طرح نگهداشت و افزایش تولید ۲۷ مخزن

MECHANICAL DATA SHEETS FOR DISCHARGE GAS K.O. DRUM

نگهداشت و افزایش تولید میدان نفتی بینک

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Rev.	**Date**	**Purpose of Issue / Status**	**Prepared by:**	**Checked by:**	**Approved by:**	**CLIENT Approval**

Class: 1 **CLIENT Doc. Number: F0Z-708837**

status:

IDC: Inter-Discipline Check

IFC: Issued For Comment

IFA: Issued For Approval

AFD: Approved For Design

AFC: Approved For Construction

AFP: Approved For Purchase

AFQ: Approved For Quotation

IFI: Issued For Information

AB-R: As-Built for CLIENT Review

AB-A: As-Built –Approved

REVISION RECORD SHEET

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4	X	X	X	X		68					
5	X	X	X			69					
6	X	X	X	X		70					
7	X	X	X	X		71					
8	X		X			72					
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General Notes

Rev

1. The Asterisk * denotes information and/or confirmation required from VENDOR. The Vendor shall be fully responsible for the complete mechanical design, preparing calculation book and supply of the vessel. The vessel shall be supplied in accordance with project 'Specification for Pressure Vessels', Doc. No. BK-GNRAL-PEDCO-000-ME-SP-0001. The manufacturer shall calculate thickness and loads of the vessel.
2. Nozzles and flanges shall be suitably supported and reinforced based on nozzle loads provided in project Specification for Pressure Vessels, Document No. BK-GNRAL-PEDCO-000-ME-SP-0001.
3. VENDOR shall include for the services of a independent verification body for mechanical design, stage inspection, testing and stamping of the equipment (if possible).
4. Access Ladder & Platform to be considered .
5. Painting and coating (internal & external) shall be as per project 'Specification for Painting', Doc. No. BK-GNRAL-PEDCO-000-PI-SP-0006 and Specification for Lining', Doc. No. BK-GNRAL-PEDCO-000-PI-SP-0007.
6. Flanges shall comply with ANSI B16.5. Nozzle bolt holes shall straddle the natural centerlines for horizontal nozzles.
   VENDOR to confirm maximum allowable nozzle loads and moments. (RF: Raised Face, WN: Welding Neck, LWN: Long Weld Neck)
7. For equipment requiring PWHT, final inspection and acceptance by the CLIENT or its nominated representative shall only be undertaken against NDE after PWHT. All weldings shall be made before vessel heat treatment (if any).
8. Manways shall be supplied complete with blind flange, external grab handles, internal grab handle and ladder rungs, nuts, bolting, gasket and proof load test davits. Davits shall be proof load tested on the vessels to 1.5 x Safe Working Load (SWL) and shall be marked accordingly.
9. Loads at support base, Shall be calculated and determined by vendor.
10. Location and number of lifting lugs on vessels shall be specificed on VENDOR drawing.
11. All external bolts and nuts shall be hot dip galvanized. Internal bolts and nuts shall be stainless steel.
12. All material, corrosion allowance and their suitability for the process fluid at design pressure and temperature to be confirmed by vendor.
13. The vendor shall be responsible for mechanical strength of the equipment based on mentioned condition in data sheets.
14. All nozzle locations and orientations will be finalized later.
15. Instrumentation items are excluded from vendor's scope of supply.
16. Any changes in material of construction, location & orientation of the nozzles shall be confirmed by client.
17. All dimensions shown are in mm unless otherwise indicated. All nozzle sizes are in inch.
18. All removable internals should be passed through manhole.
19. All materials shall be new and unused.
20. Prior to sealing the vessel for shipping and storage, the inside surface of the equipment shall be 100% visually inspected. Internal surfaces shall be clean and thoroughly dried. The CLIENT or its nominated representative shall witness the cleanliness of internal surfaces. Flange faces shall be protected by wooden or plastic dummy flanges.
21. Fabrication tolerances for vessel shall be in accordance with requirement of ASME code.
22. All items shall be clearly match marked against vessel drawings to facilitate erection.
23. The elevation of equipment's nozzels should be specified as follows :
    I. For vertical vessels : from bottom T.L.
    II. For horizontal vessels : from Left T.L.
24. Vendor shall supply details of all welding connections and give general specification of used materials.
25. Specified accessories and attachments shall be supplied by vendor.
26. Gasket shall be spiral wound type, graphite filled with inner and outer ring S.S 316.
27. Deleted
28. deleted
29. Equipment packaging, preparation for shipment and delivery shall be in accordance with the project Packing, Marking, Transportation Procedure Doc. No. "BK-GNRAL-PEDCO-000-QC-PR-0045".

شماره پیمان:	پروژه	بسته کاری	صادرکننده	تسهیلات	رشته	نوع مدرک	سریال	نسخه	شماره صفحه: ۴ از ۸
۰۵۳ - ۰۷۳ - ۹۱۸۴	BK	GCS	PEDCO	120	ME	DT	0006	D03	

General Notes (Cont'd) D03

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30. For standard detail of Earth lug execution refer to the Project "Standard Detail Drawing For Pressure Vessels and Heat Exchangers Doc. No. BK-GNRAL-PEDCO-000-ME-DW-0001".

31. Elliptical heads shall be Ultrasonic Tested for lamination after forming.

32. The projection of equipment's nozzles should be considered as per 'Standard Detail Drawing For Pressure Vessels and Heat Exchangers', Doc. No. BK-GNRAL-PEDCO-000-ME-DW-0001". Projection of Horizontal & Vertical nozzles is from tengent line and centerline respectively.

33. deleted

34. All reinforcement pads shall have 1/4" (6mm) tell-tale hole and 1/8" (3mm) vent hole as per Standard Detail Drawing For Pressure Vessels and Heat Exchangers', Doc. No. BK-GNRAL-PEDCO-000-ME-DW-0001".

35. Minimum requirement for pre-commissioning, commissioning, start up and two years spare parts operation spare parts shall be in accordance with document E&C-QC-SP-1.

36. Two M12 earthing lugs shall be provided on vessel support. Material of earthing lugs shall be S.S. 316.

37. DEMISTER specification will be finilized latter.

38. Welded carbon and carbon manganess steels for vessel shall comply with the following :
Carbon content shall not exceed 0.23%.
Based on the ladel analysis, below equation shall be satisfied.
Ceq. = C+MN/6+(Cr+Mo+V)/5+(Cu+Ni)/15 < 0.42 %

39. All carbon steel material shall be fully killed, fine grain treated and supplied in the normalized condition.

40. The material shall be in compliance with NACE MR0175/ISO15156 and Specification for Material Requirements in Sour Service, Doc.No. BK-GNRAL-PEDCO-000-PI-SP-0008.

41. Lifting Lugs / trunnions shall be provided to facilitate a single point lift. If a single point lift cannot be achieved without the use of a lifting beam, then VENDOR shall provide a suitable, certified, lifting beam.

42. Design pressure specified is at top of vessels. VENDOR design shell include static head for vessels flooded with specific gravity of the handled liquid.

43. VENDOR is to maximize shop fabrication based on the following transportation limits:
    - Maximum weight: 96 tonnes
    - Maximum load per axle: 12 tonnes
    - Maximum length: 50.0 m
    - Maximum width: 5.0 m
    - Maximum height: 5.2 m

    For items with dimensions and weights greater than the road capacity specified above, VENDOR may be required to split the package into several components.

44. All external attachments directly welded to the pressure part shall be the same material as vessel grade.

D03 45. VENDOR to advise (VTA) internal for inlet nozzle.

Mech. Data Sheet For Discharge Gas K.O. Drum (V-2103) / sheet 1 of 4

DATA SHEET

Description	:	*Discharge Gas K.O. Drum*		
Tag No.	:	*V-2103*	Quantity :	*1 Set*
Type	:	*Pressure Vessel*		

Process Design Data

Contents	*Wet Sour HC (CO2, H2S)*	Corrosive / Erosive	*Yes*
Operating Temp. (°C)	*60*	Liquid Flow (kg/h)	*-*
Operating Press. (barg)	*54.1*	Vap. Molec. Weight (kg/kmol)	*-*
Gas Flow (kg/h)	*-*	Liquid Sp. Gravity	*0.055*
Liquid Viscosity (cP)	*-*	Lethal:	*No*

Mechanical Design Data

Design Temp. (°C)	*130*	Vessel Orientation	*Vertical*
Design Press. (barg)	*62*	HHLL (mm)	*1100*
Test Press. (barg)	*Per Code & Spec. Requirements*	Nor. Liquid Vol. (m^3)	*-*
Internal Vacuum (barg)	*F.V.*	In. Dia. Of Boots (mm)	*N/A*
In. Dia. of Shell (mm)	*900*	Boot Length (mm)	*N/A*
Tan/Tan Dim. (mm)	*3000*	Boot Head Type	*N.A*
Vessel Head Type	*2:1 Elliptical (Note 31)*	Corr. Allowance (mm)	*-*
Shell Wall Thk. (mm)	*	Joint Efficiency	*1 (Shell)/ 1 (Head)/ 0.7 (Skirt)*
Head Wall Thk. (mm)	*(After Forming)**	Ambient Temp. (°C)	*-*
Seismic Design	*Calss D, Code: ASCE 7-10*	MDMT (°C)	*5*
Wind Design	*Speed: 120 Km/hr (Max.), Code: ASCE 7-10*	Insulation Required	*Personal Protection*

Materials

Code	*ASME II / ASTM*	Internal Welded Supports	*S.S.*
Shell	*A 516 70N + 3mm Clad 316L*	Nozzle Necks	*A 106 Gr.B N + 3mm Clad 316L*
Heads	*A 516 70N + 3mm Clad 316L*	Pipes	*A 106 Gr.B N + 3mm Clad 316L*
Lining/ Cladding	*-/S.S. 316L (3 mm)*	Plates	*A 516 70N*
Skirt (Top/ Bottom)	*A 516 Gr. 70N*	Forgings	*A 105N + 3mm Clad 316L*
Wear Plate	*A 516 70N*	Flanges	*A 105N + 3mm Clad 316L*
Stiffening Rings	*A 516 70N*	Fittings	*A 234 Gr. WPB*
Gaskets	*Note 26*	Welded Internals	*S.S.*
Lifting Lugs	*A 516 Gr.70N / A 283 Gr. C*	External Bolts / Nuts	*A 193 Gr. B7 / A 194 Gr. 2H (Note 11)*
Reinforcing Pads	*A 516 70N*	Internal Bolts / Nuts	*S.S. (Note 11)*
Ladder & Platform	*C.S.*	Insulation	*-*
Gratings	*Hot Dip Galvanized C.S.*	Name Plate	*S.S. 316*
External Welded Clips	*A 516 Gr.70N*		

REFERENCE STANDARDS & DOCUMENTS

Mechanical Design Code	*ASME Sec VIII Div 1, IPS-G-ME-150*
Specification for Pressure Vessels	*BK-GNRAL-PEDCO-000-ME-SP-0001*
Process Basis of Design	*BK-GNRAL-PEDCO-000-PR-DB-0001*
Piping & Instrument Diagram (P&ID)	*BK-GCS-PEDCO-120-PR-PI-0012*
Specification for Painting	*BK-GNRAL-PEDCO-000-PI-SP-0006*
Specification for Insulation	*BK-GNRAL-PEDCO-000-PI-SP-0019*
Specification For Material Requirements in Sour service	*BK-GNRAL-PEDCO-000-PI-SP-0008 (Note 40)*

Fabrication and Inspection Requirements

Inspection Authority	*TPI & Client*		
Material Certification	*In Accordance with BS EN 10204:2004, Type 3.1, Minimum for Pressure Containing and Attachments*		
Hydro Test Medium	*Water*	Hydro Test Procedure	*Yes;Per Code & Spec. Requirements*
Post Weld Heat Treatment	*No*	PT	*100%*
MT	*100 % on Lifting Lug Fillet Welds*	UT	*Yes;Per Code & Spec. Requirements*
RT	*100 % On T-Joints and Head Joints Butt-Welds,*		
	Spot On Shell Longitudinal and Circumferential Joints Butt-Welds,		
	100 % On Nozzle Neck to Flange & Fabricated Nozzle Neck Longitudinal Butt-Welds,		
RT Report	*Yes; Per Code & Spec. Requir.*	PT Report	*Yes;Per Code & Spec. Requirements*
MT Report	*Yes; Per Code & Spec. Requir.*	UT Report	*Yes;Per Code & Spec. Requirements*
Fabrication Quality Control Plan (With Offer)		*Yes*	
Welding Procedure Review / Approval		*Yes*	
Surface Preparation & Coating		*Specification for Painting Doc. No.BK-GNRAL-PEDCO-000-PI-SP-0006*	
		Specification for Linning Doc. No.BK-GNRAL-PEDCO-000-PI-SP-0007	

Mech. Data Sheet For Discharge Gas K.O. Drum (V-2103) / sheet 2 of 4

ACCESSORIES , NOZZLES LIST & LOADS @ BASE

Accessories & Attachments *(Note 25)*

Supporting Saddles	No	Name Plate Bracket	Yes
Access Ladder & Platform *(Note 4)*	Yes	Name Plate	Yes
Insulation Support	Yes	Earthing Lug *(Note 30)*	Yes
Insulation	Yes	Tailing Lug	Yes
Insulation Cover	Yes	Cathodic Protection (Sacrificial Anodes)	No
Fireproofing Support	No	Anchor Bolts	No
Lifting Lugs	Yes	Instrumentations	No
Internal/ External Clips	Yes	Skid	No
Tamplate	Yes	Support Clips	Yes
Boot	No	Vortex Breaker	Yes
Davit for Manhole	Yes	Rung & Grip	No
Internal Lining (By Painting)	Yes	Heating Coil	No
Internal Demister Pad *(Note 37)*	Yes		

Nozzles List *(Note 1)* D03

Mark	Qty.	Description	Pipe			Flange			Proj. (mm)	Reinforcement		Remarks
			Size	Thk.	Sch.	Type	Rate.	Face	*(Note 32)*	Thk.	O.D.	
A	1	*Inlet*	*6"*	*		*FWN*	*#600*	*RF*	*750**			*Integral Type*
B1	1	*Gas Outlet*	*6"*	*		*FWN*	*#600*	*RF*	*420**			*Integral Type*
B2	1	*Liquid Outlet*	*2"*	-		*LWN*	*#600*	*RF*	*350**			
V	1	*Vent*	*2"*	-		*LWN*	*#600*	*RF*	*350**			
M	1	*Manhole*	*20"*	*		*FWN*	*#600*	*RF*	*750**			*Integral Type*
S	1	*Utility Connection*	*2"*	-		*LWN*	*#600*	*RF*	*680**			
Deleted												
L 1,2	2	*Stand Pipe*	*3"*	*		*FWN*	*#600*	*RF*	*700**			*Integral Type*
L 3,4	2	*Level Transmitter*	*2"*	-		*LWN*	*#600*	*RF*	*680**			
PSV	1	*Pressure Safety Valve*	*3"*	-		*LWN*	*#600*	*RF*	*680**			
P1	1	*Pressure gauge*	2"	-		*LWN*	*#600*	*RF*	*680**			
T	1	*Temperature gauge*	2"	-		*LWN*	*#600*	*RF*	*680**			
P 2,3	2	*PDIT*	2"	-		*LWN*	*#600*	*RF*	*680**			

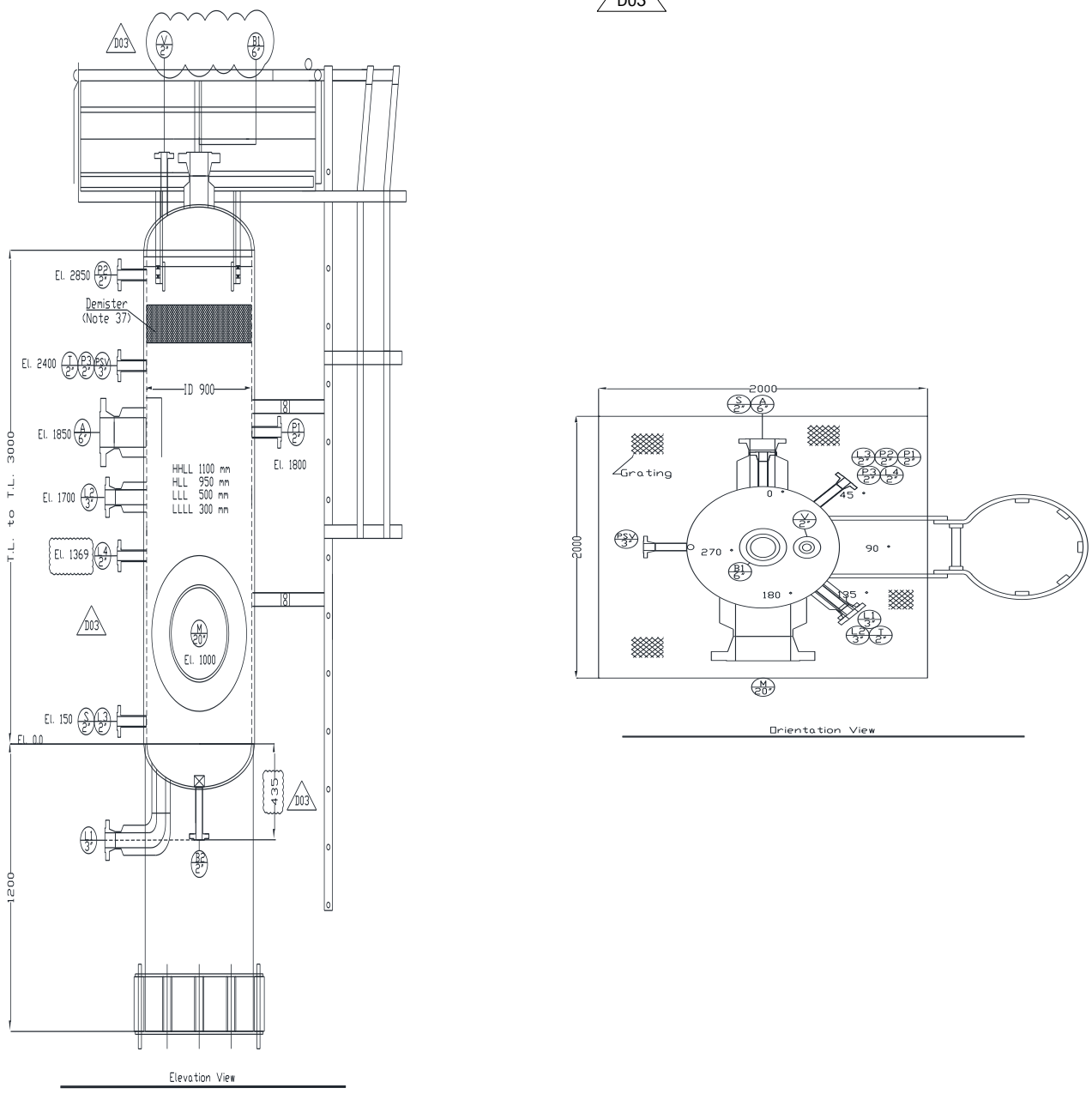
D03

Wind and Seismic Loads at Base * *Note(9)*

Load Condition / Load Type	Empty Condition			Operating Condition			Testing Condition		
	Max. Shear @ Base (Kg)	Max. Moment @ Base (Kg.m)	Weight (Kg)	Max. Shear @ Base (Kg)	Max. Moment @ Base (Kg.m)	Weight (Kg)	Max. Shear @ Base (Kg)	Max. Moment @ Base (Kg.m)	Weight (Kg)
WIND									
SEISMIC									

Mech. Data Sheets For Discharge Gas K.O. Drum (V-2103) / Sheet 3 of 4

Sketch



Note: All Dimensions are in mm except otherwise noted.

Mech. Data Sheet For Discharge gas K.O. Drum (V-2103) / sheet 4 of 4

WEIGHT

WEIGHT CONTROL DATA SHEET SI UNIT *	**1/1**

Service	:	*Discharge Gas K.O. Drum*	Location	:	*Bushehr (Binak Oilfield)*
Type	:		Quotation No.	:	
No. trains	:		Serial No.	:	
No. stages	:				
Supplier	:				
Manufacturer	:				
Model	:				

Note: Information to be completed by equipment vendor.

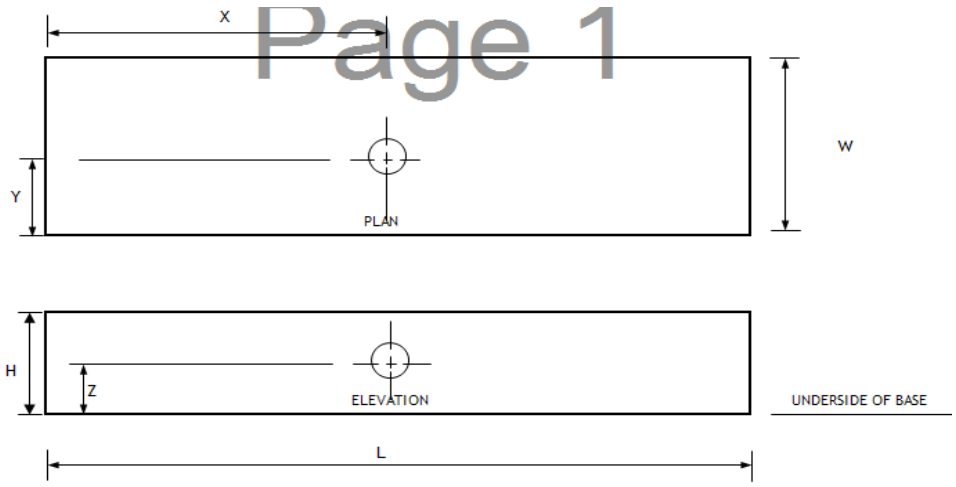
Total weight (kg) *

Fabrication	Erection	Operation	Hydrostatic Test	Removable internal	Ladder & Platform

WEIGHT AND C OF G DATA REQUIRED *

CONDITION	WEIGHT ACCURACY %	WEIGHT (kg)	CENTER OF GRAVITY (mm)		
			X	Y	Z
Dry					

SKETCH



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NOTES

1) All lifting points to be load tested and certified.
2) Any spreader beam to be load tested and certified.
3) Lifting / rigging plan for skid mounted equipment to be provided by the Vendor.