Amman Strategic Reserve Terminal for Petroleum Products

OMJ DOCUMENT		ILF COMMENT SHEET	
No.	OMJ-DAT-SRT-ME-003	**No.**	SRT-OMJ-DCS-0471-A
Rev.	1	**Date**	22.05.2015
Status	☒	A: Approved	(APP)
	☐	B: Approved as noted	(AAN)
	☐	D: For Information	(INF)

Rev.	Date	Issue Purpose / Description	Prepared	Checked	Approved	Accepted
2	08/06/2015	Comments from client incorporated	CLOB	MAPM	PBB	IGC
1	20/04/2015	Comments from client incorporated	CLOB	MAPM	PBB	IGC
0	17/12/2014	Approved for Construction	CLOB	MAPM	PBB	IGC
B	03/10/2014	Issued for Review	CLOB	MAPM	PBB	IGC

Client Ministry Of Energy & Mineral Resources	THE HASHEMITE KINGDOM OF JORDAN MINISTRY OF ENERGY AND MINERAL RESOURCES
Owner's Engineer ILF CONSULTING ENGINEERS	Document Title **SPHERES-LPG PRESSURE VESSELS SRT-V-25-01/02/03/04/05-PRELIMINARY DATA SHEET**

Contractor	Contractor's Doc. No.	Official Document Number	Rev. Code
OHL Industrial OHLI - MID Joint Venture for ASTPP Project - Amman, Jordan	**P40341-EE-111-ME-HE-00G001**	**OMJ-DAT-SRT-ME-0003**	**2**

Employer:	EPCC Contractor:		Consultant:
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PLANT LOCATION	AMMAN - JORDAN	**QUANTITY**	5
ITEM N°	SRT-V-25-01 / 02 / 03 / 04 / 05	**UNIT**	-
SERVICE	LPG storage	**P&ID Nº**	OMJ-DIA-SRT-PR-0033 to 0037

Codes, Regulations and Specifications	
DESIGN CODE	ASME VIII DIV 2 ED 2013
GENERAL SPECIFICATION	OMJ-SPC-SRT-ME-001

Fluid Process Data	**Units**	**Data**	**REV**
FLUID NAME	-	LPG	
FLUID PHASE	-	LIQUID	
SPECIFIC GRAVITY AT 15°C	-	0,49-0,581	
DENSITY AT OPERATING TEMPERATURE	kg/m3	490-581	
CORROSIVE / EROSIVE DUE TO	-	CAUSTIC WATER WITH H2S CONTENT (Note 1)	
HAZARDOUS DUE TO	-		
Operating Conditions			
OPERATING TEMPERATURE	ºC	38	0
OPERATING PRESSURE	barg	8,2	0
Design Conditions			
DESIGN TEMPERATURE (MAX / MIN)	ºC	60 / -20	0
DESIGN PRESSURE (INT / EXT)	barg	13,7 / FV	0
Vessel Characteristics			
EQUIPMENT LOCATION (Indoor/Outdoor)		Outdoor. Aboveground	
TYPE OF OPERATION		Continuous	
VESSEL APPLICATION		Storage / Pressure Vessel	
VESSEL ORIENTATION		Sphere	
VESSEL SERVICE		LPG	0
INTERNAL DIAMETER	m	19,3	
NET VOLUME	m3	3387	0
GROSS VOLUMNE	m3	3764	0
LLLL	% Vol	10 % (Heigh LLLL= 3,779 Meters)	
HH LL	% Vol	90 % (Heihg HHLL= 15,52 meters)	
LLL	-	-	0
HLL	-	-	0
POT DIAMETER	m	N/A	
HOLD UP TIME		-	
INLET NOZZLE OR DISTRIBUTOR TYPE		Notes 2, 6 and 7	0
MATERIAL		SA 516 Gr70 N (See Note 3)	
CORROSION ALLOWANCE / FORMING ALLOWANCE	mm	1,5 / 0.5	
INSULATION TYPE		NONE	
HEAT TRACED (ELECTRICAL / STEAM / HOT OIL)		NONE	
LINING (INTERNAL)	mm	See note 16	

GENERAL NOTES:

a) Thicknesses : Sphere divided on 4 sectors (See sketch page 3). PARESA to check sectors and thicknesses

b) Design Wind Velocity : 160 Km/h (50-yr. wind speed - 3-sec. Gust); I=1.15; qs=1.2 kPa, according to UBC-97 Div III

c) Seismic Design to be in accordance with Jordanian Seismic Code; zone 2A, seismic acceleration Z=0.15g;soil profile SC;I=1.5;R=2.2; Ca=0.18;Cv=0-.25

d) Estimated empty weight: 525 Tn for thicknesses given on note 3. PARESA to check thicknesses taking into account internal pressure / full vacuum / wind loads and seismic loads

e) Safety factor shall be according to the code for materials, design, manufacturing and inspection

f) Inspection: 100% ultrasonic PA or TOFD method. 100 % WFMT . 100% Hardness test.

g) Following accesories are required: Satirways, platform and handrails; earthings clips; pipe support clips for water spray system and for process pipe

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Accessories and Specific Requirements Scope				**REV**
SAFETY / RELIEF DEVICE		By Others (design by PARESA)	Note 14	
TEMPERATURE SENSOR (ATG SYSTEM)		Instrument by Others. Thermowel by PARESA	Note 11	
LEVEL TRANSMITTER (ATG SYSTEM)		Instrument by Others. Still pipe by PARESA	Note 10	
PRESSURE TRANSMITTER (ATG SYSTEM)		By Others		
LEVEL SWITCHES		By Others		
PRESSURE SWITCHES		By Others		
THERMOMETER		By Others		
VACUUM BREAKER		N/A		
IMPINGEMENT PLATE		N/A		
SPARGER		By PARESA	Note 4	
MIST ELIMINATOR TYPE:	MESH PAD	N/A		
	VANE PAD	N/A		
	MULTICYCLONE BUNDLE	N/A		
	COALESCING PAD	N/A		
VORTEX BREAKER		By PARESA		

SHELL NOZZLES AND CONNECTIONS

Service	**Item**	**Quantity**	**Size**	**Rating / Face**	
LPG inlet	**N1**	1	10"	300 # / RF	Note 6
LPG inlet	**N2**	1	4"	300 # / RF	Note 7
LPG outlet	**N3**	1	12"	300 # / RF	Note 8
Change over valve	**N4**	1	8" (by PARESA)	300 # / RF	Note 5 and 9
Level transmitter	**N5**	1	Nozzle 6" / Pipe 4"	300 # / RF	Note 10
Low Low level switch	**N6 A/B**	2	3"	300 # / RF	
High high level switch	**N7 A/B/C**	3	3"	300 # / RF	
Vapour balancing line	**N8**	1	4"	300 # / RF	
Nitrogen	**N9A/B**	2	2"	300 # / RF	
Multispot temperature sensor	**N10**	1	Nozzle 3" / Pipe 2"	300 # / RF	Note 11
Pressure transmitter	**N11A/B**	2	2"	300 # / RF	
Water draw off	**N12**	1	4"	300 # / RF	Note 15
Safety relief device	**N13**	1	4" (by PARESA)	300 # / RF	
Pressure switch	**N 14 A/B**	2	2"	300 # / RF	
Thermometer	**N15**	1	2"	300 # / RF	
Relief for Water draw off	**N16**	1	2"	300 # / RF	
Vent	**N17**	1	2"	300 # / RF	
Manhole	**M1**	1	30"	300 # / RF	Note 12

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NOTES

Note 1. Water phase conditions: Caustic soda <3% vol; PH >9; Cyanides 0.01 ppm; H2S content in water <10 ppm

Note 2. All nozzles to be built-up using ASME 300# RFWN flanges and forged self-reinforced according to Code Table 4.2.13 details 2 to 5.
Nozzle and flange materials to be SA 350 LF2 Class 1. See OMJ-SPC-SRT-ME-001 LPG Press Vessels Spec, para 4.2.
Flanges for over 24" Nominal size shall be as per ASME B16.47 Series A.
Design inlet flow-rate 270 m3/h; Design outlet flow-rate 320 m3/h

Note 3. Shell thicknesses for material SA 516 GR 70N are : 43 / 45 / 46 /46 ; Joint efficiency=1.0 ; PWHT:YES
Materials, Fabrication and Testing shall comply with the requirements shown on OMJ-SPC-SRT-ME-001 LPG Pressure Vessels.
Material Certificates shall be in accordance to EN 10204 type 3.2 for material, test and inspection reports
Material for legs: column top side SA 516 Gr 70 N, column bottom side API 5L Gr 52, base plate S275 JR
Material for anchor bolts: S275 JR

Note 4.Sparger distributor shall be provided in conection with LPG liquid inlet nozzle.

Note 5. Two Pressure relief device (1 run+1 spare) + one three ways valve shall be provide by Others

Note 6. LPG filling (inlet fitted with mixing nozzle and strainer plate)

Note 7. LPG filling from circulation (with LPG mixing nozzle Y-type)

Note 8. Lowering fitted wit removable internal spigot piece

Note 9. For 3-way / changeover valve for safety relief device

Note 10: For a radar level gauge system. Nozzle 6" with an internal SS external flanged still pipe of 4" till bottom, and attached on bottom
Still pipe to be supplied by PARESA, according to OMJ construction recomendations

Note 11: Temperature sensor; thermowell required attached on sphere bottom
Thermowell to be supplied by PARESA, according to OMJ construction recomendations

Note 12: Access at top of sphere with davit arm

Note 14: Discharge of PSV on atmosphere at safe place.

Note 15: Water draw-off shall be in accordance with API 2510A Fig 2

Note 16: See spec. OMJ-SPC-SRT-ME-001 para. 8

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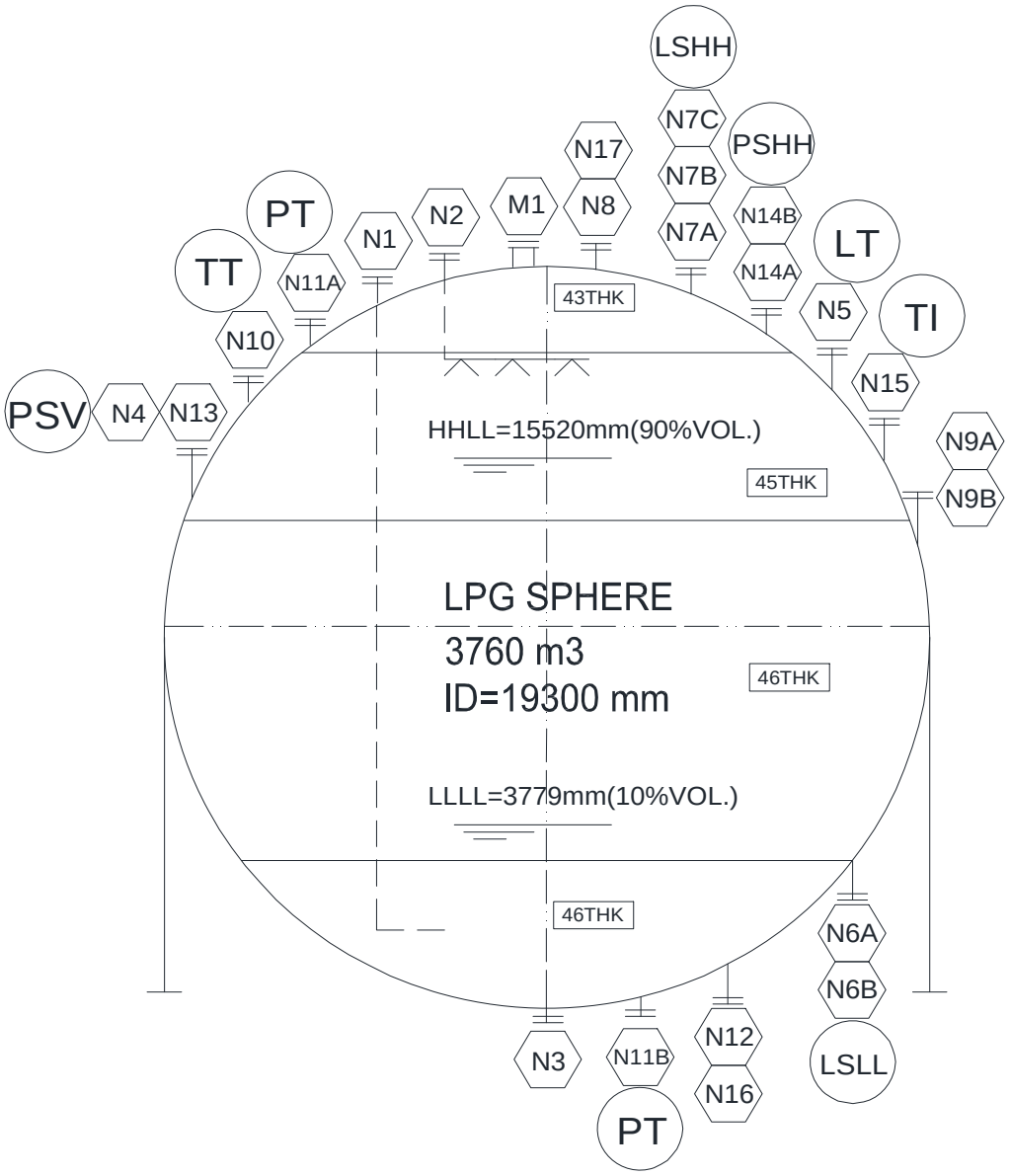

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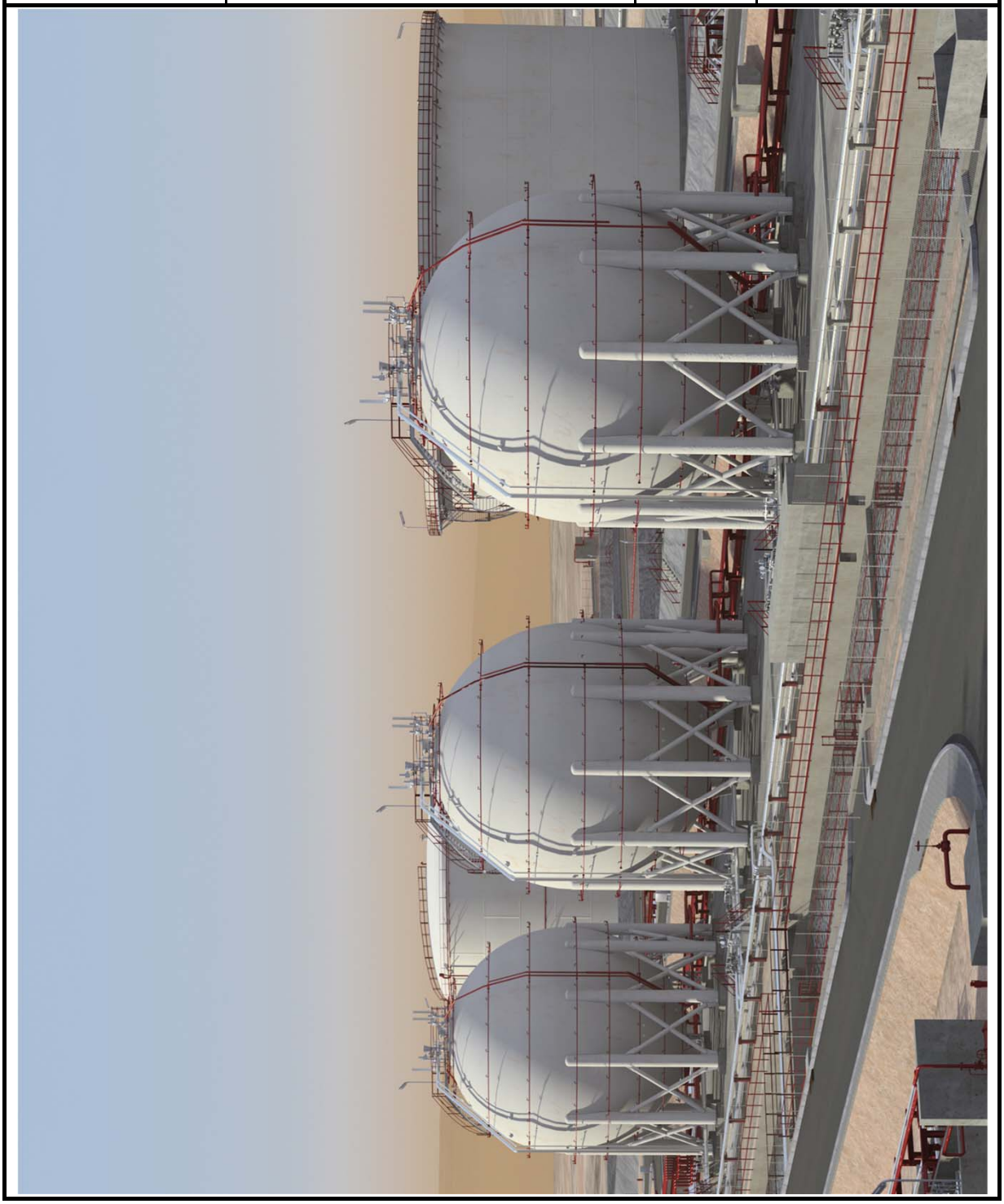

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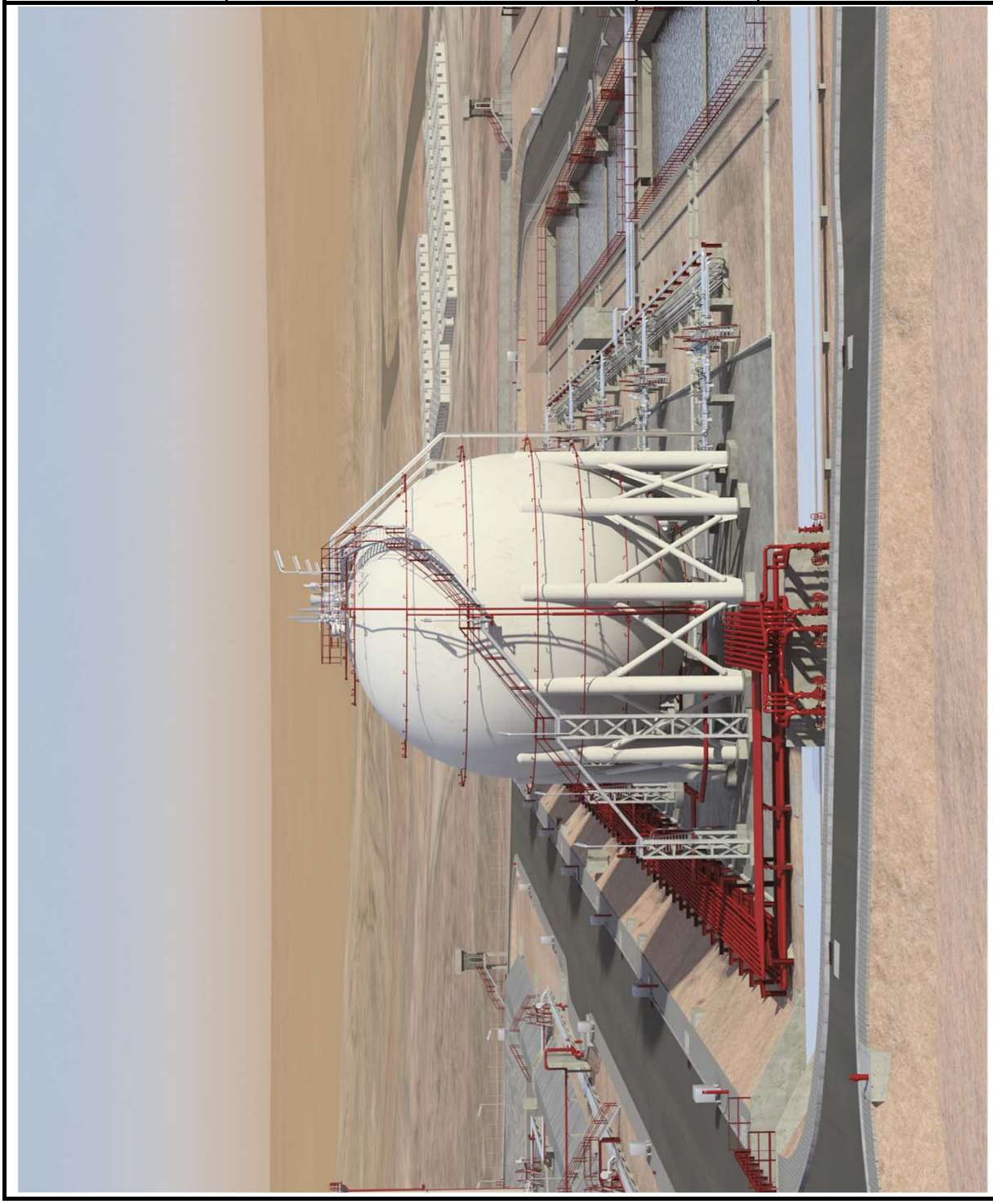

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