCRIPTION
1	B-UH-GE-*01A-02	PART OF UK481-004-007 (SUPPLIED BY GEARBOX VENDOR)	1	MAIN MINERAL OIL PUMP GEARBOX SHAFT DRIVEN TYPE: GEAR MATERIAL: CASING: CAST IRON FLOW: 983 l/min FLUID: MINERAL LUBE OIL CONNS: DISCHARGE: 5" 150#RF SUCTION: 5" 150#RF MODEL: STEMEL TFL10/160KR MANFR: FLENDER GRAFFENSTADEN
70	FO-207A FO-208A V2-233A V2-234A V2-216A V2-217A V5-200A V5-201A V5-202A V5-203A V6-200A V5-208A V5-209A P-UH-GE-*01A-A P-UH-GE-*01A-B	YUK442-110-010	1	COOLER - DUPLEX PLATE TYPE DESIGN CODE: ASME VIII DIV1 U STAMPED & NR 13 MATERIAL: 316L STAINLESS STEEL HOT SIDE DESIGN DATA MINERAL OIL CIRCUIT FLUID: ISO VG32 DESIGN PRESS: 1210KPag INLET/OUTLET TEMP: 74°C/54°C FLOW: 819 l/min HEAT LOAD: 471 kW CONNS: 4" 150#RF COLD SIDE DESIGN DATA DESIGN PRESS: 820KPag (MAX) WATER FLOW: 681 l/min INLET/OUTLET TEMP:32°C/42°C CONNS: 4" 150#RF MODEL: M10 BFD MANFR: INDUFIL/ALFA LAVAL
71	FT-UH-GE-*01A-01A FT-UH-GE-*01A-01B V6-201A V5-206A FO-209A	UK430-034-067	1	FILTER - DUPLEX INCLUDING CHANGEOVER VALVE & CROSS BLEED CONNECTION FILTRATION: 10 MICRON (ABSOLUTE) DESIGN CODE: ASME VIII DIV1 DESIGN PRESS/TEMP:1620KPag/100°C MATERIAL: 316L STAINLESS STEEL CONNS: 4" ANSI B16.5 150#RF (PROCESS) 3/4"NPT (VENT/DRAINS) MODEL: 10GH-4-1800-4" MANFR: INDUFIL
71A	-	UK430-034-068	2 SET	SPARE ELEMENTS FOR ITEM 71 MODEL:RRR-S-1800-A-CC10-V
76	PI*611A PI*614A PI*615A	YUK410-124-138	3	PRESSURE GAUGE MATERIAL: CASING: AISI 316L WINDOW: TOUGHENED SAFETY GLASS RANGE: 0 - 1600 KPag CONNS: 1/2" NPTM MODEL: MIX7 B63-D24 MANFR: BOURDON SEDEME
77	PDI*618A	YUK411-026-044	1	PRESSURE GAUGE - DIFFERENTIAL MATERIAL: CASING: AISI 316L WINDOW: TOUGHENED SAFETY GLASS RANGE: 0 - 160 KPa 0 - 1600 KPag MAX STATIC PRESSURE CONNS: 1/2" NPT(M) MODEL: MDX7 B63-B16-D16 MANFR: BOURDON SEDEME
95	V8-200A V8-201A V8-202A V8-203A PIT*612A PIT*613A PIT*616A PIT*617A	Y2-11T-189-236	4	PRESSURE TRANSMITTER - SMART C/W INTEGRAL MANIFOLD AND LCD MATERIAL: FLANGES COPLANAR: SST VENT/DRAIN: SST DIAPHRAGM: SST FILL FLUID: SILICON ELECTRONICS HOUSING: SST WETTED O RING: PTFE BRACKETS: SST WITH LCD DISPLAY CERTIFICATION:EExde PROTECTION: IP66 RANGE: -13800 TO +13800 KPag CONNS: 1/2" NPT (PROCESS) 1/2" NPT (ELEC) MODEL: 3051CG-5-A-0-2-A-1-J-S5-K6-M6 VALVE: C305AC-2-2-B-1-1-B4-L4 MANFR: ROSEMOUNT
96	PS-*669A PS-*670A		2	SUPPLIED WITH A.C. GENERATOR (REF INST DIAGRAM)
101	PDIT*619A V7-200A	Y2-11T-187-239	1	DIFF. PRESSURE TRANSMITTER - SMART C/W INTEGRAL MANIFOLD & LCD MATERIAL: FLANGES COPLANAR: SST VENT/DRAIN: SST DIAPHRAGM: SST FILL FLUID: SILICON ELECTRONICS HOUSING: SST WETTED O RING: TFE BRACKETS: SST WITH LCD DISPLAY CERTIFICATION:EExde, IIC, T4-T5 PROTECTION: IP66 RANGE: -2100 TO +2100 KPa CONNS: 1/2" NPT (PROCESS) 1/2" NPT (ELEC) MODEL: 3051CD-4-A-0-2-A-1-J-S5-K6-C1-M6 VALVE: 0305RC-6-2-B-1-1-L4-B4 MANFR: ROSEMOUNT
105	TI*617A TI*619A TI*621A TI*624A TI*626A	Y2-04J-177-001	5	TEMPERATURE GAUGE C/W THERMOWELL MATERIAL: CASE: 304 SST STEM & FLANGE: 316 SST RANGE: 0 - 120°C INSERTION LENGTH: 75mm CONNS: 3/4" NPT MODEL: ISA26 A 125 6 P0P120 BB S 00 20 16 75 50 MANFR: SOLATRON/HONEYWELL
110	TE*618A TE*620A TE*622A TE*623A TE*625A TE*627A	UK419-006-039 #001	6	RESISTANCE TEMPERATURE DETECTOR C/W THERMOWELL MATERIAL: HEAD: STAINLESS STEEL THERMOWELL: 316 STAINLESS STEEL PROTECTION: IP68 EExde RANGE: -50°C TO +450°C INSERTION LENGTH: 80mm CONNS: 3/4" NPT (PROCESS) 1/2" NPT (ELEC) MODEL: 0065-H-2-2-D-0035-D-0080-T46-E1-08 MANFR: ROSEMOUNT

ITEM	TAG No.	RRPE PART No.	REQD.	DESCRIPTION
112	TE*628A	Y2-05C-176-015	1	RESISTANCE TEMPERATURE DETECTOR C/W THERMOWELL (DUPLEX) MATERIAL: HEAD: STAINLESS STEEL THERMOWELL: 316 STAINLESS STEEL PROTECTION: IP68 EExde RANGE: -50°C TO +450°C INSERTION LENGTH: 405mm CONNS: 3/4" NPT (PROCESS) 1/2" NPT (ELEC) MODEL: 0065-H-2-2-D-0035-D-0405-T46-E1-03 MANFR: ROSEMOUNT
116	LIT*601A LIT*602A	UK413-303-006	2	LEVEL TRANSMITTER (GUIDED-WAVE RADAR) MATERIAL: 316 STAINLESS STEEL CERTIFICATION: EExia, IIC, T4 OUTPUT SIGNAL: 4-20mA W/HART CONNS: 2" 150#RF (MECH) M20x1.5 (ELEC) MODEL: TRANSMITTER: 705-511A-A21 PROBE:7MA-A430-137 MANFR: MAGNETROL
117	LIT*600A	UK413-303-005	1	LEVEL TRANSMITTER (GUIDED-WAVE RADAR) MATERIAL: 316 STAINLESS STEEL CERTIFICATION: EExia, IIC, T4 OUTPUT SIGNAL: 4-20mA W/HART CONNS: 2" 150#RF (MECH) M20x1.5 (ELEC) MODEL: TRANSMITTER: 705-511A-A21 PROBE:7MA-A430-105 MANFR: MAGNETROL
131	FI-*608A FI-*609A FI-*610A	UK414-001-034 #001	3	FLOW INDICATOR MATERIAL: 316L STAINLESS STEEL CONNS:1½" NPT MODEL: FIG.923 MANFR: RHODES
132	FI-*611A	UK414-002-034	1	FLOW INDICATOR MATERIAL: CST CONNS: 4" 150#RF MODEL: A MANFR: UNIVERSAL INDICATORS
133	FI-*612A FI-*613A FI-*614A	UK414-002-032	3	FLOW INDICATOR MATERIAL: CST CONNS: 2" 150#RF MODEL: A MANFR: UNIVERSAL
134	FI-*615A FI-*616A	UK414-001-027	2	FLOW INDICATOR MATERIAL: MTG: 316 STAINLESS STEEL COVER: CST NOMINAL SIZE: 50mm MODEL: 935 SERIES MANFR: RHODES
137	PCV-*659A	UK402-214-001	1	PRESSURE CONTROL VALVE. QUICK OPENING. NORMALLY OPEN/FAIL CLOSED MATERIAL: 316 STAINLESS STEEL DOWNSTREAM SETPOINT PRESS: 850 kPag MAX TEMPERATURE: 100°C CONNS: 2" 150#RF (PROCESS) ½" NPT (PILOT) MODEL: VALVE: EDR SERIES ACTUATOR: 655R-4A MANFR: EMERSON PROCESS
138	PCV-201A	UK402-214-002	1	PRESSURE CONTROL VALVE. QUICK OPENING. NORMALLY OPEN/FAIL OPEN MATERIAL: 316 STAINLESS STEEL DOWNSTREAM PRESS: 1500 KPag MAX TEMPERATURE: 80°C CONNS: 2" 150#RF (PROCESS) ½" NPT (PILOT) MODEL: VALVE: ED SERIES ACTUATOR: 555-43 MANFR: EMERSON PROCESS
141	TCV-*603A	UK402-021-019	1	TEMPERATURE CONTROL VALVE. 3 WAY MIXING WITH INTERNAL SENSING MATERIAL: 316 STAINLESS STEEL SETPOINT: 54°C CONNS: 4" 150#RF MODEL: 4BRRJ13007-00-AA MANFR: AMOT CONTROLS
151	PSV*654A PSV*655A	UK403-013-232	2	RELIEF VALVE MATERIAL: 316 STAINLESS STEEL SET PRESS: 1210KPag FLOW: 1483 L/MIN @ 15°C CONNS: 2" 150#RF (INLET) 3" 150#RF (OUTLET) MODEL: 2J3-JLT-JOS-E-15-N2-D MANFR: CROSBY
152	PSV-*656A PSV-*657A PSV-*658A PSV-*694A	UK403-013-246	4	THERMAL RELIEF VALVE. MATERIAL: BODY: ASTM A351/316 STAINLESS STEEL TRIM: 316 STAINLESS STEEL SET PRESS: 820KPag ORIFICE SIZE: DIA 7.8mm CONNS: 3/4" NPT(F) (INLET) 1" NPT(F) (OUTLET) MODEL: 951121MD MANFR: CROSBY

ITEM	TAG No.	RRPE PART No.	REQD.	DESCRIPTION
156	PN-M-B-UH-TS GE-*01A-03	UK492-105-011	1	MOTOR START/STOP CONTROL STATION ROTARY SWITCH (PADLOCKABLE IN STOP POSITION) MATERIAL: GRP RATING: -40°C TO +40°C CERTIFICATION: ZONE 1 EExed IIC T6 PROTECTION: IP66 CONNS: M20x1.5 MODEL: 8040/127O.001-062.010-061X MANFR: STAHL
160	V2-200A V2-201A	UK401-281-130 #107	2	BALL VALVE TYPE: FULL BORE, ANTI STATIC, FIRE SAFE, LOCKABLE MATERIAL: BODY & TRIM: 316 STAINLESS STEEL SEATS: FLUOROFILL RATING: 150#RF CONNS: 4" NB MODEL: 40.F829.6666.PZ7PZ.150.LD MANFR: WORCESTER
161	V2-202A V2-203A V2-204A V2-224A V2-225A V2-213A V2-214A	UK401-281-130 #105	7	BALL VALVE TYPE: FULL BORE, ANTI STATIC, FIRE SAFE, LOCKABLE MATERIAL: BODY & TRIM: 316 STAINLESS STEEL SEATS: PTFE RATING PRESS/TEMP: 1500KPag @ 100°C CONNS: 2" 150#RF MODEL: 20.F829.6666.PZ7PZ.150.LD MANFR: WORCESTER
162	V2-205A	UK401-281-132 #102	1	BALL VALVE TYPE: FULL BORE, ANTI STATIC, FIRE SAFE, LOCKABLE MATERIAL: BODY & TRIM: 316 STAINLESS STEEL SEATS: FLUOROFILL RATING PRESS/TEMP: 10300 KPag @ -40°C AND 6900 KPag @ 100°C CONNS: 3/4" NPT(F) MODEL: 07.F59.6666.PT.SEN.SEN.LD MANFR: WORCESTER
163	V2-206A V2-207A V2-208A V2-209A V2-210A V2-211A V2-212A V2-218A V2-219A V2-220A V2-221A V2-222A V2-223A V2-226A V2-227A V2-228A	UK401-281-061	16	BALL VALVE TYPE: FULL BORE, ANTI STATIC, FIRE SAFE, LOCKABLE MATERIAL: BODY & TRIM: 316 STAINLESS STEEL SEATS: FLUOROFILL RATING PRESS/TEMP: 6900 KPag @ 100°C CONNS:½" NPT(F) MODEL: 05.F44.6666.RZ.SEN.SEN.LD MANFR: WORCESTER
166	V2-229A V2-230A V2-231A V2-232A	UK401-281-130 #106	4	BALL VALVE TYPE: REDUCED BORE MATERIAL: BODY: 316 STAINLESS STEEL TRIM: 316 STAINLESS STEEL SEAT: PTFE RATING PRESS/TEMP:1500KPag @100°C CONNS: 3" 150#RF MODEL: 30.F829.6666.PZ7PZ.150.LD MANFR: WORCESTER
169	V3-201A V3-202A	UK401-509-001	2	GLOBE VALVE MATERIAL: BODY & TRIM: 316 STAINLESS STEEL RATING PRESS/TEMP: 1620KPag @ 100°C CONNS: 4" 150# Cv: 166UKGPM MODEL: LA54881 MANFR: LANGLEY VALVES
170	V3-200A	UK401-441-004	1	GLOBE VALVE MATERIAL:BODY - CARBON STEEL TRIM - 316 STAINLESS STEEL RATING:1800KPag @100°C CONNS: 2" 150#RF MODEL: 881 MANFR: HATTERSLEY HEATON
171	V5-207A	UK406-160-019	1	NEEDLE VALVE MATERIAL:BODY-316 STAINLESS STEEL PTFE BONNET PACKING & METAL SEAT RATING PRESS/TEMP:40000KPag@100°C CONNS: 1/2"NPT(F) MODEL: H7.V1S-40 MANFR: KEYSTONE
172	V8-204A V8-205A V8-206A	YUK406-122-004	3	INSTRUMENT VALVE - 3 WAY MATERIAL:STAINLESS STEEL RATING:PRESS/TEMP: 40000KPag @100°C CONNS: 1/2"NPT(F) MODEL: A25. VS-48 MANFR: KEYSTONE

REFERENCE DOCUMENTS

SEE SHEET 1

GENERAL NOTES

-

REV.	DESCRIPTION	DATE	DRAWN	CHECKED	APPROVED
E	SEE SHEET 1.	26-MAY-09	GS	LAM	SA
D	SEE SHEET 1.	14-MAY-08	AF	ML	BC
C	SEE SHEET 1.	14-SEP-05	AF	PB	BC
B	SEE SHEET 1.	17-AUG-04	JH	ML	BC
A	SEE SHEET 1.	19-JUL-04	JH	BC	ML
0	SEE SHEET 1.	02-APR-04	CPS	DC	BC

THIS DOCUMENT, WITH THE EXCEPTION OF INTELLECTUAL PROPERTY RIGHTS INCLUDED HEREIN THAT VEST IN ROLLS-ROYCE, IS PROPERTY OF PETROBRAS, BEING FORBIDEN FOR USE OFF ITS PURPOSE. STANDARDIZED FORM BY N-381 (PETROBRAS) - REV.7 - ANNEX A

ROLLS-ROYCE ABB

ROLLS-ROYCE N.: R762-46-UK437 Rev. 8

CONTRACT N.: 899.2.005.03-7

TECHNICAL REQ.: XXX

REGISTRY N.: XXXXXX

P.I.M. N.: I-DE-3010.64-5140-944-RRY-011 P004.DGN

PETROBRAS NETHERLANDS B.V.

ENGENHARIA / IERO

CLIENT OR USER: UN - RIO / ATP - RO

JOB OR PROJECT: RONCADOR FIELD DEVELOPMENT

AREA OR UNIT: PETROBRAS 52 (P-52)

DRAWING TITLE: MAIN LUBE OIL DIAGRAM (MINERAL)

DESIGN BY: RBY	DRAWN BY: DRS	CHECKED BY: BC	APPROVED BY: BC
SCALE: NTS	DRAWING TYPE: AD	CC: XXX	SHEET: 4 of 7
DATE: 02-APR-04	PB N.:	I-DE-3010.64-5140-944-RRY-011	

ITEM	TAG No.	RRPE PART No.	REQD.	DESCRIPTION
173	V7-201A	YUK407-042-014	1	INSTRUMENT VALVE - 5 WAY MATERIAL: 316 STAINLESS STEEL RATING PRESS/TEMP: 41300KPag @ 93°C CONNS: 1/2" NPT(F) MODEL: M6A-VIS-4 MANFR: KEYSTONE
176	V4-200A	UK401-467-013	1	CHECK VALVE (PUMP SUCTION) TYPE: WAFER MATERIAL: STAINLESS STEEL CONNS: 6" 150#RF MODEL: G 15 CPF MANFR: STOCKHAM VALVE LTD
177	V4-201A V4-202A	UK401-467-010	2	CHECK VALVE (PUMP DISCHARGE) TYPE: WAFER MATERIAL: 316 STAINLESS STEEL CONNS: 4" 150#RF MODEL: 4" G15 CVF MANFR: STOCKHAM VALVE LTD
178	V4-203A	UK401-465-005	1	CHECK VALVE TYPE: WAFER MATERIAL: BODY & TRIM: 316 STAINLESS STEEL SEAT: VITON CONNS: 2" 150#RF MODEL: RK16A MANFR: GESTRA
190	RC-UH-GE-*01A-01	UK487-001-021	1	FLAME ARRESTOR MATERIAL: 316 STAINLESS STEEL CONNS: 6" 150#RF MODEL: FE150EXSH MANFR: KNITMESH
191	RC-UH-GE-*01A-02 RC-UH-GE-*01A-03	UK487-001-011	2	FLAME ARRESTOR MATERIAL: 316 STAINLESS STEEL CONNS: 2" 150#RF MODEL: FE50EXSH MANFR: KNITMESH
192	RC-UH-GE-*01A-04 RC-UH-GE-*01A-05	UK487-001-027 #006	2	FLAME ARRESTOR MATERIAL: 316 STAINLESS STEEL CONNS: 3" 150#RF MODEL: FE80EXSH MANFR: KNITMESH
195	FO-200A	UK500-3-70	1	ORIFICE - PLATE TYPE (COOLDOWN TANK SUPPLY) MATERIAL: 316 SST ORIFICE: 12.7mm DIA CONNS: 2" 150#RF
196	FO-201A	YUK500-4-004	1	ORIFICE - BARREL TYPE (MECH PUMP PRIME) MATERIAL: SST ORIFICE: 4mm DIA CONNS: 1" NPT(F)
197	FO-202A FO-203A	YUK500-4-008	2	ORIFICE - BARREL TYPE (COOLER SUPPLY AND FILTER VENTS) MATERIAL: 316 SST ORIFICE: 3.2mm DIA CONNS: 1/2" NPT
198	FO-204A	YUK500-4-014	1	ORIFICE - BARREL TYPE (COOLDOWN SUPPLY) MATERIAL: 316 SST ORIFICE: 3.2mm DIA CONNS: 1" NPT
199	FO-205A FO-206A	Y2-02T-137-128	2	ORIFICE - BARREL TYPE (MAIN DRIVE VENT) MATERIAL: 316 SST ORIFICE: 1.6mm DIA CONNS: 1/2" NPT
200	FO-624A FO-625A	SEE NOTE 25	2	SUPPLIED WITH AC GENERATOR ORIFICE - BARREL TYPE (AC GENERATOR BEARING SUPPLY) MATERIAL: 316 SST ORIFICE: 5mm DIA CONNS: 1/2" 150#RF
210	B-UH-GE-*01A-03	UK460-011-154	1	AUXILIARY MINERAL OIL PUMP ELECTRIC MOTOR DRIVEN TYPE: 3 SCREW POSITIVE DISPLACEMENT VERT. TANK TOP MOUNTING MATERIAL: STEEL FLOW: 980 - 1095 l/min FLUID: ISO VG32 MINERAL OIL CONNS: 3" 150#RF COUPLING: METALLIC FLEXI-DISC MODEL: KEA90-3NL MANFR: PLENTY MIRLEES
	M-B-UH-GE-*01A-03	PART OF ITEM 210		MOTOR: VOLTAGE: 440V/3ph/60Hz CONNS: 2 x 2" NPT, 1 x 3/4" NPT INSULATION CLASS: F PROTECTION: IP56W CERTIFICATION: IEC MODEL: FRAME SIZE 225 MANFR: WEG
	AQ-M-B-UH-GE-*01A-03	PART OF ITEM 210		ANTI-CONDENSATION HEATER VOLTAGE: 40W/220V/2ph/60Hz
216	FT-UH-GE-*01A-02	UK432-101-019	1	CONICAL WITCH HAT MATERIAL: 316L SST FILTRATION: 40 MESH CONNS: 6" 150#RF MANFR: BARTON FIRTOP
217	FT-UH-GE-*01A-03	UK432-107-004	1	CONICAL WITCH HAT MATERIAL: 316L SST FILTRATION: 40 MESH CONNS: 2" 150#RF MANFR: GFSA

ITEM	TAG No.	RRPE PART No.	REQD.	DESCRIPTION
237	FT-UH-GE-*01A-04	2-16C-014-001 SHIPPED LOOSE	1	DEMISTER (RESERVOIR) WITH LOCAL PRESSURE INDICATOR MATERIAL: ALL 316L SST PERFORMANCE: 99.97% COLLECTION OF PARTICLES 0.3 MICRON OR LARGER CONNS: (PROCESS) - 6" 150#RF x 2 (DRAIN) - 1"NPT MODEL: OE-258-300 MANFR: DOLLINGER
238	F-206	2-16C-014-101	1	SPARE ELEMENT FOR ITEM 237 MODEL: 95-151 MANFR: DOLLINGER
241	TQ-UH-GE-*01A-01	RT62-46-UK441	1	COOLDOWN OIL TANK MATERIAL: 316L SST CAPACITY: 190 LITRES MANFR: ROLLS-ROYCE
251	-	UK476-007-006 #006	1	EXPANSION BELLOWS (WITH TIE RODS) MATERIAL: SST/NBR CONNS: 6" 150#RF MODEL: MODEL 50/DESIGN B MANFR: TEDDINGTONS ENGINEERING
252	-	UK476-007-006 #008	2	EXPANSION BELLOWS (WITH TIE RODS) MATERIAL: SST/NBR CONNS: 10" 150#RF MODEL: MODEL 50/DESIGN B MANFR: TEDDINGTONS ENGINEERING
253	-	UK476-007-006 #004	4	EXPANSION BELLOWS (WITH TIE RODS) MATERIAL: SST/NBR CONNS: 3" 150# MODEL: MODEL 50/DESIGN B MANFR: TEDDINGTONS ENGINEERING

REFERENCE DOCUMENTS

SEE SHEET 1

GENERAL NOTES

-

REV.	DESCRIPTION	DATE	EXEC.	CHECK	APPROV.
E	SEE SHEET 1.	26-MAY-08	GS	LAM	SA
D	SEE SHEET 1.	14-MAY-08	AF	ML	BC
C	SEE SHEET 1.	16-SEP-05	AF	PB	BC
B	SEE SHEET 1.	17-AUG-04	JH	ML	BC
A	SEE SHEET 1.	19-JUL-04	JH	BC	ML
0	SEE SHEET 1.	02-APR-04	ERS	DC	BC

THIS DOCUMENT, WITH THE EXCEPTION OF INTELLECTUAL PROPERTY RIGHTS INCLUDED HEREIN THAT VEST IN ROLLS-ROYCE, IS PROPERTY OF PETROBRAS, BEING FORBIDDEN FOR USE OFF ITS PURPOSE, STANDARDIZED FORM BY N-381 (PETROBRAS) - REV.F - ANNEX A.

Rolls-Royce ABB

ROLLS-ROYCE No.: RT62-46-UK437 Rev 8

CONTRACT No.: 899.2.005.03-7

TECHNICAL REQ.: XXX — INITIALS:

P.T.M No.: 1-DE-3010.64-5140-944-RRY-011E P005.DGN

REGISTRY No.: XXXXXX

PETROBRAS NETHERLANDS B.V. — ENGENHARIA / IERO

CLIENT OR USER:
UN - RIO / ATP - RO

JOB OR PROJECT:
RONCADOR FIELD DEVELOPMENT

AREA OR UNIT:
PETROBRAS 52 (P-52)

DRAWING TITLE:
MAIN LUBE OIL
DIAGRAM (MINERAL)

DESIGN BY: RRY	DRAWN BY: ERS	CHECKED BY: DC	APPROVED BY: BC
SCALE: NTS	DRAWING TYPE: A0	CC: XXX	SHEET 5 of 7
DATE: 02-APR-04	PB No.: 1-DE-3010.64-5140-944-RRY-011		

TABLE OF ACTION

	IT.No.	PLANT TAG	ENT. CODE	DESCRIPTION	DEVICE	FUNCTION	VOLTAGE	ACTION SETTING	REMARKS	CALIBRATED RANGE
	156	PN-M-B-UH-TS-GE-*01A-03	05QM	AUXILIARY MINERAL OIL PUMP START/STOP STATION	SWITCH	ESD	120/1/60	-	MANUAL START/STOP SWITCH FOR MOTOR 88QM. PROVIDES SAFETY FEATURE FOR MAINTENANCE.	-
	110	TE*622A	26CWS1	COOLING WATER SUPPLY TEMPERATURE	RTD	MON	24VDC	-	-	0 - 100°C
	110	TE*620A	26CWR1	COOLING WATER RETURN TEMPERATURE	RTD	MON	24VDC	-	-	0 - 100°C
	110	TE*625A	26QMCI	MINERAL OIL COOLER OIL INLET TEMP	RTD	MON	24VDC	-	-	0 - 100°C
	110	TE*623A	26QMCO	MINERAL OIL COOLER OIL OUTLET TEMP	RTD	MON/ALM	24VDC	-	-	0 - 100°C
	110	TE*618A	26QMGBO	MINERAL OIL GEARBOX DRAIN TEMPERATURE	RTD	MON	24VDC	-	-	0-100°C
	110	TE*627A	26QMS1A	MINERAL OIL SUPPLY TEMPERATURE	RTD	MON/ALM/SDN	24VDC	H 65°C HH 68°C	H = ALARM HH = SHUTDOWN BASED ON 2.o.o.2 VOTING FROM 26QMS1A AND 26QMS1B.	0 - 100°C
	110	TE*627A	26QMS1B	MINERAL OIL SUPPLY TEMPERATURE	RTD	MON/ALM/SDN	24VDC	H 65°C HH 68°C		0 - 100°C
	112	TE*628A	26QMT	MINERAL OIL RESERVOIR TEMPERATURE	RTD	MON/ALM/CONT	24VDC	H 85°C L 15°C	H = ALARM HIGH RESERVOIR TEMPERATURE	-40 - 100°C
	95	PIT*612A	63QM1A	MINERAL OIL SUPPLY PRESSURE	TRANS	MON/ALM/SDN	24VDC	L 130 kPag LL 100 kPag	100KPag MIN REQUIRED FOR UNIT START PERMISSIVE L = ALARM & START AUXILIARY PUMP MOTOR (88QM) (REFER ALSO TO NOTE) LL = SHUTDOWN BASED ON 2.o.o.2 VOTING FROM 63QM1A AND 63QM1B	0 - 1000 kPag
	95	PIT*613A	63QM1B	MINERAL OIL SUPPLY PRESSURE	TRANS	MON/ALM/SDN	24VDC	L 130 kPag LL 100 kPag		0 - 1000 kPag
E	96	PS-*669A	63QMG1	MINERAL OIL GENERATOR BEARING PRESSURE No.1	SWITCH	ALM	24VDC	L 90 kPag		-
E	96	PS-*670A	63QMG2	MINERAL OIL GENERATOR BEARING PRESSURE No.2	SWITCH	ALM	24VDC	L 90 kPag		-
	101	PDIT*619A	63QMJF	MINERAL OIL FILTER DIFFERENTIAL PRESSURE	TRANS	MON/ALM/SDN	24VDC	H 100 kPa HH 110 KPa	H ALARM INDICATES FILTER REQUIRES CHANGING.	0 - 1000 kPa
	95	PIT*617A	63QMP1	GEARBOX SHAFT DRIVEN MINERAL OIL PUMP DISCHARGE PRESSURE	TRANS	MON	24VDC	L800 kPag	LOW ALARM	0 - 1500 kPag
	95	PIT*616A	63QMP2	AUXILIARY MINERAL OIL PUMP DISCHARGE PRESSURE	TRANS	MON	24VDC	L800 kPAG	LOW ALARM	0 - 1500 kPag
	117	LIT*600A	710MRDT	COOLDOWN TANK LEVEL	TRANS	MON/ALM	24VDC	L 778mm (EQUIV 150 litres)	START PERMISSIVE RESET AT 548mm (EQUIVALENT 100 litres RAISING) ACTION SETTINGS AND CALIBRATED RANGES ARE MEASURED FROM THE BOTTOM OF COOLDOWN TANK MOUNTING FLANGE. LOW LEVEL IS A DECREASING MEASUREMENT.	0 - 855mm
	116	LIT*601A	710MT1	MINERAL OIL RESERVOIR LEVEL	TRANS	MON/ALM/SDN	24VDC	H 1132mm L 874mm LL 745mm	ACTION SETTINGS AND CALIBRATED RANGES ARE MEASURED DOWN FROM THE BOTTOM OF THE MINERAL OIL RESERVOIR. LOW LEVEL IS AN INCREASING MEASUREMENT. LL = SHUTDOWN BASED ON 2.o.o.2 VOTING FROM 710MT1 AND 710MT2	0 - 650mm
	116	LIT*602A	710MT2	MINERAL OIL RESERVOIR LEVEL	TRANS	MON/ALM/SDN	24VDC	H 1132mm L 874mm LL 745mm		0 - 650mm
	210	M-B-UH-GE-*01A-03	88QM	AUXILIARY MINERAL OIL PUMP MOTOR	MOTOR	-	440/3/60	-	REF. TO 26QMT AND NOTE 7 FOR MOTOR CONTROL. STOP WHEN N3 SPEED = 4336rpm.	-
	210	AQ-M-B-UH-GE-*01A-03	95QM	LUBE OIL AUX PUMP ANTI-CON HEATER	HTR	-	220/2/60	-	ENERGISE WHEN 88QM IS NOT RUNNING	-

MODULE INTERFACE POINTS

CNTN	REQD	SIZE	RATING	FACE	SERVICE
M200	1	2"	150#	RF	RESERVOIR FILL
M201	NOT USED				
M202	1	2"	150#	RF	RESERVOIR DRAIN
M203	NOT USED				
M204	1	3/4"	NPT(F)	-	FILTER DIRTY DRAIN WASTE OIL
M205A	1	2"	150#	RF	COOLDOWN TANK SUPPLY
M205B	1	2"	150#	RF	COOLDOWN TANK SUPPLY
M206A	1	1"	150#	RF	COOLDOWN SUPPLY TO MAIN SKID
M206B	1	1"	150#	RF	COOLDOWN SUPPLY TO MAIN SKID
M207A	1	2"	150#	RF	COOLDOWN TANK OVERFLOW
M207B	1	2"	150#	RF	COOLDOWN TANK OVERFLOW
M208	1	2"	150#	RF	COOLDOWN TANK VENT
M209	1	3/4"	NPT(F)	-	POWER TURBINE LEAK BY DRAIN
M217	2	6"	150#	RF	OIL DEMISTER VENT
M218	1	1"	-	-	OIL DEMISTER DRAIN
M612	1	4"	150#	RF	COOLING WATER SUPPLY - OIL COOLER
M613	1	4"	150#	RF	COOLING WATER RETURN - OIL COOLER
M614	1	6"	150#	RF	AC GENERATOR MAIN COOLANT SUPPLY
M615	1	6"	150#	RF	AC GENERATOR MAIN COOLANT RETURN
M616	1	1"	NPT(F)	-	COOLING WATER RELIEF - OIL COOLER
M229	1	2"	150#	RF	RESERVOIR SLUDGE DRAIN
M230	1	2"	150#	RF	RESERVOIR SLUDGE DRAIN
M231	1	2"	150#	RF	RESERVOIR SLUDGE DRAIN
M232	1	2"	150#	RF	RESERVOIR SLUDGE DRAIN
M694	1	2"	150#	RF	COOLER SKID DRAIN

REFERENCE DOCUMENTS

SEE SHEET 1

GENERAL NOTES

-

REV.	DESCRIPTION	DATE	EXEC.	CHECK	APPROV.
E	SEE SHEET 1.	26-MAY-09	DS	LAM	SA
D	SEE SHEET 1.	14-MAY-09	AF	ML	BC
C	SEE SHEET 1.	18-SEP-05	AF	PB	BC
B	SEE SHEET 1.	17-AUG-04	JH	ML	BC
A	SEE SHEET 1.	19-JUL-04	JH	BC	ML
0	SEE SHEET 1.	22-APR-04	DRS	DC	BC

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Rolls-Royce ABB

ROLLS-ROYCE No.: 8762-46-UK437 Rev 8

CONTRACT No.: 899.2.005.03-7

TECHNICAL REP.: XXX

INITIALS:

P.I.N. No.: 1-DE-3010.64-5140-944-RRY-011 E P006.004

REQUISITION No.: XXXXXX

PETROBRAS NETHERLANDS B.V.

ENGENHARIA / IERO

CLIENT OR USER:

UN - RIO / ATP - RO

JOB OR PROJECT:

RONCADOR FIELD DEVELOPMENT

AREA OR UNIT:

PETROBRAS 52 (P-52)

DRAWING TITLE:

MAIN LUBE OIL DIAGRAM (MINERAL)

DESIGN BY: RRY	DRAWN BY: DRS	CHECKED BY: DC	APPROVED BY: BC
SCALE: NTS	DRAWING TYPE: A0	CC: XXX	SHEET: 6 of 7
DATE: 02-APR-04	PB No.: 1-DE-3010.64-5140-944-RRY-011		

NOTES.

1. VALVES AND VALVE PARTS SHOWN SOLID ARE CLOSED DURING NORMAL OPERATION.
   ALL OTHERS ARE OPEN EXCEPT DURING SERVICING.
2. ALL PIPING AND TUBING TO COMPLY WITH RRPE SPECIFICATION UK600-5000.
   REFER TO RELEVANT ASSEMBLIES FOR DETAILS.
3. SOLENOID VALVES: FC - FAIL CLOSED, FO - FAIL OPEN. MOUNT VERTICALLY UPRIGHT.
4. D1 DENOTES A CONNECTION ON THE GAS GENERATOR.
5. ROLLS ROYCE DO NOT RECOMMEND MANIFOLD CONNECTING OF VENT LINES.
   ALL VENT LINES AHALL BE KEPT SEPARATE AND VENTED TO SAFE ATMOSPHERE.
6. MECH DRIVE PRIME VENT TO BE TAKEN FROM THE HIGH POINT OF THE MECH DRIVE PUMP DISCHARGE HEADER.
7. OPEERATING SPEED RANGE OF THE TURBINE IS 95 - 105%.
   AC PUMP AUTOMATICALLY SWITCHED OFF/ON AT 90% SPEED.
8. FLUSH TO GEM 0038 (TD-153 & TD-153-1) TO ISO 17/15/12 OIL QUALITY REQUIREMENTS.
9. HIGH POINT VENT.
10. REQUIRED OIL FLOWS:
    RT62 POWER TURBINE: 246 litre/min
    GEARBOX: 485 litre/min
    AC GENERATOR: 40 litre/min
    COOLDOWN TANK: 35 litre/min
11. POSITIONING OF COOLDOWN TANK TO BE 8500mm MIN ABOVE CENTRELINE OF PACKAGE. PIPE RUN TO BE SUCH THAT FLOW RATE OF 1.9 L/m DOWNSTREAM OF THE FLOW ORIFICE IS ACHIEVED. THE FLOW RATE SHALL BE TESTED AS PART OF THE SYSTEM COMMISSIONING.
12. SEE UTILITY SCHEDULE LP0937-RRPE-029 FOR DETAILS OF FLOW RATES, PRESSURES, TEMPERATURES AND FLUID REQUIREMENTS. CONNECTIONS WITHOUT CLIENT PIPING ARE DRAINS, VENTS AND FILLING POINTS LOCAL TO THE SKID. LOCAL DRAINS REQUIRE MANUAL OPERATION WITH LOCAL COLLECTION OF DRAIN FLUIDS.
13. SUPPLIED BY AC GENERATOR AND GEARBOX VENDOR.
14. VALVE USED TO REGULATE FLOW. ITEM 170 SHOULD BE THROTTLED ACHIEVING MAXIMUM OF 13°C TEMPERATURE DIFFERENCE ACROSS THE OIL COOLER.
15. DRAWING PREPARED WITH ROLLS-ROYCE SYMBOLOGY IN AutoCAD FORMAT. TO BE CONVERTED TO MICROSTATION FORMAT WITH PETROBRAS SYMBOLOGY AT FUTURE REVISION.
16. REFER TO DRIVEN EQUIPMENT INSTRUMENTATION P&ID:- RT62-37-UK88, FOR FURTHER DETAILS OF EQUIPMENT.
17. INSTRUMENTS AND EQUIPMENT TAGGING: e.g. PIT-*600A (* ALWAYS DENOTES '5140' FOR P52)
    'A' SHALL BE REPLACED BY :- 'B', 'C', 'D' FOR SUBSEQUENT TURBOGENERATOR UNITS.
    i.e.:FOR UNIT 'A' PIT-*600A SHALL BE PIT-5140600A.
    FOR UNIT 'B' PIT-*600B SHALL BE PIT-5140600B.
    FOR UNIT 'C' PIT-*600C SHALL BE PIT-5140600C.
    FOR UNIT 'D' PIT-*600D SHALL BE PIT-5140600D.
18. INTERCONNECTS BETWEEN ROLLS-ROYCE P&IDS ARE SHOWN FOR UNIT 'A' ONLY.
    FOR MICROSTATION CONVERSION THE INTERCONNECTS SHALL BE:
    FOR UNIT 'A' THE CONNECT NUMBER WILL BE AS SHOWN, AND THE P&ID WILL BE I-DE-3010.64-5140-944-RRY-011.
    FOR UNIT 'B' THE CONNECT NUMBER WILL BE THE VALUE SHOWN +50, AND THE P&ID WILL BE I-DE-3010.64-5140-944-RRY-011.
    FOR UNIT 'C' THE CONNECT NUMBER WILL BE THE VALUE SHOWN +100, AND THE P&ID WILL BE I-DE-3010.64-5140-944-RRY-011.
    FOR UNIT 'D' THE CONNECT NUMBER WILL BE THE VALUE SHOWN +150, AND THE P&ID WILL BE I-DE-3010.64-5140-944-RRY-011.
19. INTERCONNECTS BETWEEN ROLLS-ROYCE P&IDS AND ABB MODULE P&IDS ARE SHOWN FOR UNIT 'A' ONLY.
    FOR UNIT 'A' THE CONNECT NUMBER WILL BE AS SHOWN, AND THE P&ID WILL BE I-DE-3010.64-5140-944-ABZ-003.
    FOR UNIT 'B' THE CONNECT NUMBER WILL BE THE VALUE SHOWN +50, AND THE P&ID WILL BE I-DE-3010.64-5140-944-ABZ-004.
    FOR UNIT 'C' THE CONNECT NUMBER WILL BE THE VALUE SHOWN +100, AND THE P&ID WILL BE I-DE-3010.64-5140-944-ABZ-005.
    FOR UNIT 'D' THE CONNECT NUMBER WILL BE THE VALUE SHOWN +150, AND THE P&ID WILL BE I-DE-3010.64-5140-944-ABZ-006.
20. INTERCONNECTS BETWEEN ABB MODULE P&IDS AND ROLLS-ROYCE P&IDS ARE SHOWN FOR UNIT 'A' ONLY.
    FOR UNIT 'A' THE CONNECT NUMBER WILL BE AS SHOWN, AND THE P&ID WILL BE I-DE-3010.64-5140-944-ABZ-003.
    FOR UNIT 'B' THE CONNECT NUMBER WILL BE THE VALUE SHOWN +100, AND THE P&ID WILL BE I-DE-3010.64-5140-944-ABZ-004.
    FOR UNIT 'C' THE CONNECT NUMBER WILL BE THE VALUE SHOWN +200, AND THE P&ID WILL BE I-DE-3010.64-5140-944-ABZ-005.
    FOR UNIT 'D' THE CONNECT NUMBER WILL BE THE VALUE SHOWN +300, AND THE P&ID WILL BE I-DE-3010.64-5140-944-ABZ-006.
21. BLANKED FLANGE CONNECTIONS TO ENABLE THE LUBE OIL TANK TO BE FULLY DRAINED.
22. INTERCONNECTS BETWEEN ABB MODULE P&IDS AND ROLLS-ROYCE P&IDS ARE SHOWN FOR UNIT 'A' ONLY.
    FOR UNIT 'A' THE CONNECT NUMBER WILL BE AS SHOWN, AND THE P&ID WILL BE I-DE-3010.64-5140-944-ABZ-003.
    FOR UNIT 'B' THE CONNECT NUMBER WILL BE 26440, AND THE P&ID WILL BE I-DE-3010.64-5140-944-ABZ-004.
    FOR UNIT 'C' THE CONNECT NUMBER WILL BE 26540, AND THE P&ID WILL BE I-DE-3010.64-5140-944-ABZ-005.
    FOR UNIT 'D' THE CONNECT NUMBER WILL BE 26640, AND THE P&ID WILL BE I-DE-3010.64-5140-944-ABZ-006.
23. INTERCONNECTS BETWEEN ABB MODULE P&IDS AND ROLLS-ROYCE P&IDS ARE SHOWN FOR UNIT 'A' ONLY.
    FOR UNIT 'A' THE CONNECT NUMBER WILL BE AS SHOWN, AND THE P&ID WILL BE I-DE-3010.64-5140-944-ABZ-003.
    FOR UNIT 'B' THE CONNECT NUMBER WILL BE 26431, AND THE P&ID WILL BE I-DE-3010.64-5140-944-ABZ-004.
    FOR UNIT 'C' THE CONNECT NUMBER WILL BE 26531, AND THE P&ID WILL BE I-DE-3010.64-5140-944-ABZ-005.
    FOR UNIT 'D' THE CONNECT NUMBER WILL BE 26635, AND THE P&ID WILL BE I-DE-3010.64-5140-944-ABZ-006.
24. INTERCONNECTS BETWEEN ABB MODULE P&IDS AND ROLLS-ROYCE P&ID ARE FOR UNIT 'A' ONLY.
    FOR UNIT 'A' THE CONNECT NUMBER WILL BE AS SHOWN, AND THE P&ID WILL BE I-DE-3010.64-5140-944-ABZ-003.
    FOR UNIT 'B' THE CONNECT NUMBER WILL BE 26430, AND THE P&ID WILL BE I-DE-3010.64-5140-944-ABZ-004.
    FOR UNIT 'C' THE CONNECT NUMBER WILL BE 26530, AND THE P&ID WILL BE I-DE-3010.64-5140-944-ABZ-005.
    FOR UNIT 'D' THE CONNECT NUMBER WILL BE 26631, AND THE P&ID WILL BE I-DE-3010.64-5140-944-ABZ-006.
25. THIS ITEM (200) TO BE RETROFITTED BY WEG IN BRAZIL.
26. THE FILTER BODY THAT IS NOT IN OPERATION ALWAYS HAS TO BE VENTILATED BY AN OPENED VENT VALVE OR THE EQUALIZING VALVE SHOULD BE OPENED. THIS IS TO PREVENT THE FILTER BODY FROM COLLAPSING DUE TO THERMAL EXPANSION. THIS INSTRUCTION IS INCLUDED IN THE O&M INSTRUCTIONS FOR THE FILTER, SEE I-MA-3010.64-5140-561-RRY-001.

REFERENCE DOCUMENTS

SEE SHEET 1

GENERAL NOTES

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REV.	DESCRIPTION	DATE	EXEC.	CHECK	APPROV.
E	SEE SHEET 1.	26-MAY-05	CS	LAM	SA
D	SEE SHEET 1.	14-MAY-05	AF	ML	BC
C	SEE SHEET 1.	16-SEP-05	AF	PB	BC
B	SEE SHEET 1.	17-AUG-04	JH	ML	BC
A	SEE SHEET 1.	19-JUL-04	JH	BC	ML
0	SEE SHEET 1.	02-APR-04	EKS	DC	BC

THIS DOCUMENT, WITH THE EXCEPTION OF INTELLECTUAL PROPERTY RIGHTS INCLUDED HEREIN THAT VEST IN ROLLS-ROYCE, IS PROPERTY OF PETROBRAS, BEING FORBIDDEN FOR USE OFF ITS PURPOSE. STANDARDIZED FORM BY N-381 (PETROBRAS) - REV.F / ANNEX A.

Rolls-Royce ABB

ROLLS-ROYCE N.: RT62-46-UK437 Rev 8
CONTRACT N.: 899.2.005.03-7
TECHNICAL RESP.: XXX
INITIATED
FILE N.: I-DE-3010.64-5140-944-RRY-011 E P007.DGN
REGISTRY N.: XXXXXX

PETROBRAS NETHERLANDS B.V.

ENGENHARIA / IERO

CLIENT OR USER: UN - RIO / ATP - RO

JOB OR PROJECT: RONCADOR FIELD DEVELOPMENT

AREA OR UNIT: PETROBRAS 52 (P-52)

DRAWING TITLE: MAIN LUBE OIL DIAGRAM (MINERAL)

DESIGN BY	DRAWN BY	CHECKED BY	APPROVED BY
RRY	EKS	DC	BC

SCALE	DRAWING TYPE	CC	SHEET
NTS	A0	XXX	7 of 7

DATE: 02-APR-04

PB N.: I-DE-3010.64-5140-944-RRY-011