



STANDARD FORMS

DEP 00.00.10.05-Gen.

December 1998

DESIGN AND ENGINEERING PRACTICE



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PREFACE

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The Hague, The Netherlands,
and other Service Companies.

They are based on the experience acquired during their involvement with the design, construction, operation and maintenance of processing units and facilities, and they are supplemented with the experience of Group Operating companies. Where appropriate they are based on, or reference is made to, national and international standards and codes of practice.

The objective is to set the recommended standard for good design and engineering practice applied by Group companies operating an oil refinery, gas handling installation, chemical plant, oil and gas production facility, or any other such facility, and thereby to achieve maximum technical and economic benefit from standardization.

The information set forth in these publications is provided to users for their consideration and decision to implement. This is of particular importance where DEPs may not cover every requirement or diversity of condition at each locality. The system of DEPs is expected to be sufficiently flexible to allow individual operating companies to adapt the information set forth in DEPs to their own environment and requirements.

When Contractors or Manufacturers/Suppliers use DEPs they shall be solely responsible for the quality of work and the attainment of the required design and engineering standards. In particular, for those requirements not specifically covered, the Principal will expect them to follow those design and engineering practices which will achieve the same level of integrity as reflected in the DEPs. If in doubt, the Contractor or Manufacturer/Supplier shall, without detracting from his own responsibility, consult the Principal or its technical advisor.

The right to use DEPs is granted by SIOP, SIEP or SIC, in most cases under Service Agreements primarily with companies of the Royal Dutch/Shell Group and other companies receiving technical advice and services from SIOP, SIEP or SIC. Consequently, three categories of users of DEPs can be distinguished:

- 1) Operating companies having a Service Agreement with SIOP, SIEP, SIC or other Service Company. The use of DEPs by these Operating companies is subject in all respects to the terms and conditions of the relevant Service Agreement.
- 2) Other parties who are authorized to use DEPs subject to appropriate contractual arrangements.
- 3) Contractors/subcontractors and Manufacturers/Suppliers under a contract with users referred to under 1) or 2) which requires that tenders for projects, materials supplied or - generally - work performed on behalf of the said users comply with the relevant standards.

Subject to any particular terms and conditions as may be set forth in specific agreements with users, SIOP, SIEP and SIC disclaim any liability of whatsoever nature for any damage (including injury or death) suffered by any company or person whomsoever as a result of or in connection with the use, application or implementation of any DEP, combination of DEPs or any part thereof. The benefit of this disclaimer shall inure in all respects to SIOP, SIEP, SIC and/or any company affiliated to these companies that may issue DEPs or require the use of DEPs.

Without prejudice to any specific terms in respect of confidentiality under relevant contractual arrangements, DEPs shall not, without the prior written consent of SIOP and SIEP, be disclosed by users to any company or person whomsoever and the DEPs shall be used exclusively for the purpose for which they have been provided to the user. They shall be returned after use, including any copies which shall only be made by users with the express prior written consent of SIOP and SIEP. The copyright of DEPs vests in SIOP and SIEP. Users shall arrange for DEPs to be held in safe custody and SIOP or SIEP may at any time require information satisfactory to them in order to ascertain how users implement this requirement.

All administrative queries should be directed to the DEP Administrator in SIOP.

NOTE: In addition to DEP publications there are Standard Specifications and Draft DEPs for Development (DDD). DDDs generally introduce new procedures or techniques that will probably need updating as further experience develops during their use. The above requirements for distribution and use of DEPs are also applicable to Standard Specifications and DDDs. Standard Specifications and DDDs will gradually be replaced by DEPs.

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1. INTRODUCTION

1.1 SCOPE

This DEP binder contains standard forms applicable to electrical, mechanical and project engineering.

For Instrumentation standard forms, refer to the binder DEP 00.30.10.05-Gen.

For data sheets, requisition sheets and data/requisition sheets, refer to the binder DEP 30.10.01.10-Gen.

This edition replaces the previous edition dated December 1996; a summary of changes is given in Section 1.4.

1.2 DISTRIBUTION, INTENDED USE AND REGULATORY CONSIDERATIONS

Unless otherwise stated by SIOP and SIEP, the distribution of this document is restricted to companies forming part of or managed by the Royal Dutch/Shell Group, and to Contractors nominated by them (i.e. the distribution code is "C" as defined in DEP 00.00.05.05-Gen.)

This DEP is intended for use in oil refineries, chemical plants, gas plants, exploration and production facilities and supply/marketing installations.

If national and/or local regulations exist in which some of the requirements may be more stringent than in this DEP the Contractor shall determine by careful scrutiny which of the requirements are the more stringent and which combination of requirements will be acceptable as regards safety, environmental, economic and legal aspects. In all cases the Contractor shall inform the Principal of any deviation from the requirements of this DEP which is considered to be necessary in order to comply with national and/or local regulations. The Principal may then negotiate with the Authorities concerned with the object of obtaining agreement to follow this DEP as closely as possible.

1.3 DEFINITIONS

The **Contractor** is the party which carries out all or part of the design, engineering, procurement, construction, commissioning or management of the project, or operation of a facility. The Principal may undertake all or part of the duties of the Contractor.

The **Manufacturer/Supplier** is the party which manufactures or supplies equipment and services to perform the duties specified by the Contractor.

The **Principal** is the party which initiates the project and ultimately pays for its design and construction. The Principal will typically specify the technical requirements. The Principal may also appoint an agent or consultant authorised to act for and on behalf of the Principal.

The word **shall** indicates a requirement.

The word **should** indicates a recommendation.

1.4 SUMMARY OF CHANGES SINCE PREVIOUS EDITION

DEP number	Sheets	Date	New/revised	Location
01.00.03.80	1	08/98	revised	Section 3.1
01.00.03.81	1	08/98	revised	Section 3.1
01.00.03.84	1	12/98	revised	Section 3.1
01.00.03.85	1	08/98	revised	Section 3.1
01.00.03.86	1	08/98	revised	Section 3.1
01.00.03.87	1	08/98	revised	Section 3.1
01.00.03.88	1	08/98	revised	Section 3.1
01.00.03.89	1	08/98	revised	Section 3.1
01.00.03.90	1	08/98	revised	Section 3.1
01.00.03.91	1	08/98	revised	Section 3.1
05.00.54.84	1	08/98	revised	Section 3.2

2. REFERENCES

In this DEP, reference is made to the following publications:

NOTE: Unless specifically designated by date, the latest edition of each publication shall be used, together with any amendments/supplements/revisions thereto.

Index to DEP publications and standard specifications	DEP 00.00.05.05-Gen.,
Standard Forms - Instrumentation (binder)	DEP 00.30.10.05-Gen.,
Requisitioning (binder)	DEP 30.10.01.10-Gen.,

3. STANDARD FORMS

3.1 DESIGN BOOKS

Material balance sheet - DEP 01.00.03.80-Gen., 08/98

[illegible]

General information sheet - DEP 01.00.03.81-Gen., 08/98

		Design book No.:		page	
Principal:		Revision letter			
		Date			
		Signature			

Heat exchanger summary sheet - DEP 01.00.03.84-Gen., 12/98

Project		Location										Notes of construction	
Equip- ment No	Service	Type	Type	Unit	Material	Dimensions	Weight	Volume	Design conditions	Design conditions			
E	Unit	Material	Type	Unit	Material	Dimensions	Weight	Volume	Design conditions	Design conditions	Notes of construction	Notes	

1) Shell and tube heat exchanger

2) Plate heat exchanger

3) Double shell and tube heat exchanger

4) Double shell and tube heat exchanger

5) Plate heat exchanger

6) Double shell and tube heat exchanger

7) Double shell and tube heat exchanger

8) Double shell and tube heat exchanger

9) Double shell and tube heat exchanger

10) Double shell and tube heat exchanger

11) Double shell and tube heat exchanger

12) Double shell and tube heat exchanger

Pump summary sheet - DEP 01.00.03.85-Gen., 08/98

[illegible]

Compressor and blower summary sheet.- DEP 01.00.03.86-Gen., 08/98

[illegible]

Mixing equipment summary sheet. - DEP 01.00.03.87-Gen., 08/98

[illegible]

Separating equipment summary sheet - DEP 01.00.03.88-Gen., 08/98

[illegible]

Column summary sheet - DEP 01.00.03.89-Gen., 08/98

[illegible]

Vessel summary sheet - DEP 01.00.03.90-Gen., 08/98

[illegible]

Reactor summary sheet - DEP 01.00.03.91-Gen., 08/98

[illegible]

3.2 ELECTRICAL EQUIPMENT

Utility data - electrical - DEP 05.00.10.80-Gen., 11/93

Equipment No.	Description	EQUIPMENT				MOTOR RATING		LOAD FACTOR A d in % (in %)	EFFICIENCY at load factor C in % (in %)	POWER FACTOR or load factor C cos φ	k
		Volt	Power (kW)	Power (kVA)	Power (kVA)	Power (kW)	Power (kVA)				
1											
2											
3											
4											
5											
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42											
43											
44											
45											
Maximum of normal running plant load (Est. x % Duty %)		kW:		kVA:	$\sqrt{kW^2 + kVAR^2}$	kVA				TOTAL	
Peak load (Est. x % Duty % + 25 %)		kW:		kVA:	$\sqrt{kW^2 + kVAR^2}$	kVA				$kVA (\sqrt{kW^2 + kVAR^2})$	
Enter house loads and other loads for each separate case, subject to principal approval.											
NOTES:											
a) Load classification (restarting): For definitions of "Vital", "Essential" and "Non-Essential" services and supply of "Essential", see DEP 00.00.10.05-Gen. Electrical engineering guidelines. b) Absorbed loads: For power, short load on duty point for instrumentation, control, communication, air conditioning, the equipment and during full operation of plant for lighting during dark hours; for workshops, the average total load in normal full operation. c) Consumed loads: E "Continuous": all loads that may be required for normal operation, including lighting and workshops. F "Intermittent and special": the loads required for intermittent pumping, storage, loading and all electrical sources of electrical drive.											
Project title: _____ Principal: _____ Consignee: _____ Eng. r											
First issued: _____ Rev. 001: _____ Date: _____ Sign: _____											

[illegible]

Summary of electrical engineering - DEP 05.00.54.84-Gen., 08/98

SUMMARY OF ELECTRICAL ENGINEERING																	
Project title:										Contractor:							
Project No.:										Contract Job No.:							
Principal:										Using Contractor:							
CONTENTS																	
Title	Section	Number of sheets issued	Reference sheets included														
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	
Table of contents	1	1															
List of engineering drawings	2																
List of manufacturer's drawings	3																
Materials	4																
Generators, Isc, motor, motor, transformers, Reactors	5																
Redline, Subcontractors	6																
Sw - High-voltage	7																
Substation equipment	8																
Lighting material	9																
Cabling material	10																
Miscellaneous material	11																
Field notes	Field notes												TABLE OF CONTENTS				
	Date												Drawing No.		Section 1		
	Signature												T -		Sheet 1		

DEP 05.00.54.84-Gen. 08/98

Schedule for LV switchboard - DEP 33.67.01.80-Gen., sheet 1 12/94

1	2	3	4	5	6	7	8	9	10	11	12	
Equipment Item No.	SWITCHBOARD DATA											
	LABEL INSCRIPTION		Switch device	FUSE RATING		Con-tactor rating	Protection device	Am-meter CT ratio	Trans-ducer required	IMCR connection	RATING	
	Tag No	Equipment	Rating	Base	Fuse		il				IW	FLC
			A	A	A	A	non-standard					A
1												
2												
3												
4												
5												
6												
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Project title			Reviewed			Consignee		
Prepared	Rev. letter							
	Rev.							
	Sign.							

[illegible]

Schedule for LV switchboard - DEP 33.67.01.80-Gen., sheet 2 12/94

25	24	25	26	27	28	29	30	31	32	33	34	35	36	
CONNECTED CABLES														
Equipment Item No	MAIN			CONTROL			PILOT			PILOT				
	No. of cables and size mm²	Diameter		Length m	No. of cables and size mm²	Diameter		No. of cables and size mm²	Diameter		No. of cables and size mm²	Diameter		
		Over lead mm	Over all mm			Over lead mm	Over all mm		Over lead mm	Over all mm		Over lead mm	Over all mm	
1														
2														
3														
4														
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7														
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54														
55														
Project title:				Principal:				Coordinator:						
Prepared by:														
Date:														
Sign:														

SPACE FOR DIAGRAMS DEVIATING FROM STANDARD DRAWING S 67.019

NOTES	TECHNICAL DATA
1. Only for Ex'e motors	Supply System: V, 3-phase, 3-wire, 50/60 Hz, earthed
2. Only for motors & lighting or heating or plant services	Bus-bar current, rating: A
3. For details see T-2.239.78	Bus-bar short-circuit strength: kA rms, 1 s
MANUFACTURER'S DRAWING	REFERENCES
	DEP 00.00.01.01-Gen.
	S 67.018 Single-line diagrams for LV switchboard panels
	S 67.004 Schematic diagrams or control circuits for LV motors
	S 67.021 LV switchboard panel identifier
	Summary of electrical engineering
	Contractor Job No. _____
	Make : _____ Type: _____
	Location: _____

Eng. by:	Switchboard No.:	Sub-group No. 67	Section: left hand/centre/right hand/emergency
	Project No.:	SCHEDULE FOR LV SWITCHBOARD	
	Requisition No.:	Drawing No.:	Sheet No. 2
		T -	Cont'd on sheet:

Schedule for lighting distribution switchboard - DEP 33.67.01.81-Gen., 12/81

1	2	3	4	5	6	7	8	9	10	11	12
Equipment Item No.	LABEL INSCRIPTION	LIGHTING DISTRIBUTION SWITCHBOARD DATA				DIAGRAMS		LAYOUT		CONNECTED	
		Switch device Rating A	FUSE RATING		E.L.C.B.		Standard arrangement in accordance with S 67.022	FINAL PANEL IDENTIFICATION		No. of cores and size mm ²	D-AMC Over- and- trip
			Base A	Fused A	Rating A	Sensitivity In A		Panel No.	Circuit No.		
1											
2											
3											
4											
5											
6											
7											
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46											
47											
48											
49											
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51											
52											
53											
54											
55											

Project order		Principal		Consignment		Eng. By	
First name	Rec. letter						
	Date						
	Sign.						

[illegible]

Schedule for AC instrument distribution switchboard - DEP 33.67.01.82-Gen., 12/81

1	2	3	4	5	6	7	8	9	10	11
Equipment Item No.	LABEL DESCRIPTION	AC INSTRUMENT DIS MOUNT FOR SWITCHBOARD DATA					DIAGRAMS	LAYOUT		CO
		Switch device Rating A	FUSE RATING		CONTACTOR	Standard arrangement in switchboard with C 57.024	FINAL PANE IDENTIFICATION			
			Base A	Fuse A			Panel No.	Circuit No.	No. of rows and size (mm)	
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
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55										

Project title:		Principal:		Consultant:		Engineer:	
First issue	Rev. 01						
	Date						
	Sign						

DEP 33.67.01.42 Gen. 12/81

Schedule for DC instrument distribution switchboard - DEP 33.67.20.80-Gen., 4/82

1	2	3	4	5	6	7	8	9	10
Equipment Item No.	LABEL INSCRIPTION	DC INSTRUMENT DISTRIBUTION CIRCUIT DATA			LAYOUT		CONNECTED CABLES		
		Switch device Rating A	FUSE RATING		FINAL PANEL IDENTIFICATION		No. of cores and size mm ²	DIAMETER	
			Base A	Fuse A	Panel No.	Circuit No.		Cover lead mm	Over all mm
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
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55									

Project title:		Principal:		Consent:		Eng. by:	
First issue	Rev. letter						
	Date						
	Sign.						

DEP 00.00.10.05-Gen.
December 1998
Page 45

SPACE FOR DIAGRAMS DEVIATING FROM STANDARD DRAWINGS S 67.025/S 67.026 AND REMARKS

NOTES		TECHNICAL DATA	
		Supply system	V AC
		Rc-switch current rating	A
		Number of incoming feeder circuits	2/3/4
MANUFACTURER'S DRAWINGS		REFERENCES	
		DEP 33.67.01.31-Gen.	
		S 67.025 Schematic drawing	
		S 67.026 Typical arrangement	
		T: Bureau of electrical engineering	
		Contractor Job.No.:	
		Make:	Type:
See switchboard No.:		Location:	
Project No.:	Sub-group No. 67	SCHEDULE FOR DE INSTRUMENT DISTRIBUTION SWITCHBOARD	
Request on No.:		Drawing No.:	Sheet No.
		T:	Contract sheet:

y. by:

Schedule for remote control unit/safety switch - DEP 33.67.34.80-Gen., 9/84

Schedule for high-voltage switchgear - DEP 33.67.51.80-Gen., sheet 1 8/79

[illegible]

Schedule for high voltage switchgear - DEP 33.67.51.80-Gen., sheet 2 8/79

1. Project description		2. Main cables		3. Cables		4. Cables		5. Cables		6. Cables		7. Cables		8. Cables		9. Cables		10. Cables		11. Cables		12. Cables		13. Cables		14. Cables		15. Cables		16. Cables		17. Cables		18. Cables		19. Cables		20. Cables		21. Cables		22. Cables		23. Cables		24. Cables		25. Cables		26. Cables		27. Cables		28. Cables		29. Cables		30. Cables		31. Cables		32. Cables		33. Cables		34. Cables		35. Cables		36. Cables		37. Cables		38. Cables		39. Cables		40. Cables		41. Cables		42. Cables		43. Cables		44. Cables		45. Cables		46. Cables		47. Cables		48. Cables		49. Cables		50. Cables		51. Cables		52. Cables		53. Cables		54. Cables		55. Cables		56. Cables		57. Cables		58. Cables		59. Cables		60. Cables		61. Cables		62. Cables		63. Cables		64. Cables		65. Cables		66. Cables		67. Cables		68. Cables		69. Cables		70. Cables		71. Cables		72. Cables		73. Cables		74. Cables		75. Cables		76. Cables		77. Cables		78. Cables		79. Cables		80. Cables		81. Cables		82. Cables		83. Cables		84. Cables		85. Cables		86. Cables		87. Cables		88. Cables		89. Cables		90. Cables		91. Cables		92. Cables		93. Cables		94. Cables		95. Cables		96. Cables		97. Cables		98. Cables		99. Cables		100. Cables	
1. Type		2. Name		3. Description		4. Location		5. Date		6. Status		7. Remarks		8. Notes		9. Comments		10. Actions		11. Results		12. Conclusions		13. Recommendations		14. Follow-up		15. Review		16. Approval		17. Signature		18. Date		19. Version		20. Revision		21. Change		22. History		23. Audit		24. Compliance		25. Safety		26. Quality		27. Cost		28. Time		29. Risk		30. Impact		31. Benefit		32. Value		33. Priority		34. Urgency		35. Importance		36. Relevance		37. Feasibility		38. Viability		39. Sustainability		40. Resilience		41. Adaptability		42. Flexibility		43. Scalability		44. Portability		45. Interoperability		46. Compatibility		47. Reliability		48. Availability		49. Security		50. Confidentiality		51. Integrity		52. Accountability		53. Transparency		54. Inclusiveness		55. Openness		56. Collaboration		57. Partnership		58. Synergy		59. Complementarity		60. Additivity		61. Multiplicativity		62. Commutativity		63. Associativity		64. Distributivity		65. Identity		66. Inverse		67. Closure		68. Associativity		69. Commutativity		70. Distributivity		71. Identity		72. Inverse		73. Closure		74. Associativity		75. Commutativity		76. Distributivity		77. Identity		78. Inverse		79. Closure		80. Associativity		81. Commutativity		82. Distributivity		83. Identity		84. Inverse		85. Closure		86. Associativity		87. Commutativity		88. Distributivity		89. Identity		90. Inverse		91. Closure		92. Associativity		93. Commutativity		94. Distributivity		95. Identity		96. Inverse		97. Closure		98. Associativity		99. Commutativity		100. Distributivity	

Project No. _____

Page No. _____

Revision No. _____

Drawn by: _____

Checked by: _____

Approved by: _____

Schedule for high voltage switchgear - DEP 33.67.51.80-Gen., sheet 3 8/79

[illegible]

3.3 PUMPS

Calculation sheet for pumping data - DEP 31.29.01.85- Gen., 8/79

[illegible]

CALCULATION SHEET FOR PUMPING DATA						SUCTION SIDE			
$D_1 = \frac{m}{\pi \cdot V} \quad m/s; Rm = \frac{V \cdot D_1}{\pi} \cdot 10^6 = \frac{m}{s} \cdot \frac{m}{m} \cdot 10^6 = \frac{m^2}{s} \cdot 10^6$						$\lambda =$			
Pressure drop $\Delta p = \lambda \cdot \frac{L}{D_1} \cdot \frac{V^2}{2} \cdot 10^{-5} \cdot \rho \quad \text{bar}; \Delta p_{100l} = \frac{100}{x} \cdot \frac{2}{x} \cdot 10^{-5} \cdot x$						bar per 100 m pipe			
From	To	Flow rate dm ³ /s	Visc. cSt	Nom. pipe size in.	Pipe including valves, tees, bends, etc. converted into straight length of pipe	PRESSURE DROP (suction line)			
						Case 1 bar	m liquid	Case 2 bar	m liquid
Total pressure drop ¹⁾						+		+	
						AVAILABLE NPSH:			
Absolute pressure in suction vessel									
Height of liquid level in suction vessel above/below pump centre line (m)									
Sub total						+		+	
Total pressure drop in suction line, see ¹⁾ above									
Total minimum suction head									
Vapour pressure (absolute) of liquid									
Minimum available NPSH									
DISCHARGE SIDE									
$D_2 = \frac{m}{\pi \cdot V} \quad m/s; Rm = \frac{V \cdot D_2}{\pi} \cdot 10^6 = \frac{m}{s} \cdot \frac{m}{m} \cdot 10^6 = \frac{m^2}{s} \cdot 10^6$						$\lambda =$			
Pressure drop $\Delta p = \lambda \cdot \frac{L}{D_2} \cdot \frac{V^2}{2} \cdot 10^{-5} \cdot \rho \quad \text{bar}; \Delta p_{100l} = \frac{100}{x} \cdot \frac{2}{x} \cdot 10^{-5} \cdot x$						bar per 100 m pipe			
From	To	Flow rate dm ³ /s	Visc. cSt	Nom. pipe size in.	Pipe including valves, tees, bends, etc. converted into straight length of pipe	PRESSURE DROP (discharge line)			
						Case 1 bar	m liquid	Case 2 bar	m liquid
Pressure drop standard value									
Pressure drop apparatus:									
Total pressure drop ²⁾						+		+	
						DIFFERENTIAL HEAD			
Absolute pressure at battery limit or absolute pressure in discharge vessel									
Height of liquid level in discharge vessel above/below pump centre line (m)									
Sub total						+		+	
Total pressure drop in discharge line, see ²⁾ above									
Total maximum discharge head						+		+	
Total minimum suction head (see suction side)									
Differential head									
Made by		Date		PLM ² : P		Rev. 1			
Checked by		Date		FLAH I		Rev. 2			
Appr. by		Date		CONS GWEE:		Rev. 3			
Principal						Sheet No.		cont'd on sheet No.	
Eng. by						Req. No.			
						Drawing No.			

3.4 PIPING SYSTEMS

SPECIFICATION FOR PIPING SYSTEMS

PROJECT NUMBER:

PLANT:

CONSIGNEE:

LOCATION:

First issue	Rev. letter					
	Date					
	Sign.					
Plant :		COVER SHEET				Drawing No
Consignee :						T -
Eng. by :		Contr. Job No				Sheet No
Principal :		Project No.				

Index and issue sheet - DEP 31.38.01.41-Gen., 2/84

[illegible]

Design and engineering requirements - DEP 31.38.01.42-Gen., 1/92

GENERAL REQUIREMENTS

Design, engineering and testing of piping systems shall be in accordance with DEP 31.38.01.11 - Gen., dated and (16) amendments mentioned in the job instructions or project specifications.

SPECIAL REQUIREMENTS

Special requirements which are not mentioned in, or conflict with DEP 31.38.01.11 - Gen., dated are part of this specification and stated on sheet(s) No.

PIPING CLASSES

Piping classes to be used for this project are selected from DEP 31.38.01.12 - Gen., dated Derived piping classes are indicated by an X, Y or Z added to the piping class number.

Additional requirements which are included in DEP 31.38.01.12 - Gen., dated are part of this specification and stated on sheet(s) No.

SELECTED PIPING CLASSES

Piping classes selected for this project are listed on sheet(s) No. of this specification.

BILL OF MATERIAL

Each 'Bill of Material', including drawings, number system and standard forms to be used, shall be in accordance with DEP 31.38.01.13 - Gen., dated

PIPING SUPPORTS

Supporting of piping shall be in accordance with:
DEP 31.38.01.29 - Gen.

Eng. Contractor's standard practice for which the Principal's written agreement is given; see

NOTES: 1) For Exploration and Production, DEP 31.38.01.15 - Gen. is used.

First Issue		Rev. letter		Cont'd or sheet No.																																								
Date																																												
Sign.																																												
<table border="1"> <tr> <td>Plan</td> <td>:</td> <td colspan="3"></td> <td rowspan="4"> Drawing No.: — Sheet No. </td> </tr> <tr> <td>Consignee</td> <td>:</td> <td colspan="3"></td> </tr> <tr> <td>Eng. by</td> <td>:</td> <td colspan="3"></td> </tr> <tr> <td>Principal</td> <td>:</td> <td colspan="3"></td> </tr> <tr> <td colspan="2"></td> <td colspan="3" style="text-align: center;">DESIGN AND ENGINEERING REQUIREMENTS</td> <td></td> </tr> <tr> <td colspan="2"></td> <td colspan="3">Contr. Job No.</td> <td></td> </tr> <tr> <td colspan="2"></td> <td colspan="3">Project No.</td> <td></td> </tr> </table>						Plan	:				Drawing No.: — Sheet No.	Consignee	:				Eng. by	:				Principal	:						DESIGN AND ENGINEERING REQUIREMENTS						Contr. Job No.						Project No.			
Plan	:				Drawing No.: — Sheet No.																																							
Consignee	:																																											
Eng. by	:																																											
Principal	:																																											
		DESIGN AND ENGINEERING REQUIREMENTS																																										
		Contr. Job No.																																										
		Project No.																																										

Selection of piping classes for process utility lines - DEP 31.38.01.43-Gen., 2/84

Unit number	Service	Approx. normal WP bar ga	Working temp. °C	Design condition		Piping class	Basic material and/or remarks
				Press. bar ga	Temp. °C		

Continuation sheet No.							
First issue	Rev. letter						
	Date						
	Sign.						
Plan: signed : _____				SELECTION OF PIPING CLASSES FOR		Drawing No. T -	
Eng. by : _____ Principal : _____				Contr. Job No. : _____ Project No. : _____		Sheet No. : _____	

General-purpose sheet - DEP 31.38.01.44-Gen., 2/84

Cont'd on sheet No.									
First issue	Rev. letter								
	Date								
	Sign.								
Plan:									Drawing No.
Consignee :									T -
Eng by :					Contr. Sub No.:			Sheet No.	
Principal :					Project No.:				

Description of piping classes deviating - DEP 31.38.01.52-Gen., 2/84

Bill of material - cover sheet -DEP 31.38.01.80-Gen., 1/73

Index sheet - DEP 31.38.01.81-Gen., 1/73

Sheet No.	DESCRIPTION	Sheet No.	DESCRIPTION
1	Cover sheet	51	
2	Key plan	52	
3	Index sheet	53	
4	Issue sheet	54	
5	Issue sheet: isometric drawings Q1 to Incl.	55	
6		56	
7		57	
8		58	
9		59	
10		60	
11		61	
12		62	
13		63	
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44		94	
45		95	
46		96	
47		97	
48		98	
49		99	
50		100	

REMARKS AND/OR DESCRIPTION OF REVISIONS									

Revision	Rev. n. w.								
	Date								
	Sign.								

Plan	INDEX SHEET				Drawing No.
Longitudinal	Sheet 1 to 100 last				T
Lat. by	Chart, data base				Sheet No. 2
Project	Project No.				

Sheet No.	Contract/Job No.	Date of issue				Sheet No.	Contract/Job No.	Date of issue			
		First issue	A	B	C			D	First issue	A	B
01						51					
02						52					
03						53					
04						54					
05						55					
06						56					
07						57					
08						58					
09						59					
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42						92					
43						93					
44						94					
45						95					
46						96					
47						97					
48						98					
49						99					
50						00					

REMARKS AND/OR DESCRIPTION OF REVISIONS

Continued on Issue sheet No.

First issue	Rev. letter								
	Each								
	Sign								

Plant: _____

Contract: _____

Lot: 35 _____

Project: _____

ISSUE SHEET

Sheet 01 of 03

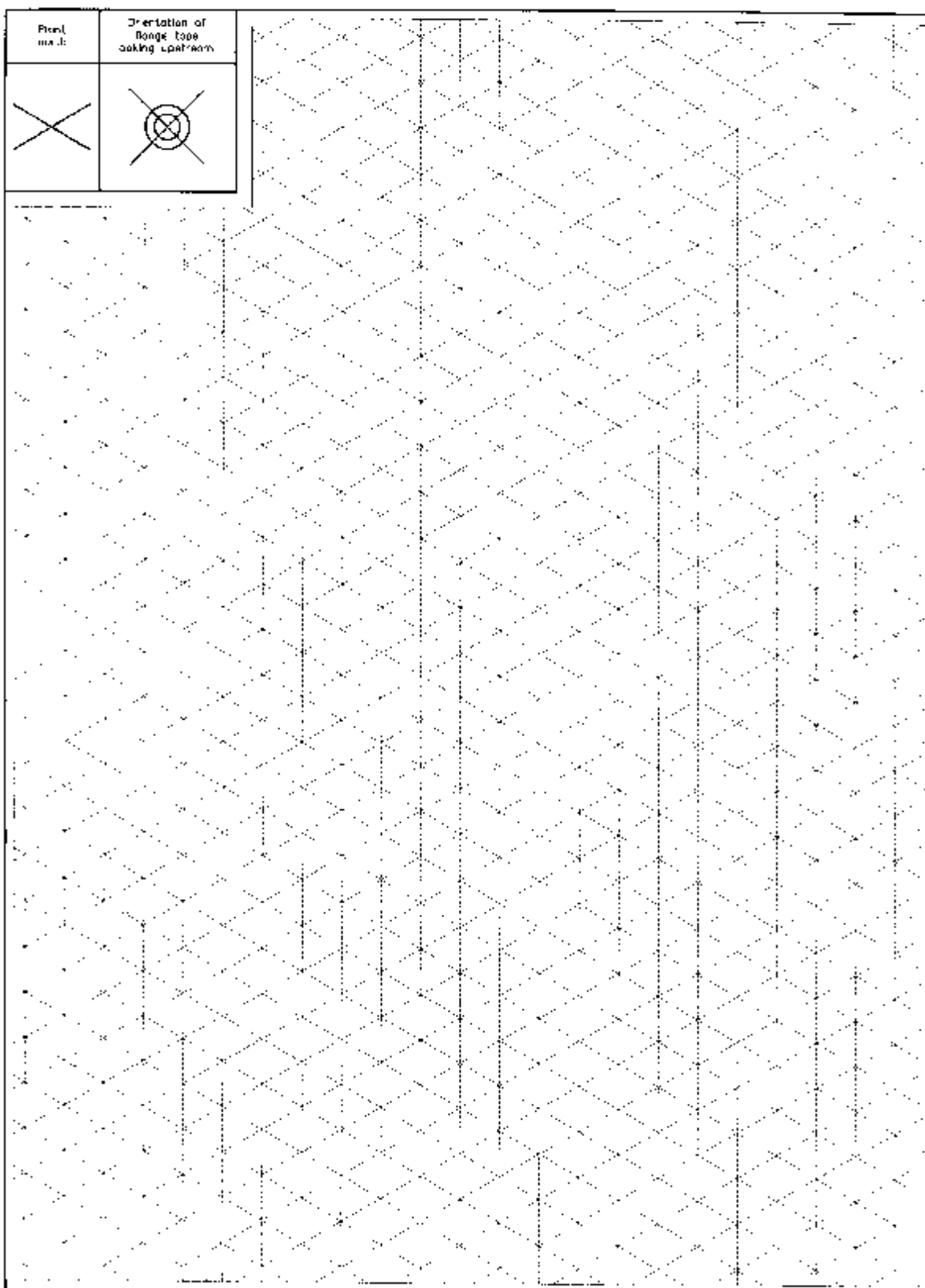
Contract Job No. _____

Project No. _____

Drawing No. _____

Sheet No. _____

Isometric drawing sheet - DEP 31.38.01.86-Gen., 12/91



user/project/dep/3-380/86/soduet

Items not covered by list of materials		Quantity	Requisition no.	Item	Description	Tag No.
Host		Piping plan drg.			First issue	Rev. letter
Location		Stress calc. drg.			Date	
Eng. by		Contr. job no.			Sign.	
Principal		Test pressure				
Prefix	Project no.	Symbol	Piping class	Inst. code	Unit or area	Drawing no.
Sheet no.		Line no.				

3.5 INSTRUMENTATION

Instrumentation Standard Forms (general, flow calculations and instrument installations) are in a **separate binder, DEP 00.30.10.05-Gen.**

3.6 MISCELLANEOUS

Specification of design and engineering documents - DEP 05.00.50.82-Gen., sheet 1 11/70

[illegible]

Specification of design and engineering doc. - DEP 05.00.50.82-Gen., sheet 2 11/70

SPECIFICATION OF DESIGN AND ENGINEERING DOCUMENTS Sequential order No.		PRINCIPAL OFFICE'S COPY		All documents to be accompanied by one set of this specification.		SHEET No. 2	
COPY to be sent to: (Principal's name and address)		Eng. contractor's Job No.					
		Principal's project No.					
		Project title and applicable contract number(s)					
From:		Date of despatch from engineering contractor to principal:	Date of receipt by principal from engineering contractor:	Date of return from principal to engineering contractor:			
1. Registration No. of engineering contractor	2. Registration No. of principal	3. Number of transparencies and/or prints	4. Description of document or title				5. Order 1-4
Code to be used by principal only (see column 5)							
1. Comments on document proper		3. See additional remarks					
2. To be resubmitted for comments		4. No comments					
Additional remarks engineering contractor							
Additional remarks principal							
* Engineering contractor to indicate by x what is applicable							
Engineering contractors remain responsible for their documents under all circumstances, and shall never be entitled to allege express or tacit approval thereof by the principal.			Signature engineering contractor		For comments ☐		
					Released ☐		

Specification of design and engineering doc. - DEP 05.00.50.82-Gen., sheet 3 11/70

SPECIFICATION OF DESIGN AND ENGINEERING DOCUMENTS Sequential order No.		PRINCIPAL OFFICE'S COPY		All documents to be accompanied by one set of the specifications in the specification or by the documents relating to one project sub-group number should be stated		SHEET No. 3	
COPY to be sent to: (Principal's name and address)			Eng. contractor's Job No.				
			Principal's project No.				
			Project title and applicable unit number(s)				
From:			Date of despatch from engineering contractor to principal:	Date of receipt by principal from engineering contractor:	Date of return from principal to engineering contractor:		
1. Registration No. of engineering contractor	2. Registration No. of principal	3. Number of transparencies and/or prints	4. Description of document or title			5. Code 1-4	
Code to be used by principal only (see column 5)							
1. Comments on document proper				3. See additional remarks			
2. To be resubmitted for comments				4. No comments			
Additional remarks engineering contractor							
Additional remarks principal							
* Engineering contractor to indicate by X what is applicable							
Engineering contractors remain responsible for their documents under all circumstances, and shall never be entitled to allege express or tacit approval thereof by the principal.			Signature engineering contractor		For comments ☐ *		
					Released ☐ *		

Specification of design and engineering doc. - DEP 05.00.50.82-Gen., sheet 4 11/70

SPECIFICATIONS OF DESIGN AND ENGINEERING DOCUMENTS Sequential order No.		PRINCIPAL OFFICE'S COPY		All documents to be accompanied by one set of this specification In this specification only the documents relating to one project sub-group number should be stated.		SHEET No. 4					
COPY to be sent to: (Principal's name and address)			Eng. contractor's job No.								
			Principal's project No.								
			Project title and applicable unit number(s)								
From:			Date of despatch from engineering contractor to principal:	Date of receipt by principal from engineering contractor:	Date of return from principal to engineering contractor:						
1. Registration No. of engineering contractor	2. Registration No. of principal	3. Number of transparencies and/or prints	4. Description of document or title			5. Code 1-4					
<u>Code to be used by principal only (see column 5)</u> <table border="0"> <tr> <td>1. Comments on document proper</td> <td>3. See additional remarks</td> </tr> <tr> <td>2. To be resubmitted for comments</td> <td>4. No comments</td> </tr> </table>								1. Comments on document proper	3. See additional remarks	2. To be resubmitted for comments	4. No comments
1. Comments on document proper	3. See additional remarks										
2. To be resubmitted for comments	4. No comments										
Additional remarks engineering contractor											
Additional remarks principal											
* Engineering contractor to indicate by x what is applicable											
Engineering contractors remain responsible for their documents under all circumstances, and shall never be entitled to allege express or tacit approval thereof by the principal.			Signature engineering contractor		For comments: ☐ Released: ☐						

Specification of design and engineering doc. - DEP 05.00.50.82-Gen., sheet 5 11/70

SPECIFICATION OF DESIGN AND ENGINEERING DOCUMENTS		PRINCIPAL OFFICE'S COPY		All documents to be accompanied by one set of this specification.		SHEET No. 5
Sequential Code No.				In its application only the documents relating to one project sub-group number should be stated.		
COPY to be sent to: (Principal's name and address)		Eng. contractor's Job No.				
		Principal's project No.				
		Project title and applicable unit number(s)				
From:		Date of despatch from engineering contractor to principal:	Date of receipt by principal from engineering contractor:	Date of return from principal to engineering contractor:		
1. Registration No. of engineering contractor	2. Registration No. of principal	3. Number of transparencies and/or prints	4. Description of document or title			5. Code 1-4
<u>Code to be used by principal only (see column 5)</u> 1. Comments on document proper 3. See additional remarks 2. To be resubmitted for comments 4. No comments						
Additional remarks engineering contractor						
Additional remarks principal						
* Engineering contractor to indicate by x what is applicable						
Engineering contractors remain responsible for their documents under all circumstances, and shall never be entitled to allege express or tacit approval thereof by the principal.			Signature engineering contractor		For comments ☐ Re-assessed ☐	

Specification of design and engineering doc. - DEP 05.00.50.82-Gen., sheet 6 11/70

SPECIFICATION OF DESIGN AND ENGINEERING DOCUMENTS Sequential order No.		ENGINEERING CONTRACTOR'S COPY		All documents to be accompanied by new set of this specification In this specification only the documents relating to one project sub-group number should be placed		SHEET No. 6
COPY to be sent to: (Principal's name and address)			Eng. contractor's Job No.			
			Principal's project No.			
			Project title and applicable unit number(s)			
From:			Date of despatch from engineering contractor to principal:	Date of receipt by principal from engineering contractor:	Date of return from principal to engineering contractor:	
1. Registration No. of engineering contractor	2. Registration No. of principal	3. Number of transparencies and/or prints	4. Description of document or title		5. Code 1-4	
Code to be used by principal only (see column 5):						
1. Comments on document proper		3. See additional remarks				
2. To be resubmitted for comments		4. No comments				
Additional remarks engineering contractor						
Additional remarks principal						
* Engineering contractor to indicate by X what is applicable						
Engineering contractors remain responsible for their documents under all circumstances, and shall never be entitled to allege express or tacit approval thereof by the principal.			Signature engineering contractor		For comments ☐ * Released ☐ *	

Specification of design and engineering doc. - DEP 05.00.50.82-Gen., sheet 7 11/70

SPECIFICATION OF DESIGN AND ENGINEERING DOCUMENTS Document Order No.		ENGINEERING CONTRACTOR'S COPY		All documents to be accompanied by one set of this cover slip In this specification only the documents relating to one project subgroup number should be stated		SHEET No. 7	
COPY to be retained by engineering contractor for further reference		Eng. contractor's Job No.					
		Principal's project No.					
		Project title and applicable unit numbers					
From:		Date of despatch from engineering contractor to principal:		Date of receipt by principal from engineering contractor:		Date of return from principal to engineering contractor:	
1. Registration No. of engineering contractor	2. Registration No. of principal	3. Number of transparencies and/or prints	4. Description of document or title				
Code to be used by principal only (see column 5)							
1. Comments on document proper		3. See additional remarks					
2. To be resubmitted for comments		4. No comments					
Additional remarks engineering contractor							
Additional remarks principal							
* Engineering contractor to indicate by X what is applicable							
Engineering contractors remain responsible for their documents under all circumstances, and shall never be entitled to allege express or tacit approval thereof by the principal.			Signature engineering contractor		For comments ☐		
					Retained ☐		

Specification of design and engineering documents - DEP 05.00.50.82-Gen., sheet 8 11/70

SPECIFICATION OF DESIGN AND ENGINEERING DOCUMENTS Sequential order No.		PURCHASING OFFICE'S COPY		All documents to be accompanied by one set of this specification. In this specification only the documents relating to one project sub-group number could be stated.		SHEET No. 8	
COPY to be sent to: (Purchasing office's name and address)				Eng. contractor's Job No.			
				Principal's project No.			
				Project title and app. made (in Russian)			
From:				Date of despatch from engineering contractor:		Date of receipt from engineering contractor:	
1. Registration No. of engineering contractor		2. Registration No. of principal		3. Number of transparencies and/or prints		4. Description of document or title	
Additional remarks engineering contractor							
Additional remarks principal							
Engineering contractors remain responsible for their documents under all circumstances, and shall never be entitled to allege express or tacit approval thereof by the principal.				Signature engineering contractor			

Specification of design and engineering doc. - DEP 05.00.50.82-Gen., sheet 9 11/70

SPECIFICATION OF DESIGN AND ENGINEERING DOCUMENTS Sequential order No.		LOCAL HEAD OFFICE'S COPY		All documents to be accompanied by one set of this specification. In this specification only the documents relating to one project sub-group number should be stated.		SHEET No. 9	
COPY to be sent to: (Local head office's name and address)				Eng. contractor's Job No.			
				Principal's project No.			
				Project title and applicable unit number(s)			
From:				Date of despatch from engineering contractor:		Date of receipt from engineering contractor:	
1. Registration No. of engineering contractor	2. Registration No. of principal	3. Number of transparencies and/or prints	4. Description of document or title				
Additional remarks engineering contractor							
Additional remarks principal							
Engineering contractors remain responsible for their documents under all circumstances, and shall never be entitled to allege express or tacit approval thereof by the principal.				Signature engineering contractor			

Specification of design and engineering doc. - DEP 05.00.50.82-Gen., sheet 10 11/70

SIMPLIFICATION OF DESIGN AND ENGINEERING DOCUMENTS Squidex Code No.		PLANT SITE COPY		All documents to be accompanied by one set of this simplified set. In this simplified set the documents relating to the project sub-group number should be signed		SHEET No. 10
COPY to be sent to: (Plant site name and address)			Eng. contractor's Job No.			
			Principal's project No.			
			Project title and app. sketch and/or model			
From:			Date of despatch from engineering contractor:	Date of receipt from engineering contractor:		
1. Registration No. of engineering contractor	2. Registration No. of principal	3. Number of transparencies and/or prints	4. Description of document or title			
Additional remarks engineering contractor						
Additional remarks principal						
Engineering contractors remain responsible for their documents under all circumstances, and shall never be entitled to allege express or tacit approval thereof by the principal.			Signature engineering contractor			

List of data/requisitions and requisitions - DEP 05.00.51.81-Gen., 9/66

1; 1 := 1 on average $\mu = 0.149$

List of supplier's drawings - DEP 05.00.51.82-Gen., 9/66

LIST OF SUPPLIER'S DRAWINGS

List of design and engineering drawings - DEP 05.00.51.83-Gen., 9/66

LIST OF DESIGN AND ENGINEERING DRAWINGS

Approval Drawings Instructions to the supplier (ADS form) - DEP 05.00.54.81-Gen., 12/88

ADS form

SUBMISSION

To obviate any delays and keep interested parties concurrently informed, drawings submitted for approval shall be forwarded under cover of the attached "Approval Drawing Specification".

The RED form states the number of prints to be despatched.

COMPLETION OF THE SPECIFICATION SHEETS

It is essential that all information is typed and appears only in the correct space.

In addition to the self-explanatory notes contained within the attached sheets, suppliers should note the following instructions:

Space 4. If drawings are complete, delete the word "PART"; if other drawings are to follow, delete the word "COMPLETE".

Space 9. }
Space 10. } Insert names and addresses as given on the RED form.
Space 11. }

Space 20. To be used for additional comments, if any. Please do not comment by letter.

DISTRIBUTION OF THE SPECIFICATION SHEETS

The "Instructions" given at the foot of each sheet in regard to despatch shall be carefully followed.

Following scrutiny of drawings by the Approval Office, sheet 5 will be returned to you with one annotated copy of each drawing and accompanied, when drawings are released, by an appropriate "Final Drawing Specification" DEP 05.00.54.82-Gen., which details our procedure for submission.

To minimize delays, please ensure that copies 2 and 3, and 4-7 incl. are sent to the correct addresses, as indicated on the RED form.

The attached sheets are self-copying and therefore no carbon paper is required.

Approval drawing specification - DEP 05.00.54.81-Gen., sheet 1 12/88

SUPPLIER'S COPY				Approval will be given: within 15 working days after receipt of drawing(s).		Sheet No. 1			
1. Date of despatch			d. PART		COMPLETE				
5. Purchase Order No.			6. Supplier's Works Order reference						
7. Name of equipment									
8. Supplier's name/address			9. Distributors Office's name/address						
Telephone No. Ext.:			11. Principal's name/address						
10. Purchasing Office's name/address			/						
12. Item No.	13. Supplier's drawing No.	14. Rev. No.					15. Drawing description or title	REV. NO. 1 TO 12	REV. NO. 13 TO 15
20. Additional remarks by supplier									
21. Signed									
WARNING: Approval of drawings in no way releases suppliers from responsibilities for their accuracy, or for the design, construction and performance of the equipment.									
INSTRUCTIONS: SUPPLIER TO DETACH AND RETAIN THIS SHEET FOR RECORDS									

Approval drawing specification - DEP 05.00.54.81-Gen., sheet 2 12/88

PURCHASING OFFICE'S COPY					<i>Approval will be given within 15 working days after receipt of drawings.</i>		Sheet No. 2
1. Date of despatch			2. PART / COMPLETE				
5. Purchase Order No.				8. Supplier's Works Order reference			
7. Name of equipment							
3. Supplier's name/address FROM				9. Distributor's Office's name/address			
Telephone No. Ext.				11. Principal's name/address			
10. Purchasing Office's name/address TO:							
12. Item No.	13. Supplier's drawing No.	14. Rev. No.	15. Drawing description or title	16. No. per set	17. No. per set		
20. Additional remarks by supplier							
21. Signed: _____							
WARNING: Approval of drawings in no way absolves suppliers from responsibilities for their accuracy, or for the design, construction and performance of the equipment.							
INSTRUCTIONS: SUPPLIER TO DETACH THIS SHEET AND DESPATCH SPATELY WITHOUT DRAWINGS TO THE PURCHASING OFFICE AT THE ADDRESS SHOWN IN SPACE 10							

Approval drawing specification - DEP 05.00.54.81-Gen., sheet 3 12/88

PRINCIPAL'S COPY					Approval will be given within 15 working days after receipt of drawing(s).		Sheet No. 3
1. Date of despatch				PART		COMPLETE	
5. Purchase Order No.				6. Supplier's Works Order reference			
7. Name of equipment							
8. Supplier's name/address FROM:				9. Distribution Office's name/address			
Telephone No.: Ext.:				11. Principal's name/address TO:			
10. Purchasing Office's name/address							
12. Item No.	13. Supplier's drawing No.	14. Rev. No.	15. Drawing description or title	Qty. as per PED Transp.	Qty. as per RED Frit		
20. Additional remarks by supplier							
21. Signed: _____							
WARNING: Approval of drawings in no way involves suppliers from responsibilities for their accuracy, or for the design, construction and performance of the equipment.							
INSTRUCTIONS: SUPPLIER TO DETACH THIS SHEET AND DESPATCH SEPARATELY WITHOUT DRAWINGS TO THE PRINCIPAL AT ADDRESS SHOWN IN SPACE 11							

Approval drawing specification - DEP 05.00.54.81-Gen., sheet 4 12/88

APPROVAL OFFICE'S COPY										Approval will be given within 15 working days after receipt of drawing(s).		Sheet No. 4	
1. Date of despatch		2. Date of receipt		3. Date of distribution		4. PART		COMPLETE					
5. Purchase Order No.						6. Supplier's Work Order reference							
7. Name of equipment													
8. Supplier's name/address FROM:						9. Distribution Office's name/address (TO):							
Telephone No.: ExL:						10. Principal's name/address							
11. Purchasing Office's name/address													
12. Item No.	13. Supplier's drawing No.	14. Rev. No.	15. Drawing description or title	Qty. as per RED Form	Qty. as per RED Form	16. Approval Office's drawings No.	17. Rev. No.	18. Code	19. Meaning of Code				
									Code A: Released to manufacturer Code B: Released for construction, except as indicated NOTE: in both cases final drawings shall be submitted under cover of the "Final Drawings Specification" DEP 00.00.54.02-Gen., attached. Code C: To be submitted before starting manufacture under cover of "Approved Drawing Specification" DEP 00.00.54.01-Gen., attached.				
20. Additional remarks by supplier													
										21. Signed:			
22. Additional remarks by Distribution Office													
The requirements for final drawings and the address to which they should be despatched are given on the RED form. WARNING: Approval of drawings in no way absolves suppliers from responsibilities for their accuracy, or for the design, construction and performance of the equipment.													
										23. Signed:			
INSTRUCTIONS: SUPPLIER TO DESPATCH THIS SHEET AND REMAINING SHEETS OF THE SPECIFICATION TO THE DISTRIBUTION OFFICE SHOWN IN SPACE 9, TOGETHER WITH THE NUMBER OF PRINTS OF EACH DRAWING AS STATED ON THE RED FORM													

Approval drawing specification - DEP 05.00.54.81-Gen., sheet 5 12/88

SUPPLIER'S COPY										Approval will be given within 15 working days after receipt of drawings	Sheet No. 5
1. Date of despatch		2. Date of receipt		3. Date of distribution		4. PART		COMPLETE			
5. Purchase Order No.					6. Supplier's Work Order reference						
7. Name of equipment:											
8. Supplier's name/address TO:					9. Distribution Office's name/address FROM:						
Telephone No. Ext.:					10. Purchasing Office's name/address						
11. Principal's name/address											
12. Item No.	13. Supplier's drawing No.	14. Rev. No.	15. Drawing description or title	Qty. required REQ. Trans.	Qty. or part 100 % Part	16. Approval Office's drawings No.	17. Rev. No.	18. Code	19. Meaning of Code		
									Code A: Reserved for construction		
									Code B: Released for construction except as indicated		
									Code C: In construction, shall be submitted under cover of the Final Drawings Specification, DEP 00.00.10.05-Gen. attached		
									Code D: Reserved for use before finalisation of the drawing, shall be submitted under cover of the Final Drawings Specification, DEP 00.00.10.05-Gen. attached		
20. Additional remarks by supplier											
21. Signed: _____											
22. Additional remarks by Distribution Office											
The requirements for final drawings and the address to which they should be despatched are given on the REQ form.											
WARNING: Approval of drawings in no way absolves suppliers from responsibilities for their accuracy, or for the design, construction, and performance of the equipment.						23. Signed: _____					
INSTRUCTIONS: APPROVAL OFFICE TO DETACH THIS SHEET AND DESPATCH SEPARATELY TO THE SUPPLIER WITH ONE ANNOTATED PRINT OF EACH DRAWING (i) FINAL DRAWING SPECIFICATION FOR ANY DRAWING A OR B (ii) APPROVAL DRAWING SPECIFICATION FOR ANY DRAWING CODED C											

Approval drawing specification - DEP 05.00.54.81-Gen., sheet 6 12/88

PURCHASING OFFICE'S COPY										<i>Approval will be given within 10 working days after receipt of drawings(s).</i>		Sheet No. 6	
1. Date of despatch		2. Date of receipt		3. Date of distribution		4. PART		COMPLETE					
5. Purchase Order No.					6. Supplier's Works Order reference								
7. Name of equipment													
8. Supplier's name/address Telephone No.: Ext.:						9. Distributions Office's name/address FROM: 11. Principal's name/address							
10. Purchasing Office's name/address TO:													
12. Item No.	13. Supplier's drawing No.	14. Rev. No.	15. Drawing description or title	Qty. per RED Form	Qty. per RED Form	16. Approval Office's drawings No.	17. Rev. No.	18. Code	19. Meaning of Code				
									Code A: Reduced for construction. Code B: Reduced for construction, except as indicated. NOTE: In both cases the drawings shall be submitted under cover of the Drawing Specification DEP 00.00.10.05-Gen. attached. Code C: Drawing to be resubmitted before starting manufacturing under cover of Approval Drawing Specification DEP 00.00.10.05-Gen. Attached.				
20. Additional remarks by supplier													
21. Signed: _____													
22. Additional remarks by Distribution Office													
The requirements for final drawings and the address to which they should be despatched are given on the RED form. WARNING: Approval of drawings in no way assures suppliers from responsibilities for their accuracy, or for the design, construction and performance of the equipment.													
23. Signed: _____													
INSTRUCTIONS. DISTRIBUTION OFFICE TO DETACH THIS SHEET AND DESPATCH WITHOUT DRAWINGS TO THE PURCHASING OFFICE													

Approval drawing specification - DEP 05.00.54.81-Gen., sheet 7 12/88

PRINCIPAL'S COPY						<i>Approval will be given within 15 working days after receipt of drawings.</i>		Sheet No 7	
1. Date of despatch		2. Date of receipt		3. Date of distribution		4. PART		COMPLETE	
5. Purchase Order No.				6. Supplier's Works Order reference					
7. Name of equipment									
8. Supplier's name/address Telephone No.: Ext.:					9. Distribution Office's name/address FROM:				
					11. Principal's name/address TO:				
10. Purchasing Office's name/address									
12. Form No.	13. Supplier's drawing No.	14. Rev. No.	15. Drawing description or title	16. Date of REC	17. Date of REC	18. Approval Office's Drawing No.	19. Rev. No.	20. Code	21. Meaning of Code
									Code 1: Released for construction.
									Code 2: Released for distribution except as follows: NOTE: In some cases final drawings are submitted early to one of the "Five Drawings Spot Checks". If approved or rejected, attached.
									Code 3: Corrected. To be resubmitted before starting construction under cover of "Approved Drawing, Basic outline DEP 35605-81 Gen. Annexes
22. Additional remarks by supplier									
21. Signed: _____									
22. Additional remarks by Distribution Office									
The recipient lists for final drawings and the address to which they should be despatched are given on the FFD form									
WARNING: Approval of drawings in no way absolves suppliers from responsibilities for their accuracy, or for the design, construction and performance of the equipment.						23. Signed: _____			
INSTRUCTIONS: DISTRIBUTION OFFICE TO DETACH THIS SHEET AND DESPATCH TO THE PRINCIPAL WITH ONE ANNOTATED PRINT OF EACH DRAWING (UNLESS OTHER INSTRUCTIONS ARE APPLICABLE)									

Final Drawings instructions to the supplier (FDS form) - DEP 05.00.54.82-Gen., 12/88

FDS form

ROUTING

Final drawings shall be forwarded to the Distribution Office in accordance with the RED form, under cover of the attached "Final Drawing Specification", when:

- the approval drawings have been coded "A" or "B" on sheet 5 of the "Approval Drawing Specification" DEP 05.00.54.81-Gen.;
- final drawings only are stipulated on the RED form, DEP 40.10.01.83-gen.

In either case the RED form states the number of prints and transparencies to be despatched.

Under no circumstances should any drawing coded "C" be included on the "Final Drawing Specification". Revised prints of these drawings should be submitted to the Distribution Office under cover of an "Approval Drawing Specification", DEP 05.00.54.81-Gen.

COMPLETION OF THE SPECIFICATION SHEETS

It is essential that all information is typed and appears only in the correct space.

In addition to the self-explanatory notes contained within the attached sheets, suppliers should note the following instructions:

- Space 4. If drawings are complete, delete the word "PART"; if other drawings are to follow, delete the word "COMPLETE".
- Space 9. } Insert names and addresses as given on the RED form.
Space 10. }
- Space 14. Insert supplier's drawing revision number, i.e. new revision numbers resulting from the Approval Office's indications on drawings coded "B".
- Space 16. Where drawings have been released for construction (either code "A" or code "B"), insert the Approval Office number, as shown in space 16 of the "Approval Drawing Specification" on both the Final Drawing Specification and on the drawings.
- Space 19. To be used for additional comments, if any. Please do not comment by letter.

DISTRIBUTION OF THE SPECIFICATION SHEETS

The "Instructions" given at the foot of sheet 1 and 2 shall be carefully followed.

To minimum delays, please ensure that copies 2, 3, 4 and 5 are sent to the correct address, as indicated on the RED form.

The attached sheets are self-copying and therefore no carbon paper is required.

Final drawing specification - DEP 05.00.54.82-Gen., sheet 1 12/88

SUPPLIER'S COPY						Sheet No. 1
1. Date of despatch			2. PART		COMPLETE	
3. Purchase Order No.			6. Supplier's Works Order reference			
7. Name of equipment						
8. Supplier's name/address			9. Distribution Office's name/address			
Telephone No.: Ext.:						
10. Purchasing Office's name/address						
12. Item No.	13. Supplier's drawing No.	14. Rev. No.	15. Drawing description or title	16. Approval Office's drawing No.	17. Rev. No.	18. Quantity Final drawings attached Drawings attached Prints
19. Additional remarks by supplier						
20. Signature: _____						
WARNING: Approval of drawings in no way absolves suppliers from responsibilities for their accuracy, or for the design, construction and performance of the equipment. INSTRUCTIONS: SUPPLIER TO DETACH AND RETAIN THIS SHEET FOR RECORDS						

Final drawing specification - DEP 05.00.54.82-Gen., sheet 2 12/88

DISTRIBUTION OFFICE COPY							Sheet No. 2
1. Date of despatch		2. Date of receipt		3. Date of distribution		PART COMPLETE	
5. Purchase Order No.				6. Supplier's Works Order reference			
7. Name of equipment							
8. Supplier's name/address FROM: Telephone No.: Ext.:				9. Distribution Office's name/address TO: 11. Principal's name/address			
10. Purchasing Office's name/address							
12. Item No.	13. Supplier's drawing No.	14. Rev. No.	15. Drawing description or title	16. Approval Office's drawing No.	17. Rev. No.	18. Quantity Final drawings attached	
						Transparencies	Prints
19. Additional remarks by supplier							
						20. Signed:	
21. Additional remarks by Distribution Office							
The requirements for final drawings and the address to which they should be despatched are given on the RED form.							
WARNING: Approval of drawings in no way absolves suppliers from responsibilities for their accuracy, or for the design, construction and performance of the equipment.				22. Signed:			
INSTRUCTIONS: SUPPLIER TO DESPATCH THIS SHEET AND REMAINING SHEETS OF THE SPECIFICATION TO THE DISTRIBUTION OFFICE AT ADDRESS SHOWN IN SPACE 9, TOGETHER WITH THE REQUIRED NUMBER OF DRAWINGS, AS STATED ON THE RED FORM							

Final drawing specification - DEP 05.00.54.82-Gen., sheet 3 12/88

PRINCIPAL'S COPY						Sheet No. 3	
1. Date of despatch		2. Date of receipt		3. Date of distribution		4. PART COMPLETE	
5. Purchase Order No.				6. Supplier's Works Order reference			
7. Name of equipment							
8. Supplier's name/address				9. Distribution Office's name/address			
Telephone No.: Ext.:				FROM:			
				11. Principal's name/address			
10. Purchasing Office's name/address				TO:			
12. Item No.	13. Supplier's drawing No.	14. Rev. No.	15. Drawing description or title	16. Approval Office's drawing No.	17. Rev. No.	18. Quantity Final drawings attached	
						Transparencies	Prints
19. Additional remarks by supplier							
						20. Signed:	
21. Additional remarks by Distribution Office							
WARNING: Approval of drawings in no way absolves suppliers from responsibilities for their accuracy, or for the design, construction and performance of the equipment.				22. Signed:			
INSTRUCTIONS: DISTRIBUTION OFFICE TO DESPATCH THIS SHEET TO THE PRINCIPAL WITH REQUIRED NUMBER OF DRAWINGS							

Final drawing specification - DEP 05.00.54.82-Gen., sheet 4 12/88

PURCHASINGS OFFICE'S COPY						Sheet No. 4	
1. Date of despatch		2. Date of receipt		3. Date of distribution		4. PART COMPLETE	
5. Purchase Order No.				6. Supplier's Works Order reference			
7. Name of equipment							
8. Supplier's name/address Telephone No. Ext. :				9. Distribution Office's name/address FROM: 11. Principal's name/address TO:			
12. Purchasing Office's name/address				13. Supplier's drawing No.			
12. Item No.		14. Rev. No.		15. Drawing description or title		16. Approval Office's drawing No.	
17. Rev. No.		18. Quantity		19. Final drawings attached		20. Price	
19. Additional remarks by supplier							
20. Signed:							
21. Additional remarks by Distribution Office							
22. Signed:							
INSTRUCTIONS: DISTRIBUTIONS OFFICE TO DESPATCH THIS SHEET WITHOUT DRAWINGS TO THE PURCHASING OFFICE							

Minutes of meeting - DEP 05.00.55.83-Gen., 1/65

MINUTES OF MEETING No.		DATE :	SHEET No. Continued on sheet No.
SUBJECT :		PLACE :	
PRINCIPAL :		ENG. CONTRACTOR :	
PROJECT No.			
AREA :		JOB No.	
SUB- GROUP	SUBJECT ITEM	DESCRIPTION OF DISCUSSION	ACTION TO BE TAKEN BY

Full manufacturing report - DEP 31.22.10.41-Gen., sheet 1 01/92

Name and address of manufacturer :

Principal's purchase order No. : Item No. :

Equip't. plant No. and name :

Manufacturer's production order No. :

DESCRIPTION	Section	No. of sheets
General data	A1	
Copy of release note	N*	
Certificate of conformance (design)	A2	
Certificate of conformance (construction and testing)	A3	
List of authorized deviations and/or concessions	B	
List of construction materials/alloy verification certificates	C	
List of material design strength data	D	
Welding procedure (details)	E1	
Welding procedure (test results)	E2	
List of welders and welding operators	E3	
Welder approval test record	E4	
Non-destructive examinations:		
List of NDE methods	F1	
Radiography (details)	F2	
Wall thickness measurements (shell)	F3	
Wall thickness measurements (other components)	F4	
QC considerations for vessels with glass lining	F5*	
QC considerations for vessels with rubber lining	F6*	
Report on repairs (locations to be shown on as-built drawings, report of additional NDE in appropriate section, re-heat treatment)	G*	
Heat treatment certificate	H	
Nozzle orientation check (sketch with dimensions)	I	
Circularity (out of roundness)/straightness/misalignment (high low)	J 1/2	
Painting and coating system	K	
Pressure test certificate	L	
Equipment nameplate or stamping	M	
As-built general assembly drawing (certified and signed)	O*	
Quality Control Plan	P*	
* No sheet provided		
NOTE: Delete what does not apply		

For manufacturer:

Name:

Position:

Place and date:

Signature and stamp

For inspection organization:

Name:

Position:

Name of company:

Place and date:

Signature and stamp

Full manufacturing report - DEP 31.22.10.41-Gen., sheet 2 01/92

Name and address of manufacturer :		Section A1, sheet of
Principal's purchase order No. :		Item No. :
Equlpt. plant No. and name :		
Manufacturer's production order No. :		
Applicable design code :		
Year of manufacture :	Manufacturer's serial No. :	
Name of design org. :		
Name of inspection org. :		
Type of vessel :	horizontal/vertical*, clad/lined/coated*	
Design stress, bar(ga) :		
Design temperature (Min./Max.) :		
ID/OD*, mm :		
Wall thickness, (Actual) mm :		
Corrosion allowance, mm :		
Overall length of vessel :		
Weight of vessel (empty) :		
Heat treatment :	yes/no* When yes, type of heat treatment :	
Pressure test date :		
Position :	horizontal/vertical*	
Test pressure :	 bar(ga)	
Test medium :		
Temperature of medium :	 °C	
NDE	- radiography (X-ray/Gamma-ray) : yes/no*, spot*/.....%* - ultrasonic : yes/no*, spot*/.....%* magnetic/particle : - dye penetrant :	
Joint efficiency :		
Type of equipment support :	skirt/saddle/suspended*	
Number(s) of approved drawing(s) :	Rev. No. : Rev. No. : Rev. No. : Rev. No. : Rev. No. :	

* Delete what does not apply

For manufacturer: Name: Position: Place and date: Signature and stamp	For inspection organization: Name: Position: Name of company: Place and date: Signature and stamp
---	--

Full manufacturing report - DEP 31.22.10.41-Gen., sheet 3 01/92

Name and address of manufacturer : Section A2, sheet of

Principal's purchase order No. Item No. :

Equip't. plant No. and name

Manufacturer's production order No.

We hereby certify that the design of this vessel conforms to:

Code

Purchase order No. Rev. : Dated :

Requisition No. Rev. : Dated :

Additional requirements

For design organization

Name

Position

Name of company

Place and date

Signature and stamp

We hereby confirm that the design of the above equipment has been reviewed and accepted by. (*)
as complying with the specified code and the additional requirements.

* Here state name/function indicator of acceptance authority (i.e. Principal or Nominee).

NOTE In some instances the inspection organization may be appointed.

For inspection organization

Name

Position

Name of company

Place and date

Signature and stamp

* Delete what does not apply.

For manufacturer:

Name:

Position:

Place and date:

Signature and stamp

For inspection organization:

Name:

Position:

Name of company.

Place and date:

Signature and stamp

Full manufacturing report - DEP 31.22.10.41-Gen., sheet 4 01/92

Name and address of manufacturer : Section A3, sheet of

Principal's purchase order No. : Item No. :

Equip. plant No. and name :

Manufacturer's production order No. :

We hereby certify that this equipment has been constructed and tested in conformity with:

Code :

Purchase order No. : Rev. : Dated :

Regulation No. : Rev. : Dated :

Additional requirements :

For manufacturer :

Name :

Position :

Name of company :

Place and date :

Signature and stamp

We hereby confirm that (except for the items listed hereunder*), the construction and testing of the above equipment has been carried out under surveillance and that to the best of our knowledge and belief all aspects of this work have been in accordance with the requirements of the above code, purchase order, requisition and the additional requirements.

* Delete words between brackets if not applicable, otherwise list items not covered by above statement immediately hereunder

For inspection organization :

Name :

Position :

Name of company :

Place and date :

For manufacturer:

Name:

Position:

Place and date:

Signature and stamp

For inspection organization:

Name:

Position:

Name of company:

Place and date:

Signature and stamp

Full manufacturing report - DEP 31.22.10.41-Gen., sheet 5 01/92

Section B sheet of

Manufacturer's production order No :

[illegible]

Signature and stamp

For inspection organization:

Name:

Position:

Place and date:

Signature and stamp

Full manufacturing report - DEP 31.22.10.41-Gen., sheet 6 01/92

Full manufacturing report - DEP 31.22.10.41-Gen., sheet 7 01/92

Name and address of manufacturer :

Section D, sheet of

Principal's purchase order No. :

Item No. :

Equip. plant No. and name :

Manufacturer's production order No. :

Part of equipment	Identification of material actually used	Design temperature, °C	Nominal design strength, N/mm ²	Reference strength, N/mm ²	Reference document ³⁾

NOTES: 1) The design strength value used in the computations. Where this value is based on two or more reference strength values, a detailed derivation shall be attached.

2) The option on strength value(s) on which, in accordance with the code requirements, the nominal design strength has been based (yield, tensile or creep rupture strength value).

3) The document(s) from which the reference strength or the nominal design strength value(s) has been taken.

4) When fracture properties are required to be proven by destructive mechanical testing (tensile tests, Charpy impact tests) these test certificates should be attached.

For manufacturer:

Name:

Position:

Place and date:

Signature and stamp

For inspection organization

Name:

Position:

Name of company:

Place and date:

Signature and stamp

Full manufacturing report - DEP 31.22.10.41-Gen., sheet 8 01/92

Principal's purchase order No. : _____ Item No. : _____

Equipl. plant No. and name :

Manufacturers production order No :

Manufacturer's procedure No. (and revision No.): _____ Test record No.: _____

Welding process(es)	Parent material(s)
---------------------	--------------------

[illegible]

Welding position(s) : Materials group(s):

Test piece position: _____ **Dimensions of test piece:** _____ mm

Weld preparation (dimensional sketch):	Run sequence and completed weld dimensions (sketch):
--	--

Method of preparation and cleaning:	Welding conditions:
-------------------------------------	---------------------

Welding consumables	Size(s)	Quantity
Electrodes	2.5, 3.2, 4.0, 5.0, 6.0, 8.0, 10.0, 12.5, 16.0, 20.0, 25.0, 32.0, 40.0, 50.0, 63.0, 80.0, 100.0, 125.0, 160.0, 200.0, 250.0, 320.0, 400.0, 500.0, 630.0, 800.0, 1000.0, 1250.0, 1600.0, 2000.0, 2500.0, 3200.0, 4000.0, 5000.0, 6300.0, 8000.0, 10000.0, 12500.0, 16000.0, 20000.0, 25000.0, 32000.0, 40000.0, 50000.0, 63000.0, 80000.0, 100000.0, 125000.0, 160000.0, 200000.0, 250000.0, 320000.0, 400000.0, 500000.0, 630000.0, 800000.0, 1000000.0, 1250000.0, 1600000.0, 2000000.0, 2500000.0, 3200000.0, 4000000.0, 5000000.0, 6300000.0, 8000000.0, 10000000.0, 12500000.0, 16000000.0, 20000000.0, 25000000.0, 32000000.0, 40000000.0, 50000000.0, 63000000.0, 80000000.0, 100000000.0, 125000000.0, 160000000.0, 200000000.0, 250000000.0, 320000000.0, 400000000.0, 500000000.0, 630000000.0, 800000000.0, 1000000000.0, 1250000000.0, 1600000000.0, 2000000000.0, 2500000000.0, 3200000000.0, 4000000000.0, 5000000000.0, 6300000000.0, 8000000000.0, 10000000000.0, 12500000000.0, 16000000000.0, 20000000000.0, 25000000000.0, 32000000000.0, 40000000000.0, 50000000000.0, 63000000000.0, 80000000000.0, 100000000000.0, 125000000000.0, 160000000000.0, 200000000000.0, 250000000000.0, 320000000000.0, 400000000000.0, 500000000000.0, 630000000000.0, 800000000000.0, 1000000000000.0, 1250000000000.0, 1600000000000.0, 2000000000000.0, 2500000000000.0, 3200000000000.0, 4000000000000.0, 5000000000000.0, 6300000000000.0, 8000000000000.0, 10000000000000.0, 12500000000000.0, 16000000000000.0, 20000000000000.0, 25000000000000.0, 32000000000000.0, 40000000000000.0, 50000000000000.0, 63000000000000.0, 80000000000000.0, 100000000000000.0, 125000000000000.0, 160000000000000.0, 200000000000000.0, 250000000000000.0, 320000000000000.0, 400000000000000.0, 500000000000000.0, 630000000000000.0, 800000000000000.0, 1000000000000000.0, 1250000000000000.0, 1600000000000000.0, 2000000000000000.0, 2500000000000000.0, 3200000000000000.0, 4000000000000000.0, 5000000000000000.0, 6300000000000000.0, 8000000000000000.0, 10000000000000000.0, 12500000000000000.0, 16000000000000000.0, 20000000000000000.0, 25000000000000000.0, 32000000000000000.0, 40000000000000000.0, 50000000000000000.0, 63000000000000000.0, 80000000000000000.0, 100000000000000000.0, 125000000000000000.0, 160000000000000000.0, 200000000000000000.0, 250000000000000000.0, 320000000000000000.0, 400000000000000000.0, 500000000000000000.0, 630000000000000000.0, 800000000000000000.0, 1000000000000000000.0, 1250000000000000000.0, 1600000000000000000.0, 2000000000000000000.0, 2500000000000000000.0, 3200000000000000000.0, 4000000000000000000.0, 5000000000000000000.0, 6300000000000000000.0, 8000000000000000000.0, 10000000000000000000.0, 12500000000000000000.0, 16000000000000000000.0, 20000000000000000000.0, 25000000000000000000.0, 32000000000000000000.0, 40000000000000000000.0, 50000000000000000000.0, 63000000000000000000.0, 80000000000000000000.0, 100000000000000000000.0, 125000000000000000000.0, 160000000000000000000.0, 200000000000000000000.0, 250000000000000000000.0, 320000000000000000000.0, 400000000000000000000.0, 500000000000000000000.0, 630000000000000000000.0, 800000000000000000000.0, 1000000000000000000000.0, 1250000000000000000000.0, 1600000000000000000000.0, 2000000000000000000000.0, 2500000000000000000000.0, 3200000000000000000000.0, 4000000000000000000000.0, 5000000000000000000000.0, 6300000000000000000000.0, 8000000000000000000000.0, 10000000000000000000000.0, 12500000000000000000000.0, 16000000000000000000000.0, 20000000000000000000000.0, 25000000000000000000000.0, 32000000000000000000000.0, 40000000000000000000000.0, 50000000000000000000000.0, 63000000000000000000000.0, 80000000000000000000000.0, 100000000000000000000000.0, 125000000000000000000000.0, 160000000000000000000000.0, 200000000000000000000000.0, 250000000000000000000000.0, 320000000000000000000000.0, 400000000000000000000000.0, 500000000000000000000000.0, 630000000000000000000000.0, 800000000000000000000000.0, 1000000000000000000000000.0, 1250000000000000000000000.0, 1600000000000000000000000.0, 200000	

Filter material	Current (value type)	AG / DG
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Make and type	Voltage
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[illegible]

Shielding gas/flux	Travel speed - F.O.L.
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Make and type	Wire feed speed
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12
13	13
14	14
15	15
16	16
17	17
18	18
19	19
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83	83
84	84
85	85
86	86
87	87
88	88
89	89
90	90
91	91
92	92
93	93
94	94
95	95
96	96
97	97
98	98
99	99
100	100

[illegible]

Belong treatment	Belong treatment
Belong treatment	Belong treatment

Second side treatment	Post-weld heat treatment
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Specification

Method

	Temperature °C	Method	Control	Control
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Control				Control	
Blank				Blank	

[illegible]

Other Information:

Record of approval test:

Originator:	Welder's identity
-------------	-------------------

NAME: _____

Place and date:	Mark:
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Extent of approval	Remarks:
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Range of materials

Range of thickness (ps) :

Range of diameters:

For manufacturer: _____ For inspection organization: _____

Name: _____ Name: _____

Position: _____ Position: _____

Name of company:

Place and date: _____

Signature and stamp	Signature and stamp
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Full manufacturing report - DEP 31.22.10.41-Gen., sheet 9 01/92

Name and address of manufacturer : Section E2, sheet of

Principal's purchase order No : Item No. :

Equip't. plant No. and name :

Manufacturer's production order No. :

NON-DESTRUCTIVE TESTS	Test record No. :
Visual:	Radiography :
Magnetic particle or dye penetrant:	Ultrason c :

DESTRUCTIVE TESTS						
Test	Tensile strength	Yield strength	Elongation	Reduct. of area	Fracture location	Test Temp.
Units	N/mm ²	N/mm ²	%	%		°C
Transverse tensile						
All-weld tensile						

Bend tests			Fillot weld fracture (results)
Orientation	Former diameter	Results	1.
Root/face/side			2.
Root/face/side			3.
Root/face/side			Macro-examination
Root/face/side			
Longitudinal			
Hardness survey		type:	load:
	Hardness range		Locations of hardness measurements (sketch):
Parent material			
H.A.Z.			
Weld			

Impact tests		Applicable standard:	
Specimen location and size	Notch location	Test temp., °C	Results (with units)

Additional test(s) and result(s), e.g. chemical analysis, micro-examination, ferrite measurement, etc.:

The statements in this record are correct. The test welds were prepared, welded and tested in accordance with the requirements of the applicable codes and the additional requirements.

For manufacturer:	For inspection organization:
Name:	Name:
Position:	Position:
	Name of company:
Place and date:	Place and date:
Signature and stamp	Signature and stamp

Full manufacturing report - DEP 31.22.10.41-Gen., sheet 10 01/92

Full manufacturing report - DEP 31.22.10.41-Gen., sheet 11 01/92

Name and address of manufacturer		Section E4, sheet of	
Principal's purchase order No.		Item No. :	
Equip't plant No. and name			
Welder's name :	Welder's identity No. :		
Approval test No. :	Date of test:	Shop or site test	
Welding procedure No. :	Welding process and polarity:		
Parent material(s)	Welding consumables		
Type	Electrode or filler material :		
Thickness :	Specification :		
Pipe outside diameter or dimension :	Type of flux or electrode covering :		
Welding position :	Pipe position :		
Type of joint with sketch of weld preparation:	Weld dimensions required :		
Additional information :			
Approval test results :			
(State: satisfactory, unsatisfactory or not applicable and clearly indicate any results of re-tests)			
Non-destructive tests			
Visual :			
Magnetic particle :			
Dye penetrant :			
Radiography/ultrasonics :			
Destructive tests			
Macro-examination :			
Root bend :			
Face bend :			
Side bend :			
Fillet weld fracture :			
Result of test with any remarks :			
Inspection organization:		For welder's employer:	
Witnessed by:		Position:	
Place and date:		Name of company:	
		Place and date:	
Signature and Stamp		Signature and Stamp	

Endorsements (Intervals of six months):

*One sheet to be completed for one test

Full manufacturing report - DEP 31.22.10.41-Gen., sheet 12 01/92

Name and address of manufacturer :

Section F1, sheet of

Principal's purchase order No.

Item No. :

Equipl. plant No. and name

Manufacturer's production order No.

List of NDE methods and standard/code applied:

Methods	Applicable standard/code

Repairs:

Part of equipment	Weld No.	Acceptable Yes/No	Remarks

For manufacturer:

Name:

Position:

Place and date:

Signature and stamp

For inspection organization:

Name:

Position:

Name of company:

Place and date:

Signature and stamp

Full manufacturing report - DEP 31.22.10.41-Gen., sheet 13 01/92

Name and address of manufacturer : Section F2, sheet of

Principal's purchase order No. : Item No. :

Equlpt. plant No. and name :

Manufacturer's production order No. :

Method of radiography (X-ray/gamma-ray ^{*)}):

Source strength:

Film name and type (sensitivity) : 13

* Delete what does not apply

Applicable code:

Outline sketch (state zero marking related to the exact location from which radiography was started) or manufacturer's sketch to be attached.

Repairs

Part of equipment	Weld No.	Pass/Fail	Remarks

For manufacturer:

Name:

Position:

Place and date:

Signature and stamp

For inspection organization:

Name:

Position:

Name of company:

Place and date:

Signature and stamp

Full manufacturing report - DEP 31.22.10.41-Gen., sheet 14 01/92

Name and address of manufacturer

Section F3, sheet of

Principal's purchase order No.

Item No. :

Equip. plant No. and name

Manufacturer's production order No. :

Shell layout

Give description of ultrasonic instrument used:

For manufacturer:

Name

Position:

Place and date:

Signature and stamp

For inspection organization:

Name:

Position:

Name of company:

Place and date:

Signature and stamp

Full manufacturing report - DEP 31.22.10.41-Gen., sheet 15 01/92

Full manufacturing report - DEP 31.22.10.41-Gen., sheet 16 01/92

Name and address of manufacturer : Section H, sheet of

Principal's purchase order No. : Item No. :

Equip't. plant No. and name :

Manufacturer's production order No. :

Stress relieved by

Name of company

Address

Date

Method of heat treatment (stress relief, normalizing etc.) :

Required temperature °C

Maximum material thickness (shell or heads) mm

Rate of heating up °C/h

Time taken to reach required temperature h

Holding time h

Rate of cooling down °C/h

Method of cooling down

Graphical presentation of the applied procedure to be attached.

Remarks: (in case of additional/repeated heat treatment due to repairs etc. an additional sheet to be provided).

For manufacturer:

Name:

Position:

Place and date:

Signature and stamp

For inspection organization:

Name:

Position:

Name of company:

Place and date:

Signature and stamp

Full manufacturing report - DEP 31.22.10.41-Gen., sheet 17 01/92

Name and address of manufacturer : Section I, sheet of

Principal's purchase order No. : Item No. :

Equip't. plant No. and name :

Manufacturer's production order No. :

Outline sketch (section and top view) or manufacturer's attachment

The results of the check on main dimensions can be indicated between brackets on the as-built drawing, being part of this manufacturing report.

Example: 4000 (+3; or 4000 ;+3)
 | <-----> |

For manufacturer: Name: Position: Place and date: Signature and stamp	For inspection organization: Name: Position: Name of company: Place and date: Signature and stamp
---	--

Full manufacturing report - DEP 31.22.10.41-Gen., sheet 18 01/92

Name and address of manufacturer :

Section J1, sheet of

Principal's purchase order No. :

Item No. :

Eqult. plant No. and name :

Manufacturer's production order No. :

Design: inside diameter, ID = mm
outside diameter, OD = mm
external circumference, C = mm
greatest permissible deviation from nominal inside diameter: plus mm; minus mm

Section	Circularity, mm				Circumference, mm		Remarks
	D max.	Deviation from OD	D min.	Deviation from OD	C actual	+/- Deviation	
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							

NOTE: In the case of vessels to be installed in the vertical position, if the above measurements are made in the horizontal position, the measurements shall be repeated after turning the shell through 90° about its longitudinal axis.

For manufacturer:

Name:

Position:

Place and date:

Signature and stamp

For inspection organization:

Name:

Position:

Name of company:

Place and date:

Signature and stamp

Full manufacturing report - DEP 31.22.10.41-Gen., sheet 19 01/92

Name and address of manufacturer :

Section J2, sheet of

Principal's purchase order No. :

Item No. :

Equipl. plant No. and name :

Manufacturer's production order No. :

A wire shall be mounted at equal distances from the heads between the tangent lines.

Measurements shall not be made to a weld, fitting or other raised part.

The positive or negative deviations from 'L' to be stated.

Section	Deviations from straightness			
	LA +/-	LB +/-	LC +/-	LD +/-
1				
2				
3				
4				
5				
6				
7				
8				
9				

The maximum deviation of the shell from a straight line shall not exceed mm.

NOTE: For shells of tubular heat exchangers the use of a 'pull through' is permitted and no values have then to be stated.

For manufacturer:

Name:

Position:

Place and date:

Signature and stamp

For inspection organization

Name:

Position:

Name of company:

Place and date:

Signature and stamp

Full manufacturing report - DEP 31.22.10.41-Gen., sheet 20 01/92

Name and address of manufacturer : Section K, sheet of

Principal's purchase order No. : Item No. :

Equip't, plant No. and name :

Manufacturer's production order No. :

Painting/Coating system details :

Surface preparation as per code/standard No.:

Inspection of the surface finish has been carried out by the following method(s):

Results were considered:

Satisfactory / Unsatisfactory

Layer Description /No.	Paint/coat: name and specification reference	Minimum dry-film thickness (mm)		Curing* time in hours		Relative * humidity		Repair and repair method	Remarks
		Specified	Actual	Specified	Actual	Specified	Actual		

Adhesion/cohesion tests have been carried out on test samples and were demonstrated to be successful.

Continuity of the painting/coating has been checked by means of high voltage spark test: Yes/No

The method used was :

The results were :

* Diagrams of curing time and interval period, relative humidity during application to be attached

Details of subsequent surface preparations should be noted.

For manufacturer:

Name:

Position:

Place and date:

Signature and stamp

For inspection organization:

Name:

Position:

Name of company:

Place and date:

Signature and stamp

Full manufacturing report - DEP 31.22.10.41-Gen., sheet 21 01/92

Name and address of manufacturer : Section L, sheet of

Principal's purchase order No. : Item No. :

Equip. plant No. and name :

Manufacturer's production order No. :

This is to certify that the above equipment has satisfactorily passed a pressure test under the conditions mentioned below:

1. Test pressure (outside tubes)* : bar (ga) Holding time: h
Specification of medium:
Type (water, air, etc.) :
Temperature : °C
- 2.* Test pressure (inside tubes)* : bar (ga) Holding time: h
Specification of medium:
Type (water, air, etc.) :
Temperature : °C
3. Maximum allowable differential pressure (she/Vulco side, during test)* : bar (ga)
4. Additional support (sketch) for columns: Yes/No *
If testing of column has been applied in horizontal position, can field testing be executed in vertical situation (e.g. with regard to skirting).
5. Have gaskets been renewed after test? Yes/No

* Delete when does not apply.

For manufacturer:	For inspection organization:
Name:	Name:
Position:	Position:
	Name of company:
Place and date:	Place and date:
Signature and stamp	Signature and stamp

Full manufacturing report - DEP 31.22.10.41-Gen., sheet 22 01/92

Name and address of manufacturer : _____ Section M, sheet _____ of _____

Principal's purchase order No. : _____ Item No. : _____

Equip. plant No. and name : _____

Manufacturer's production order No. : _____

Photograph or rubbing *

* Delete what does not apply

For manufacturer:	For inspection organization:
Name:	Name:
Position:	Position:
	Name of company:
Place and date:	Place and date:
Signature and stamp	Signature and stamp

Abridged manufacturing report - DEP 31.22.10.42-Gen., 01/92

Section A1 sheet of

Principal's purchase order No. : _____ Item No. : _____

Equip't. plant No. and name	:	
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Manufacturers production order No. :

Description of ports*

Design code* 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995 996 997 998 999 1000 1001 1002 1003 1004 1005 1006 1007 1008 1009 1010 1011 1012 1013 1014 1015 1016 1017 1018 1019 1020 1021 1022 1023 1024 1025 1026 1027 1028 1029 1030 1031 1032 1033 1034 1035 1036 1037 1038 1039 1040

Additional requirements

Design pressure* : bar (g): Design temperature* : °C

Total pressure^a	: _____ bar (ga);	Total impicum^b	: _____ mm Hg (cm H ₂ O)
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Overall dimensions : mm

Weight of equipment (weight empty) : kg

Drawing(s) No (s)	
	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

(အရစ်ခ် ဥပဒေ၏ ပါးလော့ဇာကတစ်ပါး)

Manufacturer's serial No. : Year of manufacture :

Non-destructive testing* :

Part of equipment	List of construction materials			
	Specified	Actualy used	Type of certificate	Certificate page No.

If a pressure test is not required, a leak test has to be conducted (when applicable).

Certificates to be attached.*

* Delete what does not apply or state N/A, Inc. applicable.

We hereby certify that the goods have been designed, constructed and tested in every respect in accordance with the applicable code⁸ and/or (additional) requirements as mentioned in the purchase order.

For manufacturer: _____

Position: 1 of 60

Page end date:

Signature and stamp

For review:	For inspection organization:
-------------	------------------------------

Principal or nominee:	Name:
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Name:	Position:
-------	-----------

Name of company:

Place and date:	Place and date:
-----------------	-----------------

Signature and stamp

Signature and stamp

Spare parts list and interchangeability - DEP 70.10.90.81-Gen., sheet 1 11/90

[illegible]

ABILITY RECORD

SPIR NUMBER	30
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30

MESC GROUP	31
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31

AUTHORIZED FOR PURCHASE BY: S2

32

PARTS DATA

REQUIRED ON SITE DATE : 33

33

[illegible]

Spare parts list and interchangeability - DEP 70.10.90.81-Gen., sheet 2 11/90

SPARE PARTS LIST AND INTERCHANGEABILITY RECORD
CONTINUATION SHEET

ME-SC A.O. EQUIPMENT ORDER REF. A.O.	NUMBER OF PARTS PER UNIT	NO OF UNITS	MANUFACTURER'S SERIAL NO.	MANUFACTURER MODEL OR TYPE	EQUIPMENT RES OR TAG NO.
	1				
	2				
	3				
	4				
	5				
	6				
	7				
	8				
	9				
	10				
	11				
	12				
	13				
	14				
	15				
	16				
	17				
	18				
	19				
	20				
	21				
	22				
	23				
	24				
	25				

										SPIR NUMBER	
										MESC GROUP	
										EQUIPMENT	
										MANUFACTURER	
										SUPPLIER	
										PROJECT	
										PLANT	
										COMPANY	
										NOTES	
										REMARKS	
										1	
										2	
										3	
										4	
										5	
										6	
										7	
										8	
										9	
										10	
										11	
										12	
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										15	
										16	
										17	
										18	
										19	
										20	
										21	
										22	
										23	
										24	
										25	
										STATUS OF SPIR	
										REVISION	
										DATE	
										SIGNATURE	
										SHEET NO. OF	
										REQUISITION NO.	

Spare parts list and interchangeability - DEP 70.10.90.81-Gen., sheet 3 11/90

DEP 20.00.10.05-Gen., Sheet 3 of 3

SPARE PARTS LIST AND INTERFERENCE

THE COMPLETION OF THE SPIR FORM(S) BY MANUFACTURER(S)/SUPPLIER(S)

The SPIR form consists of a main sheet and continuation sheets, format A3. The completed forms shall be distributed on A3 formats as specified in the Purchase order. **The manufacturer/supplier is requested to complete all the columns, except the bold faced columns of the form as described below.**
All information shall be clearly stated in English language.

Explanation of column no's

- Column 1 - **EQUIPMENT REG. or TAG NO.**
Enter the equipment registration or tag number for each piece of equipment as stated in the requisition or purchase order.
 - Column 2 - **MANUFACTURER'S MODEL or TYPE**
State model, type or other positive identification reference of the equipment/instrument ordered.
 - Column 3 - **MANUFACTURER'S SERIAL NO.**
State serial number or other unique identification reference of the equipment/instrument ordered.
 - Column 4 - **NO. OF UNITS**
Enter the total number of pieces of identical equipment/instruments as quoted in columns 1, 2 and 3.
 - Column 5 - **NUMBER OF PARTS PER UNIT**
For each unit or group of identical units, enter in the appropriate space the number of parts fitted in each unit of equipment/instrument.
 - Column 6 - **MESC NUMBER EQUIPMENT / ORDER REFERENCE NO.:**
If known, filled in by manufacturer.
 - Column 7 - **CLASSIFICATION OF EQUIPMENT**
v-vital, e-essential, a-auxiliary
 - Column 8 - **TOTAL NUMBER OF IDENTICAL PARTS INSTALLED**
Enter the total number of identical parts covered by the equipment specified. In the case of identical units multiply the quantity of column 5 by the number of units given in column 4.
 - Column 9 - **ITEM NUMBER OF PARTS**
 - Column 10 - **DESCRIPTION OF PARTS**
List all parts which should be carried in stock for initial and normal operation including slow-wearing parts.
If an item is interchangeable between two or more units it should be listed only once (refer to columns 14,15)
 - Column 11 - **MATERIAL SPECIFICATION**
Enter material specification in terms of full International Standards and accepted conventions, not manufacturer's or sub-manufacturer's reference, including material certificates if required.
 - Column 12 - **DRAWING NUMBER (including PDS NO'S)**
For each part in column 10, enter the manufacturer's parts list and/or drawing number.
Documents referred to, must always be attached to the SPIR form by the manufacturer or supplier.
 - Column 13 - **NAME SUPPLIERS AND/OR REMARKS**
Note supplier's name for items shown in column 15.
 - Column 14 - **MANUFACTURER'S PART NUMBER**
Enter the manufacturer's unique reference number or other information which specifically identifies each part in the manufacturer's organization.
 - Column 15 - **SUPPLIER'S PART NUMBER**
Enter the supplier's unique identification number of items from third party manufacturers ("bought-out" items) such as ball bearings, oil seals, mechanical seals, gaskets, couplings, instruments, electrical parts, fuses, relays etc.
- NOTES FOR 14, 15:**
In view of the wide variety of systems in use for identification of parts, it is not possible to lay down firm rules for completion of these columns.
- Manufacturers/suppliers should give whatever identification system they use to positively identify parts and to show interchangeability with other existing equipment.

INTERCHANGEABILITY RECORD

ed		Manufacturer's supplier's final cross sectional drawings, workshop drawings and real part numbers may not always be available in the early stage of manufacture. This should not delay the completion of the SPIR form and subsequent ordering.
	Column 16	- MESC NUMBER OF SPARE PARTS If known to be filled in by the manufacturer.
	Column 17	- UNIT OF MEASURE For example: per-piece set. The build-up of a set shall be explicated in column 10.
	Column 18	- APPROXIMATE UNIT PRICE State the ex works price per piece of each part in the currency shown at the top of the column.
	Column 19	- DELIVERY TIME IN WEEKS
	Column 20	- COMMISSIONING SPARE PARTS RECOMMENDED BY MANUFACTURER Commissioning Spare Parts are parts required to prepare the equipment ready for start up.
3.	Column 21	- INITIAL SPARE PARTS RECOMMENDED BY MANUFACTURER Initial spare parts are to safeguard the operation of equipment during the running-in and starting-up periods and the first year of operation.
	Column 22	- SPARE PARTS FOR NORMAL OPERATION RECOMMENDED BY MANUFACTURER Spare parts for normal operation should adequately cover the requirements of the day to day maintenance for a period of two years following the initial operation.
	Column 23	- CRITICAL SPARE PARTS Based on manufacturer's experience
	Column 24	- COMMISSIONING SPARE PARTS RECOMMENDED BY SPARE PARTS ADVISOR OF OPCO.
	Column 25	- INITIAL SPARE PARTS RECOMMENDED BY SPARE PARTS ADVISOR OF OPCO
I	Column 26	- SPARE PARTS FOR NORMAL OPERATION RECOMMENDED BY SPARE PARTS ADVISOR OF OPCO
	Column 27	- CRITICAL SPARE PARTS Based on OpCo's experience
3	Column 28	- PHYSICAL STOCK TO BE FILLED IN BY MATERIALS DEPARTMENT OF OPCO If a part is an existing stock item, the actual stock quantity shall be mentioned.
ns	Column 29	- QUANTITY TO BE ORDERED TO BE FILLED IN BY MATERIALS DEPARTMENT OF OPCO Taking into account the new established min/max stock levels.
	Column 30	- SPIR NUMBER Enter the SPIR registration/filing number.
	Column 31	- MESC GROUP Enter coding schedule of the GENERAL INDEX TO MESC.
	Column 32	- AUTHORIZED FOR PURCHASE Enter name responsible person.
	Column 33	- REQUIRED ON SITE DATE In case the SPIR form is used for purchase enter the required on-site date.
	Column 34	- STATUS/REVISION OF SPIR LIST Final, p-preliminary. Revisions to be marked as o-original a, b, c etc.
out"	Column 35	- MANUFACTURER'S FOCAL POINT Incl. tel. nr. to be filled in.
	Column 36	- NOTES Information not covered on previous columns to be filled in here
1	NOTE:	FOR DEFINITIONS E.T.C. REFER DEP 70.10.90.11 - GEN. "SPARE PARTS FOR INITIAL AND NORMAL OPERATION".
parts		

ERC - General Purpose - DEP 30.00.00.80-Gen., 4/92

INFORMATION COMPILED BY		DATE	CHECKED ON SITE BY	DATE
CHECKED BY		DATE	REFINERY	

DEP 00.00.00.80-Gen. 4/92

ERC - Heat Exchanger Shell - DEP 31.21.01.80-Gen., 4/92

ERC - Tube Bundle - DEP 31.21.01.81-Gen., 4/92

ERC - Barometric condenser vacuum equipment - DEP 31.21.01.82-Gen., 10/96

ERC - Air-cooled Heat Exchanger - DEP 31.21.70.80-Gen., 4/92

LOCATION AND DUTY				MEDIUM				AIR-COOLED HEAT EXCHANGER				PLANT No.	
LOCATION		DUTY		PERMITTED OPERATING RANGE		GENERAL INFORMATION							
				MINIMUM	MAXIMUM								
Air temp. inlet		°C				Purchase order No.		Date		Type			
Air temp. outlet		°C				Year of fabrication		Serial No.		Size			
Working temp. inlet		°C				Design book page No.		MESC No.		MESC No.			
Working temp. outlet		°C				Fabrication report No.		MESC No.		MESC No.			
Working press. inlet		bar (gag)				NOTE: This equipment is safeguarded against overpressure by:		Relief valve No.		MESC No.			
Working press. outlet		bar (gag)				P & I drawing Ref. No.		ENGINEERING		MESC No.			
Normal capacity						Constructed acc. to		Design pressure (see note above)		bar (gag)			
Max. capacity						Hydro. test pressure (new and old)		Design temperature		°C			
Heat transferred						Header nozzles (per element)		Diam.		mm			
Over design						Flange standard/size		ASA series		mm			
Cooling surface (outside bare)		m ²				Corrosion allow. of headers		mm		mm			
Cooling surface (total finned)		m ²				Volume of water for testing		yes/no		yes/no			
						Radiograph/cut/ultrasonic test		yes/no		yes/no			
						Stress relieved		yes/no		yes/no			
						Drawing reference		General arrangement No.		Requisition No.			
						Description and tubes arrangement		This cooler consists of no. of elements parallel		no. of elements in series			
								For repair purposes the elements are marked as		indicated on the attached sheet			
								The elements consist of		tubes in		rows	

[illegible]

CHECKED ON 5-14-83
REFINERY

DEF 31 22 JO 80 GER.. 4.92

ERC - Pressure Vessel - DEP 31.22.00.81-Gen., 4/92

LOCATION		DUTY		MEDIUM		PRESSURE VESSEL		PLANT No.	
INTENDED OPERATING CONDITIONS						GENERAL INFORMATION			
SHELL						Purchase order No. _____ Date _____			
Working press. int. test _____ bar (gag) _____						Make _____ Type _____			
Working temp. _____ °C _____						Year of fabrication _____ Serial No. _____			
Working capacity _____ m ³ /h _____						Design book page No. _____ Size _____			
Max. Working cap. _____ m ³ /h _____						Fabrication report No. _____ MESC No. _____			
Working press. _____ bar (gag) _____						NOTE: This equipment is designed against overpressure by _____			
Working temp. _____ °C _____						Relief valves No. _____			
Heat consumption _____ kW _____						P & I drawing Ref. No. _____			
JACKET						ENGINEERING			
Working press. _____ bar (gag) _____						Constructed acc. to _____			
Working temp. _____ °C _____						Design temperature _____ °C			
Heat consumption _____ kW _____						Design pressure (internal (see note above)) _____ bar (gag)			
						Design pressure external _____ bar (gag)			
						Hydrostatic Test pressure (new and solid) _____ bar (gag)			
						Volume of water testing _____ m ³			
						Inside diam. _____ mm			
						Total length _____ mm			
						Well thickness at dish ends _____ mm			
						Corrosion allowance _____ mm			
						Stress relieved _____ yes/no			
						Radio graphic/ultrasonic tested _____ yes/no			
						Special heat treatment _____ yes/no			
						Shell liner full party _____ thickness _____ mm			
						Dished ends lined _____ yes/no			
						Insulated _____ yes/no			
						Heating surface _____ m ²			
						DRAWING REFERENCE			
						General arrangement No. _____			
						Requisition No. _____			

INFORMATION COMPLETED BY		CHECKED ON SITE BY	
CHECKED BY	DATE	REFINERY	DATE
DEP 31.22.00.81 59m, 4/02			

ERC - Fired Steam Boiler - DEP 31.24.00.80-Gen., 4/92

ERC - Furnace - DEP 31.24.00.81-Gen., 10/96

ERC - Air preheater - DEP 31.24.48.80-Gen., 10/96

LOCATION AND DUTY				AIR PREHEATER				REGISTRATION No.					
No.	LOCATION	LOC. No.	DUTY	MEDIUM	DATE	GENERAL INFORMATION							
1						Purchase order No. _____ Date _____							
2						Maker _____ Type _____							
3						Year of fabrication _____ Serial No. _____							
4						Design boss page No. _____ S/n _____							
5						Fabrication report No. _____ MESC No. _____							
6						Relief valve card No. _____ Mass _____ kg							
						Date in operation _____							

DESIGN WORKING CONDITIONS		ACTUAL WORKING CONDITIONS											
		1		2		3		4		5		6	
		AIR	FLUE GAS	AIR	FLUE GAS	AIR	FLUE GAS	AIR	FLUE GAS	AIR	FLUE GAS	AIR	FLUE GAS
Quantity	kg/h												
Max weight	kg/h												
Density	kg/m ³												
Viscosity	mPa.s												
Temperature	°C												
Heat transferred	kW												
Velocity	m/s												
Pressure drop	MPa												
V.I.T.	°C												
Surface	m ²												

MATERIALS		SPECIFICATION		MESC No.		ENGINEERING	
No.	PAINT	SIZE					
	Shade						
	Flowing drum						
	Corrosion plates						
	Sealing plates						
	Flange						
	Nuts						
	Gas 1318						
	Body						
	Flange tubes						

DRAWING UNIT		REGISTRATION No.		DRAWING REFERENCE	

[illegible]

ERC - Conveyor/elevator - DEP 31.27.00.80-Gen., 10/96

ERC - Weighing equipment - DEP 31.27.04.80-Gen., 10/96

LOCATION AND DUTY		WEIGHING EQUIPMENT		REGISTRATION No.	
LOCATION	DUTY	DATE OF GOVERNMENT GAUGING	SIGNATURE GOV. INSP.	GENERAL INFORMATION	
				Purchase order No.	
				Date	
				Manufacturer	
				Type of equipment	
				Size	
				Serial No.	
				Mass town	kg
				Factory order No.	
				MESC No.	
				Date in operation	
				Government weighing No.	
				ENGINEERING DATA	
				Self Indicating	yes / no
				Dial diameter	mm
				Range dial chart From	to
				Taring device	yes / no
				Taring capacity	kg
				Type of adjusting	sliding pointer / press buttons
				Quick taring device	yes / no
				Angle of dial	
				Range switch capacity	kg
				Chart capacity	kg
				Total capacity	kg
				Graduations	kg
				Transportable	yes / no
				Platform size	mm
				Pneumatic stop mechanism	yes / no
				Antistat	yes / no
				Electrical system	volts
					phases
					cycles
				SERVICE DATA	
				Max. weighing velocity	loads per h
				Material handled	
				Bin capacity	kg/m ³
				Temp. of material	

[illegible]

ERC - Mixing equipment - DEP 31.27.10.80-Gen., 10/96

SEP 31 27 10.33 AM '11

ERC - Gear box - DEP 31.29.00.80-Gen., 10/96

LOCATION AND DUTY				GEAR BOX		REGISTRATION No.																																																																																																																																																																																					
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Centrifugal / reciprocating																																																																																																																																																																																											
Pump																																																																																																																																																																																											
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Generator																																																																																																																																																																																											

ERC - Centrifugal pump- DEP 31.29.02.80-Gen., 10/96

CENTRIFUGAL PUMP				REGISTRATION No.	
LOCATION AND DUTY				GENERAL INFORMATION	
No.	LOCATION	LOC. No.	DUTY	MEDIUM	DATE
1					
2					
3					
4					
5					
6					
7					

DESIGN OPERATING CONDITIONS		ACTUAL OPERATING CONDITIONS							ENGINEERING	
		1	2	3	4	5	6	7		
Liquid									Constructed acc. to	bar (kg)
Discharge pressure	bar (kg)								Maximum allowable working pressure	bar (kg)
Pumping temperature	°C								Maximum allowable working temperature	°C
Relative density at pumping temp.									Hydrostatic test pressure	bar (kg)
Visc. at pumping temp.	mm ² /s								Direction of rotation (facing driven end)	DISCHARGE
Capacity	m ³ /h								Nozzle position (facing driven end)	bar (kg)
Wp. press. at pump temp.	bar (kg)								L.H. / R.H. ends - top down end	bar (kg)
Total min. suction head	bar (kg)								Flange standards / size	bar (kg)
Total max. discharge head	bar (kg)								ASA series	bar (kg)
Differential head at max. cap.	bar (kg)								Cooling on	bar (kg)
Refr. head NPSH	bar (kg)								Chilling water	bar (kg)
Available NPSH	bar (kg)								Maximum temperature of cooling water at inlet	°C
Speed	rpm								Type of coupling	°C
Power required	kW								Coupling adjustment face, to manufacturer's spec.	°C
Impeller diam.	mm								Minimum allowable wall thickness of casing	mm
	mm								Number of stages	mm
	mm								Efficiency of pump	mm
	mm								Horizontal / Vertical set	mm

MATERIALS		SPECIFICATION		DRAWING REFERENCE	
LOC.	PART	SIZE	MS-SC No.	General arrangement	No.
	Casing and covers			Sectional	No.
	Impeller			Part list	No.
	Impeller wear rings			Fukler	No.
	Brinell hardness			Sequition	No.
	Casing wear rings			Graph	No.
	Brinell hardness				

CLEARANCE INFORMATION	
Radial	Impeller wear rings / casing wear rings
	Intermediate bushings / sleeve
	Next bush / stuffing box bushings
	Journal bearings
	Balance piston / sleeve

ERC - Reciprocating pump - DEP 31.29.12.80-Gen., 10/96

LOCATION AND DUTY				RECIPROCATING PUMP										REGISTRATION No.	
No.	LOCATION	LOC. No.	DUTY	GENERAL INFORMATION											
				DATA ON											
				DESIGN WORKING CONDITIONS											
				ENGINEERING											
1				1	2	3	4	5	6	7	Constant speed acc. to				
2											Max. allow. working press.				bar / gal
3											Max. allow. working temp.				°C
4											Hydraulic test press.				bar / gal
5											Nozzle position (from steam end / other)				
6											Right hand / Left hand side				yes / no
7											Flange standard / size				mm
											Valve type				mm
											Cooling or stuffing box				yes / no
											Cooling water / fresh / brackish / salt				yes / no
											Steam jacket				yes / no
											Ramovack / Inerts				yes / no
											Cylinder bore				mm
											Min. & max. wall thickness of casting				mm
											Couplings				mm
											Nozzle position (facing steam cover)				INLET
											Right hand / Left hand side				EXHAUST
											Flange standard / size				mm
											Steam temp. normal / max.				°C
											Deck press. normal / max.				bar / gal
											Deck press. normal / max.				bar / gal
				DRAWING REFERENCE											
				General arrangement No.											
				Sectional No.											
				Part list No.											
				Cover No.											
				Insulation No.											

MATERIALS		SPECIFICATION		MISC. No.	
No.	NAME	SIZE			
	Cylinder: internal				
	Cylinder: internal				
	Cylinder: liner				
	Piston or plunger				
	Piston rod				

[illegible]

ERC - Rotary displacement pump - DEP 31.29.22.80-Gen., 10/96

LOCATION AND DUTY				ROTARY DISPLACEMENT PUMP		REGISTRATION NO.	
No.	LOCATION	LOC. No.	DUTY	MEDIUM	DATE		
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							

DESIGN OPERATING CONDITIONS		ACTUAL OPERATING CONDITIONS								ENGINEERING	
		1	2	3	4	5	6				
Liquid handled								Constructed size to			
Discharge pressure	bar (g)							Max. allowable working pressure			bar (g)
Pumping temp.	°C							Hydrostatic test pressure			bar (g)
S.G. at pumping temp.								Max. allowable working temp.			°C
Visc. at pumping temp.	mm ² /s							Direction of rotation (seen from driver)			
Capacity	m ³ /h							Nozzle position (seen from driver)			
Capacity	m ³ /h							Right hand / Left hand / etc.	top / down / etc.		
Vap. press. at pump temp.	bar (abs)							Flange standards / size	ASA series		
Total min. suction head	bar (m liq. lgal)							Couling on stuffing box - bearing - pedestal			
Total max. discharge head	bar (m liq. lgal)							Cooling water - from / brackish / salt			
Differential head at max. visc.	bar (m l.u.)							Max temp. of cooling water at inlet			°C
Required NPSH	bar (m l.u.)							Type of coupling			
Available NPSH	bar (m l.u.)							Min. allow. wall thickness of casing			mm
Number of revolutions	rpm							Steam jacket			yes / no
Power required	kw							Bypass with hand operated relief valve			yes / no
								Safety valve			yes / no

MATERIALS		DRAWING REFERENCE	
No.	PART	SIZE	SPECIFICATION
1	Casing and covers		
2	Inner roller		
3	Outer roller		
4	Liner		
5	Shaft		
6	Shaft sleeves		
7			
8			
9	Blacks		
10	Clear wheels		
11	Bolting		
12	Gaskets		

CLEARANCE INFORMATION	
Clearance	mm
Outer roller / inner roller	
Liner	
Axial	
Boiling (in no ball / roller bearing)	

[illegible]

ERC - Axial pump - DEP 31.29.32.80-Gen., 10/96

LOCATION AND DUTY				AXIAL PUMP		REGISTRATION No.	
No.	LOCATION	LOC. No.	DUTY	MEDIUM	DATE	GENERAL INFORMATION	
1						Purchase order	No.
2						Maker	No.
3						Year of fabrication	No.
4						Design book page	No.
5						Fabrication report	No.
6						Relief valve card	No.
7						MISC No	No.
8						Mass	kg
9						Date in operation	
ENGINEER NG							
DESIGN OPERATING CONDITIONS				DATA ON			
ACTUAL OPERATING CONDITIONS				ENGINEER NG			
1	2	3	4	5	6	7	8
Continued test to							
Max. allow. working press.							bar/ga.
Max. allow. working temp.							°C
Hydraulic test press.							bar/ga.
Direction of rotation (seen from driver)							
Nozzle position (seen from driver)							
LI / RH side - top / down / end							
Flange standards / size							
ASA, series							
Cooling on stirring tank - bearings - pedestal							
Cooling water: fresh / cracked / sea							
Max temp. of cooling water at inlet							°C
Type of coupling							
Min. allow. wall thickness of casing							mm
Steam jacket							yes / no
Bypass with hand operated relief valve							yes / no
Safety valve							yes / no
DRAWING REFERENCE							
General arrangement				No.			
Sections				No.			
Part list				No.			
Folder				No.			
Requisition				No.			
Graph				No.			
CLEARANCE INFORMATION							
Bearings (if no ball bearing)				mm			
Radial clearance propellers				mm			
Axial clearance				mm			
Back lash propellers				mm			
Coupling				mm			
MATERIALS				SPECIFICATION			
No.	PART	SIZE	MISC No.				
1	Casing and covers						
2	Propellers						
3	Casing liner						
4							
5							
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ERC - Centrifugal compressor-blower - DEP 31.29.40.80-Gen., 10/96

LOCATION AND DUTY				CENTRIFUGAL COMPRESSOR-BLOWER				REGISTRATION No.	
No.	LOCATION	LOC. No.	DUTY	MEDIUM	DATE	GENERAL INFORMATION			
1						Purchase order No.	Date		
2						Maker	Type		
3						Year of fabrication	Serial No.		
4						Design tank size	Size		
5						Fabrication report No.	MESC No.		
6						Relief valve card No.	Mass		
							Date in operation		

DESIGN OPERATING CONDITIONS		ACTUAL OPERATING CONDITIONS						ENGINEERING	
		1	2	3	4	5	6		
Discharge press.	bar (g)							Constructed acc. to	
Discharge temp.	°C							Max. allow. working press.	bar (g)
Enthalpy								Hydr. test pressure	bar (g)
Humidity								Max. allow. working temp.	°C
Rel. molecular mass								Direction of rotation (axis from driver)	
Compressibility								Nozzle position (axis from driver)	
Norm. capacity	m³/h							Right hand / Left hand side	top / down / end
Max. capacity	m³/h							Flange standards / size	ASA series
Min. capacity	m³/h							Cooling water: fresh / brackish / salt	
Inlet press.	bar (g)							Max. temp. of cooling water	°C
Inlet temp.	°C							Type of coupling	
Press. fluctuation due to pulsation	bar							Number of reentrances	Max. Min. Critical
Efficiency	%							Wall thickness of casing	
Power required	kW							Corrosion allowance	
								Horizontal / vertical split	
								Number of stages	
								Conditioning: yes / no. injection (heat gas / steam / air / ejector; oil seal; mech. seal)	

MATERIALS		DRAWING REFERENCE	
No.	PART	SIZE	GENERAL ARRANGEMENT No.
	Casing and covers		
	Diaphragm		
	Rotor		
	Blading		
	Impellers		
	Shaft		
	Shaft sleeves		
	Glands		
	Bolts		
	Inner casing (stiff)		
	Inner casing (thrust)		
	After cooler (shell)		

CLEARANCE INFORMATION	
	Sheet no.
Diaphragms	
Glands	
Impellers	
Thrust	
Stages (lateral)	
Trimming	

ERC - Reciprocating compressor - DEP 31.29.43.80-Gen., 10/96

LOCATION AND DUTY				RECIPROCATING COMPRESSOR		REGISTRATION No.																																																																																																																																																																																					
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ERC - Fan - DEP 31.29.47.80-Gen., 10/96

LOCATION AND DUTY				FAN		REGISTRATION NO.																																																																																																																																													
No.	LOCATION	LDC No.	DUTY	MEDIUM	DATE																																																																																																																																														
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ERC - Reciprocating vacuum pump - DEP 31.29.53.80-Gen., 10/96

[illegible]

ERC - Rotary vacuum pump - DEP 31.29.56.80-Gen., 10/96

ERC - Steam turbine - DEP 31.29.60.80-Gen., 10/96

LOCATION AND DUTY				STEAM TURBINE				REGISTRATION NO.	
No.	LOCATION	DUTY	DATE	GENERAL INFORMATION					
1				Purchase order No.	Date				
2				Manufacturer	Type				
3				Year of fabrication	Seller No.				
4				Design book page No.	Site				
5				Facilitation report No.	MEGC No.				
6				Relief valve card No.	Mass			kg	
					Date in operation				

DESIGN WORKING CONDITIONS		ACTUAL WORKING CONDITIONS						ENGINEERING			
		1	2	3	4	5	6				
Live steam press.	norm.	bar (g)						Constructed acc. to		HP side	LP side
	max.	bar (g)						Max. allow. working press.	bar (g)		
	min.	bar (g)						Max. allow. working temp.	°C		
Live steam temp.	norm.	°C						Hydraulic test press.	bar (g)		
	max.	°C						Direction of rotation (seen from non driving end)			cm / s
	min.	°C						Number of revolutions per minute	normal		
Normal back press.		bar (g)							max.		
Variation in back press		bar (g)							critical		
Variation in vacuum		m bar (abs)									
Steam extracted from turbine at		bar (g)						Number of stages			
Bled steam press. governed by turbine		yes / no						Nozzle position (seen from non driving end)			
Back press. governed by turbine		yes / no						Right hand / Left hand side	top / down / end		
Output	normal	rpm						Flange standards / size	ASA series		
	max.	rpm						Condensing equipment			
Power required by driven unit	kW at							Cooling water: fresh / brackish / salt			yes / no
	kVA at							Type of coupling			
Steam consumption at	normal load	kg/h									
	max. load	kg/h									
Cooling water	press.	bar (g)									
	max. temp	°C									

DRAWING REFERENCE	
General arrangement	No.
Sectional	No.
Part list	No.
Foundation	No.
Regulation	No.
Test figures	No.

PARAMIT-IMPROMATION

[illegible]

ERC - Gas turbine - DEP 31.29.70.80-Gen., 10/96

[illegible]

ERC - Internal combustion engine - DEP 31.29.80.80-Gen., 10/96

INTERNAL COMBUSTION ENGINE				REGISTRATION No.	
LOCATION AND DUTY		GENERAL INFORMATION			
No.	LOCATION	LOC. No.	DUTY	Purchase Order	No.
1				Make	Date
2				Year of fabrication	Type
3				Design break down	Serial No.
4				Fabrication report	Size
5				Model valve card	MESC No.
6				Model / gas / petrol engine	Mass
					Date in operation
DATA ON					
DESIGN OPERATING CONDITIONS		ENGINEERING			
ACTUAL OPERATING CONDITIONS		DRAWING REFERENCE			
No.	PART	SIZE	SPECIFICATION	MT SC No.	
1	Cylinder				
2	Cylinder liner				
3	Piston				
4	Piston ring				
5	Crank shaft				
6	Connecting rod				
7	Valve (inlet)				
8	Valve (exhaust)				
9	Valve seat (inlet)				
10	Valve seat (exhaust)				
11	Valve spring (inlet)				
12	Valve spring (exhaust)				
CLEARANCE INFORMATION					
	Main bearing				mm
	Bottom end				mm
	Piston end / crosshead				mm
	Piston and liner				mm
	Valve inlet				mm

ERC - Steam engine - DEP 31.29.85.80-Gen., 10/96

LOCATION AND DUTY				STEAM ENGINE		REGISTRATION No.	
No.	LOCATION	LOC. No.	DUTY	MEDIUM	DATE	GENERAL INFORMATION	
1						Purchase order	No. _____
2						Maker	No. _____
3						Year of fabrication	No. _____
4						Design book page	No. _____
5						Particulation report	No. _____
6						Relief valve card	No. _____
						Mass	kg _____
						Date in operation	_____
DATA ON							
DESIGN WORKING CONDITIONS				ENGINEERING			
Steam press. on throttle valve _____ bar (gag) Steam temp. on throttle valve _____ °C Steam press. on L.P. cyl. _____ bar (gag) Steam temp. on L.P. cyl. _____ °C Steam press. / vac. or exhaust _____ bar (gag) / bar (abs) Steam condensation at full load _____ kg/h Specific steam consumption _____ kg/kWh Efficiency _____ % Speed control limits between _____ rpm Number of revolutions _____ rpm Power _____ kW				Constructed and to _____ Max. allow. working press. _____ bar (gag) Max. allow. working temp. _____ °C Max. allow. number of revolutions _____ rpm Direction of rotation (facing coupling) _____ Nozzle position (facing coupling) _____ Right hand / Left hand size _____ Top / down / end _____ Flange standard / size _____ ASA series _____ Length of stroke _____ mm Cylinder bore L.P. cyl. _____ mm Expansion ratio between _____ Type of valves _____ Type of coupling _____ INLET _____ EXHAUST _____			
MATERIALS							
No.	PART	SIZE	SPECIFICATION	MISC. No.	DRAWING REFERENCE		
	Cylinders				General arrangement	No. _____	
	Piston H.P.				Sectional	No. _____	
	Piston L.P.				Part list	No. _____	
	Piston ring L.P.				Folder	No. _____	
	Piston ring L.P.				Particulation	No. _____	
	Piston rod				Graph	No. _____	
CLEARANCE INFORMATION							
	Connecting rod				L.P. piston in cyl. / rod		mm _____
	Crank shaft				L.P. piston in cylinder		mm _____

ERC - Spring loaded safety/relief valves - DEP 31.36.90.50-Gen., 4/92

SPRING LOADED SAFETY/RELIEF VALVES

[illegible]

[illegible]

ERC - Pipe Lines - DEP 31.38.00.80-Gen., 4/92

LOCATION AND DUTY				PIPELINES		PLAN No	
LOCATION		DUTY		MEDIUM			
INTENDED OPERATING CONDITIONS				GENERAL INFORMATION			
Fluid		PERMITTED OPERATING RANGE		Purchase order No.	Date	Type	
Phase		MINIMUM	MAXIMUM	Maker		Serial No	
				Year of fabrication		Size	
				Design block huge		MSC No.	
				Fabrication report No.		Mass	
Working mass		bar/gpa		NOTE: This pipeline is forwarded against			
Working temp.		°C		Overpressure by:			
Density		kg/m ³		Relief valve No.			
Viscosity		mm ² /s		P & I drawing Ref. No.			
Flow rate		m ³ /h		ENGINEERING			
MATERIALS				CONSTRUCTION			
No.	PART	SIZE	SPECIFICATION	MSC No.			
	Line pipe						
	Flanges						
	Packing						
	Valve body						
	Valve						
	Valve actuator						
	Membrane						
If more than one relief valve protects the line, then the tag numbers together with schematic diagram sketch should be included herein.				Piping mass			
				Design pressure (see note above)			
				Hydrostatic test press.			
				Velocity			
				Pipe diameter			
				Pipe schedule			
				Flange standards/size			
				ASA series			
				Insulation			
				Insulation thickness			
				Special test requirements			
				Stress relieved			
				Red dye/ultrasonic test			
				Corrosion allowance			
				DRAWING REFERENCE			
				General arrangement No.			
				Part list No.			
				Requisition No.			
				Welding directions No.			

GENERAL INFORMATION						MANUFACTURER'S INFORMATION							INSTRUMENT							
Purchase order No.		Manufacturer		Variable		DIRECTLY CONN.		RECEIVER		CORRECTING UNIT										
Date of purchase		Model		Floor		Indicator		Ind. exten.		Control valve										
Type		Type		Level		Recorder		Recorder		Regulator										
Value		Serial No.		Pressure		Controller		Controller												
MESC No.		Mr's order No.		Temperature		Transmitter		Cumulative station												
Registration No.		Year of fabrication				Switch		Main contr. unit												
Date of receipt		Certified dry. No.						Relay												
Item in operation		Parts list																		
		Install. instructions																		

ACQUISITION AND OPERATING CONDITIONS

[illegible]

TECHNICAL DATA

SUPPLY		CONTROL		INDICATOR / RECORDER		CHART	
Pneumatic:	bar light	Proportional	Integral / Derivative	Number pens:	Type pens:	Circular:	Strip
Electric:	cycles	%	min.	Number points:	Printing speed:	Graduation:	
Hydraulic:		Switch ratio manual / remote / separate		Scale graduation:		Mfr's No.:	
						MFSC No.:	
SIGNAL		Adjustment set-point / mechanical / integral / pneu. / elect. / remote pres. / elect		MOUNTING		CHART DRIVE	
Pneumatic:	bar light			Flush / Surface / Yoke		Pneumatic	bar light
Electric:				Integral / Field		Electric:	AC/DC
Hydraulic:						Mechanical:	cycles
						Chart speed:	mm/h

TECHNICAL DATA

[illegible]

GENERAL INFORMATION				MANUFACTURER'S INFORMATION				INSTRUMENT																																																																																							
Purchase order No.		Date of purchase		Manufacturer Model		Type		Pressure		Flow																																																																																					
Value		MESC No.		Serial No.		Mfr's order No.		Normal		Upset																																																																																					
Request on No.		Year of receipt		Year of fabrication		Certified No.		Vibration		Frequency																																																																																					
Date in operation		Parts list		Install. instructions				Max. temp. at 10°C		Max. temp. at 10°C																																																																																					
LOCATION AND OPERATING CONDITIONS: <table border="1"> <thead> <tr> <th>No.</th> <th>Date</th> <th>Plant</th> <th>Tag No.</th> <th>Service</th> <th>Leak test sch. vessel</th> <th>Fluid</th> <th>Temp. 1°C</th> <th>Pressure at 10°C M.W.</th> <th>Flow at 1</th> <th>Pressure Normal</th> <th>Flow Upset</th> <th>Max. temp. at 10°C</th> <th>Max. temp. at 10°C</th> </tr> </thead> <tbody> <tr><td>1</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>2</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>3</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>4</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>5</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> </tbody> </table>												No.	Date	Plant	Tag No.	Service	Leak test sch. vessel	Fluid	Temp. 1°C	Pressure at 10°C M.W.	Flow at 1	Pressure Normal	Flow Upset	Max. temp. at 10°C	Max. temp. at 10°C	1														2														3														4														5													
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ERC - Electric motor - DEP 33.66.05.80-Gen., 10/96

ERC - Fixed roof Tank - DEP 34.51.00.80-Gen., 4/92

DEF 34.51.00.60-Gen.. 4:92

ERC - Floating- roof Tank - DEP 34.51.00.81-Gen., 4/92

LOCATION AND DUTY		MEDIUM		FLOATING ROOF TANK		PLANT No.
LOCATION	DUTY			GENERAL INFORMATION		
INTENDED OPERATING CONDITIONS		PERMITTED OPERATING RANGE		Purchase order No.		Date
Working temp.	°C	MINIMUM	MAXIMUM	Year of fabrication	Type	
Capacity	m ³			Design back pipe No.	Serial No.	
Vap. press. of liquid	bar (psi)			Fabrication report No.	Size	
Relative density of liquid					MESC No.	
Max. height of liquid	m				Mass	kg
					Date in operation	
MATERIALS		SPECIFICATION		ENGINEER V.G.		
No.	PART	SIZE	MESC No.	Course and acc. no.		
	Bottom plates			Bottom (in test press.)		m bar (psi)
	Shell plates			Diameter of tank		m
	1st course(s)			Height of tank		m
	2nd course(s)			Number of courses		
	3rd course(s)			Type of floating roof		
	4th course(s)			Type of shell welding		
				Non destructive testing radiographic/ultrasonic		
	5th course(s)			Nozzle		5.01 UN INLET
	6th course(s)			Flange standards/size		ASA series
	7th course(s)			Corrosion allowances bottom plates		mm
	8th course(s)			Corrosion allowances shell plates		mm
	9th course(s)			Corrosion allowances floating roof		mm
	10th course(s)			Heating coil		yes/no
	11th course(s)			DRAWING REFERENCE		
	12th course(s)			3. Control No.		
	Relief/Vac. valves			Shell No.		
	Landing valves			Scal No.		
	Unloading valves			Turquition No.		
	Floor drains			Callibration card No.		
	Seal type			Welding details No.		
	Relief/Vac. valves*					
	Roof stair/ladder					
	Seal plates					
	Foam piping					
	Roof drain					
	Hose					
	Pentograph					
	Automatic					
				FOUNDATION LEVEL OBSERVATIONS		
				ZERO LEVEL AT END OF OPERATION		
				Observation data		

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ERC - Spherical Pressure Tank - DEP 34.51.00.82-Gen., 4/92

INFORMATION COMPILED BY		CHECKED ON SITE BY	
CHECKED BY		RETINER	
DATE		DATE	

ERC - Full Containment Refrigerated Liquefied Gas (RLG) Tanks - DEP 34.51.00.83-Gen., 4/92

LOCATION AND IDENTITY		DUTY		MEDIUM		FULL CONTAINMENT REFRIGERATED LIQUEFIED GAS (FLG) TANKS				PLANT NO.	
LOCATION		DUTY		MEDIUM		GENERAL INFORMATION				PLANT NO.	
IN-TYPE: OPERATING CONTAINERS						Purchase order No.		Date		Type	
Working press. (bar/ga) / Max. surge in rate (bar/ga) / Max. surge out rate (bar/ga) / Max. surge off rate (bar/ga)						Year of fabrication		Serial No.		Size	
Relative density of liquid						Fabrication report No.		MESC No.		Kg	
Max. height of liquid						NOTE: This equipment is protected against overpressure/vacuum by RLV No. _____					
Capacity						P & I, Diag. No. _____		Date in operation			
MATERIALS PRIMARY TANK						ENGINEERING					
No.		PART		SIZE		SPECIFICATION		MESC No.		Curriculum doc. to	
Bottom plates		Shell plates		1st course(s)		2nd course(s)		3rd course(s)		4th course(s)	
5th course(s)		6th course(s)		7th course(s)		8th course(s)		9th course(s)		10th course(s)	
11th course(s)		12th course(s)		13th course(s)		14th course(s)		15th course(s)		16th course(s)	
17th course(s)		18th course(s)		19th course(s)		20th course(s)		21st course(s)		22nd course(s)	
23rd course(s)		24th course(s)		25th course(s)		26th course(s)		27th course(s)		28th course(s)	
29th course(s)		30th course(s)		31st course(s)		32nd course(s)		33rd course(s)		34th course(s)	
35th course(s)		36th course(s)		37th course(s)		38th course(s)		39th course(s)		40th course(s)	
41st course(s)		42nd course(s)		43rd course(s)		44th course(s)		45th course(s)		46th course(s)	
47th course(s)		48th course(s)		49th course(s)		50th course(s)		51st course(s)		52nd course(s)	
53rd course(s)		54th course(s)		55th course(s)		56th course(s)		57th course(s)		58th course(s)	
59th course(s)		60th course(s)		61st course(s)		62nd course(s)		63rd course(s)		64th course(s)	
65th course(s)		66th course(s)		67th course(s)		68th course(s)		69th course(s)		70th course(s)	
71st course(s)		72nd course(s)		73rd course(s)		74th course(s)		75th course(s)		76th course(s)	
77th course(s)		78th course(s)		79th course(s)		80th course(s)		81st course(s)		82nd course(s)	
83rd course(s)		84th course(s)		85th course(s)		86th course(s)		87th course(s)		88th course(s)	
89th course(s)		90th course(s)		91st course(s)		92nd course(s)		93rd course(s)		94th course(s)	
95th course(s)		96th course(s)		97th course(s)		98th course(s)		99th course(s)		100th course(s)	
101st course(s)		102nd course(s)		103rd course(s)		104th course(s)		105th course(s)		106th course(s)	
107th course(s)		108th course(s)		109th course(s)		110th course(s)		111th course(s)		112th course(s)	
113th course(s)		114th course(s)		115th course(s)		116th course(s)		117th course(s)		118th course(s)	
119th course(s)		120th course(s)		121st course(s)		122nd course(s)		123rd course(s)		124th course(s)	
125th course(s)		126th course(s)		127th course(s)		128th course(s)		129th course(s)		130th course(s)	
131st course(s)		132nd course(s)		133rd course(s)		134th course(s)		135th course(s)		136th course(s)	
137th course(s)		138th course(s)		139th course(s)		140th course(s)		141st course(s)		142nd course(s)	
143rd course(s)		144th course(s)		145th course(s)		146th course(s)		147th course(s)		148th course(s)	
149th course(s)		150th course(s)		151st course(s)		152nd course(s)		153rd course(s)		154th course(s)	
155th course(s)		156th course(s)		157th course(s)		158th course(s)		159th course(s)		160th course(s)	
161st course(s)		162nd course(s)		163rd course(s)		164th course(s)		165th course(s)		166th course(s)	
167th course(s)		168th course(s)		169th course(s)		170th course(s)		171st course(s)		172nd course(s)	
173rd course(s)		174th course(s)		175th course(s)		176th course(s)		177th course(s)		178th course(s)	
179th course(s)		180th course(s)		181st course(s)		182nd course(s)		183rd course(s)		184th course(s)	
185th course(s)		186th course(s)		187th course(s)		188th course(s)		189th course(s)		190th course(s)	
191st course(s)		192nd course(s)		193rd course(s)		194th course(s)		195th course(s)		196th course(s)	
197th course(s)		198th course(s)		199th course(s)		200th course(s)		201st course(s)		202nd course(s)	
203rd course(s)		204th course(s)		205th course(s)		206th course(s)		207th course(s)		208th course(s)	
209th course(s)		210th course(s)		211st course(s)		212nd course(s)		213rd course(s)		214th course(s)	
215th course(s)		216th course(s)		217th course(s)		218th course(s)		219th course(s)		220th course(s)	
221st course(s)		222nd course(s)		223rd course(s)							

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