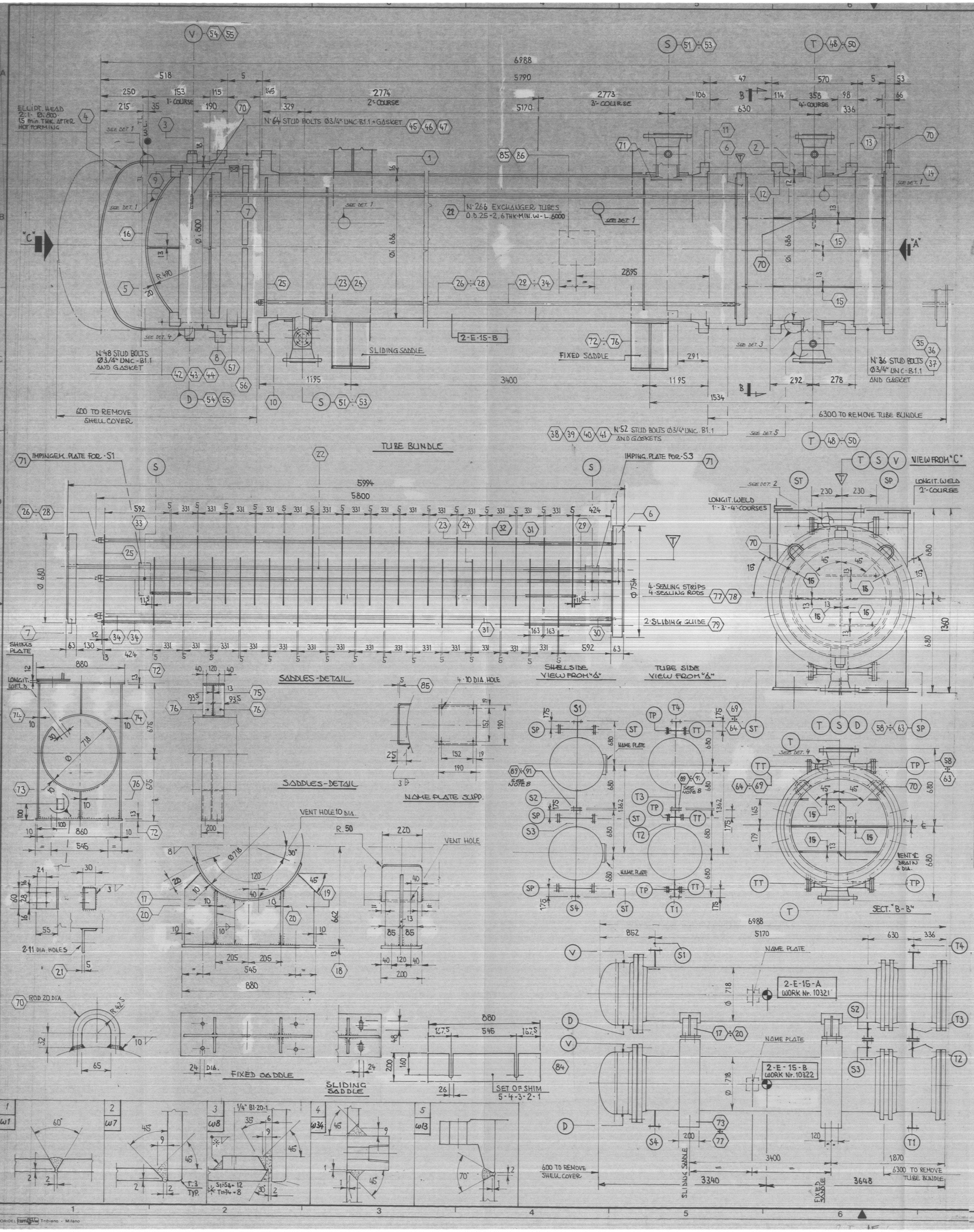

DWG.S AND SPEC.S REFERENCE

N°	REV.	TITLE
DWG - 1972 SH 5 OF 6	1	NAME PLATE - 2-E-15 A
DWG - 1972 SH 4 OF 6	0	TEST RING
DWG - 1972 SH 6 OF 6	1	NAME PLATE - 2-E-15 B
DWG - 1972 SH 3 OF 6	1	GASKETS
DWG - 1972 SH 2 OF 6	2	TUBESHEETS - FLANGES AND BAFFLES
DWG - 1972 BH	1	MATERIAL LIST

NOTES

1. ALL THICKNESSES ARE NOMINAL, UNLESS OTHERWISE SPECIFIED.
2. UNLESS OTHERWISE INDICATED, ALL DIMENSIONS ARE IN mm.
3. THE SIGN ▽ SHOWN THE MAJOR ASSEMBLY AXIS.
4. STANDARD TOLERANCES OF FABRICATION IN ACCORDING TO TEMA CODE.
5. MACHINING OF TUBESHEETS AND FLANGES 250 RMS UNLESS OTHERWISE SPECIFIED.
6. ALL RF FLANGES SHALL HAVE FACING FINISH:
   - 125 AARH IN ACCORDANCE WITH ANSI B 16.5 LATEST EDITION.
7. ALL BOLTS HOLES TO STRADDLE NATURAL CENTERLINE OF EQUIPMENT.
8. SPIRAL WOUND GASKET IN AISI 316 WITH GRAPHITE (98% CARBON MINIMUM NO BINDERS 100 PPM LEACHAGE CHLORIDES MAXIMUM) INSERTION (INNER RING IN AISI 316 AND OUTER RING IN C.S. ARE REQUIRED) DIMENSIONS ACCORDING TO ASME/ANSI B16.20
9. ALL INTERNAL WELDS OF SHELL SIDE SHALL BE GROUND FLUSH.
10. THE MATERIALS SHALL BE IN ACCORDACE WITH PAR. 3.3.3 AND 3.3.4 OF SPECIFICATION SNAMPROGETTI SPC.SC.ST.503 REV. 0.
11. EACH COUPLING SHALL BE FITTED WITH A ROUND HEAD BAR PLUG 75 mm LONG.
12. FOR ALL CORNER PRESSURE WELDS (INTERNAL AND EXTERNAL) WPS N. P1-M/40 & P1-M/10.d
13. ALL EXPOSED SURFACES TO BE SANDBLASTED AND PAINTED IN ACCORDINC WITH SPECIFIC. SNAMPROGETTI SPC.N.00-GA-E-60722 REV. 3.
14. THE EQUIPMENT SHALL BE PREPARED FOR TRANSPORT IN ACCORDANCE WITH SPECIFICATION SNAMPROGETTI G-554 REV. 3.
15. BESIDE THE INSTALLED MATERIAL, SHALL BE SUPPLIED THE FOLLOWING SPARE PARTS:
   - 3 COMPLETE SETS OF GASKETS, AND 10% STUD BOLTS & NUTS (MIN. 5 PIECES FOR TYPE)
16. COOLING WATER SIDE SHALL BE INTERNALLY & TUBE EXCHANGER SHALL BE PAINTED WITH AN EXPOXY - ALDEXYDE - ALUMINIUM POWER RESISTENCE ~ 200 µ THK.
   - ALL INTERESTED SURFACE SHALL BE PREPARED AND CONSTRUCTED ACCORDING TO:
   - SURFACE HAS TO BE SMOOTH FINISH, WITHOUT RAGS, WELDING SPLASHES, CAVITS UNDERCATS OR SPALLINGS.
   - INTERNAL WELDS HAVE TO BE SMOOTH FINISHED
   - ALL INTERNAL CORNERS HAVE TO BE ROUNDED BY RADIUS MINIMUM 1.5 mm
17. SNAMPROGETTI REF. : SUPPLY SPEC. RA-E-2305 REV.
18. SLIDING GUIDES, RODS AND SEALING STRIPS SHALL BE WELDED TO AT BAFFLES ON ONE SIDE ONLY.
19. - TIGHTENING MOMENT : NOMINAL BOLT 3/4" — INITIAL N.m 95 — INTERMEDIATE N.m 135 — FINAL N.m 200

   "MAX OPERATING TEMPERATURE"
   SHELL SIDE 60 °C
   TUBE SIDE 45 °C
20. MINIMUM DESIGN METAL TEMPERATURE : SHELL SIDE - 30°C AT 0.1 MPag
   TUBE SIDE - 30°C AT 0.1 MPag

⊕ CENTRE OF GRAVITY

NOZZLE DATA

MARK	Q.TY	SIZE	RATING AND TYPE (ANSI B 16.5)	PIPE O.D.×THK.	REINF. PAD DIA.×THK.	SERVICE
V	2	3/4"	ANSI 6000# NPT-CPLG	/	/	VENT (WITH PLUG)
D	2	3/4"	ANSI 6000# NPT-CPLG	/	/	DRAIN (WITH PLUG)
ST	3	1-1/2"	ANSI 300#-WN-RF	48,3×7,14	/	T.W. (WITH BL. FLG.)
SP	3	1"	ANSI 300#-WN-RF	33,4×6,35	/	P.T (WITH BL. FLG.)
S4	1	6"	ANSI 300#-WN-RF	168,3×10,97	270×16	OUT
S3	1	6"	ANSI 300#-WN-RF	168,3×10,97	270×16	IN
S2	1	6"	ANSI 300#-WN-RF	168,3×10,97	270×16	OUT
S1	1	6"	ANSI 300#-WN-RF	168,3×10,97	270×16	IN
TT	3	1-1/2"	ANSI 300#-WN-RF	48,3×7,14	/	T.W. (WITH BL. FLG.)
TP	3	1"	ANSI 300#-WN-RF	33,4×6,35	/	P.T. (WITH BL. FLG.)
T4	1	6"	ANSI 300#-WN-RF	168,3×10,97	270×12	OUT
T3	1	6"	ANSI 300#-WN-RF	168,3×10,97	270×12	IN
T2	1	6"	ANSI 300#-WN-RF	168,3×10,97	270×12	OUT
T1	1	6"	ANSI 300#-WN-RF	168,3×10,97	270×12	IN

DESIGN DATA

◉ SHELL/COVER - Rx 100% - Joint eff. 1 -

	SHELL	TUBE		SHELL	TUBE
WORK NUMBER	10321-10322		SIZE		
TYPE / SIZE	AES-686×6000		ULTRASONIC EXAMINATION	/	/
SURFACE m²	122,4		LIQUID PENET./MAGNETIC PART.	NO	NO
DESIGN CODE	ASME VIII-DIV.1-1992 ED. INCL. ADD. 1993-TEMA R 1988 ED. INCL. ERR. 1991 API STD 660 5TH ED. JUNE 1993		POSTWELD HEAT TREATMENT	NO	YES
			CORROSION ALLOWANCE mm	3	3
SIZE	SHELL	TUBE	THERMAL EXP. COEFF. mm/m°C	/	/
FLUID — TYPE	HYDROCARBON	COOLING WATER	METAL TEMPERATURE °C	/	/
FLUID — FISIC STATE	L/V	L			
FLUID — SPEC. GRAVITY kg/dm³	0.746 ÷ 0.764	1	INSPECTION EQUIPMENT	SNAMPROGETTI & UDT	
NUMBER PASSES	1	6			
DESIGN PRESSURE MPag	3,01	2,01			
WORKING PRESSURE MPag	2,13	0,6			
HYDROSTATIC TEST PRESS. MPag (NOTE 20)	4,515	3,015	PAINTING	SEE NOTES 13-16	
EQUIPMENT DESIGN TEMP. °C	155	50	INSULATION mm	NO	NO
TUBESHEETS DESIGN TEMP. °C	/	/			
WORKING TEMPERATURE IN/OUT °C	60/38	32/45	CAPACITY M3	2,030	0,700
JOINT EFFICIENCY/CATEGORY	0,85-◉	0,85	BUNDLE WEIGHT kg	3040	
TEST PLATES	UDT	UDT	EMPTY WEIGHT kg	6620	
X-RAY EXAMINATION	SPOT-◉	SPOT	WEIGHT FULL WATER kg	9350	

MATERIALS

	SHELL SIDE		TUBE SIDE
SHELL	A-516 Gr. 60-A20/S5	SHELL	A-516 Gr. 60-A20/S5
DISHED HEAD	A-516 Gr. 60-A20/S5	FLAT COVER	A-765 Gr. II
SHELL COVER	A-516 Gr. 60-A20/S5	CHANNEL FLANGES	A-765 Gr. II
SHELL FLANGES	A-765 Gr. II	PASS PARTITIONS	A-516 Gr. 60-A20/S5
NOZZLE PIPES	A-333 Gr. 6 SMLS	NOZZLE PIPES	A-333 Gr. 6 SMLS
NOZZLE FLANGES	A-350 Gr. LF2	NOZZLE FLANGES	A-350 Gr. LF2
REINFORCING PADS	A-516 Gr. 60-A20/S5	REINFORCING PADS	A-516 Gr. 60-A20/S5
COUPLINGS	A-350 Gr. LF2	COUPLINGS	A-350 Gr. LF2
EXPANSION JOINT	/	FLOATING HEAD	A-516 Gr. 60-A20/S5
FLOW-GUIDE PLATE	/	FLOATING HEAD FLANGE	A-765 Gr. II
PACKING BOX	/	SPLIT SHEAR RINGS	A-765 Gr. II
WEIR	/	SOLID RING	A-516 Gr. 60-A20/S5
STUD BOLTS — SHELL AND CHANNEL FLG.	A-193 Gr. B7	TUBE BUNDLE — TUBESHEETS	A-765 Gr. II
FLOATING HEAD	A-193 Gr. B7	TUBES	A-334 Gr. 6 SMLS
NOZZLES	A-193 Gr. B7	BAFFLES OR SUPP. PLATES	A-516 Gr. 60-A20/S5
PACKING BOX	/	TIE RODS AND NUTS	Fe 360 B UNI 7070
NUTS — SHELL AND CHANNEL FLG.	A-194 Gr. 2H	SPACERS	A-334 Gr. 6 SMLS
FLOATING HEAD	A-194 Gr. 2H	SEALING STRIPS	A-516 Gr. 60-A20/S5
NOZZLES	A-194 Gr. 2H	INPIGMENT BAFFLE	A-516 Gr. 60-A20/S5
PACKING BOX	/	SLIPPING SLIDES	/
GASKETS — CHANNEL-COVER	SOFT IRON JACKETED ASBESTOS FREE	SUPPORT SADDLES	A-516 Gr. 60-A20/S5
CHANNEL-STAT. TUBESHEET	"	REINFORCING SADDLES	A-516 Gr. 60-A20/S5
SHELL-STAT. TUBESHEET	"	NAME PLATE	S.S. 304
SHELL COVER	"	NAME PLATE SUPPORT	A-516 Gr. 60
FLOATING HEAD	SOFT IRON JACKETED ASBESTOS FREE	FILLER MATERIALS	/
PACKING BOX	/		
TUBE SIDE NOZZLES	SEE NOTE 8		
SHELL SIDE NOZZLES	SEE NOTE 8		

Snamprogetti S.p.A.

DOCUMENT STATUS	SIGNED	DATE
A - INFORMATION/COMMENTS NOTED SUBMIT CERTIFIED FINAL TRANSPARENCY		
B - INFORMATION/COMMENTS NOTED RESUBMIT		
10 - FOR INFORMATION ONLY NO REVIEW PERFORMED		
SCF - SUPPLIER CERTIFIED FINAL		

ISSUE OF CERTIFIED FINAL DOCUMENT DOES NOT RELIEVE SUPPLIER OF RESPONSABILITY OR LIABILITY UNDER THE CONTRACT / PURCHASE ORDER

Snamprogetti
JOB 300000 PETROCHEMIA PLOCK SA
DWG / SPC N 2-RE-8-23990
HYDROCRACKING PLANT Sh-1 Of-1
CONTRACT N PL0001 44124-94-5645

REV.	DATE	SIGNATURE
0	4.7.95	[signature]
1	4.9.95	[signature]
2	6.11.95	[signature]

REV	Date	Description	Drawn	Ckd.	QC Appd.
2	12.10.95	REVISION	[signature]	[signature]	[signature]
1	08-07-95	REVISION	[signature]	[signature]	[signature]
0	26/05/95	- Issue	[signature]	[signature]	[signature]

Manufacturer
MECCANICA SARDA
- Purchase order N° 300000/PRL/00019
- JOB N° 951205
- User : PETROCHEMIA PLOCK S.A.
- Plant location : PLOCK - POLAND
- Unit : HYDROCRACKING PLANT
- Service : NAPHTHA SPLITTER BOTTOMS TRIM COOLER

- HEAT EXCHANGER
2-E-15-A/B

DWG. No 1972

- Ref.	- Scale	-Sh	-Of	REV.
	1:10	1	6	2