TRANSNET

NMPP Alliance

Transnet Limited

New Multi Product Pipeline (NMPP) Project

50-A09 – ULSD ACCUMULATOR DATASHEET

2684358-U-TM1-ME-DS-084

Revision 5 – Issued for Construction

TRANSNET

NMPP Alliance

Transnet Limited

New Multi Product Pipeline (NMPP) Project

50-A09 – ULSD ACCUMULATOR DATASHEET

February 2011

NMPP Alliance Arup Worley Parsons JV

Building 16, Ground Floor,

Harrowdene Business Park, Woodmead,

Sandton, Gauteng, South Africa

Tel +27 11 287 9700 Fax +27 11 258 8846

www.arup.com

Job number 2684358

Job title	New Multi Product Pipeline (NMPP) Project	Job number 2684358
Document title	50-A09 – ULSD ACCUMULATOR DATASHEET	File reference
Document ref	2684358-U-TM1-ME-DS-084	

Revision	Date				
A	14 April 08	Revision Description	Issued for Enquiry		
			Prepared by	Checked by	Approved by
		Name	C Wray	M Hanrahan	F Du-Plessis
		Signature	CW	MH	FdP
B	16 May 08	Filename			
		Description	Issued for Enquiry		
			Prepared by	Checked by	Approved by
		Name	H Montgomery	M Hanrahan	F Du-Plessis
		Signature	HM	MH	FdP
1	01 Nov 08	Filename			
		Description	Issued for Construction		
			Prepared by	Checked by	Approved by
		Name	H Montgomery	D Admony	F Du-Plessis
		Signature	HM	DA	FdP
2	05 Mar. 09	Filename			
		Revision Description	Issued for Tender		
			Prepared by	Checked by	Approved by
		Name	D Govender	D Admony	F Du-Plessis
		Signature			

Issue Document Verification with Document ✓

Job title	New Multi Product Pipeline (NMPP) Project		Job number 2684358
Document title	50-A09 – ULSD ACCUMULATOR DATASHEET		File reference
Document ref	2684358-U-TM1-ME-DS-084		

Revision	Date				
3	22/10/20009	Filename			
		Revision Description	Issued for Order		
			Prepared by	Checked by	Approved by
		Name	SVT	HM	FDP
		Signature			
4	7/4/10	Filename			
		Description	Approved		
			Prepared by	Checked by	Approved by
		Name	SVT	HM	FDP
		Signature			
5	15/02/11	Filename			
		Description	Issued for Construction		
			Prepared by	Checked by	Approved by
		Name	RD	HM	AG
		Signature			
		Filename			
		Revision Description			
			Prepared by	Checked by	Approved by
		Name			
		Signature			

Issue Document Verification with Document ✓

TRANSNET

NMPP Alliance

Transnet Limited

New Multi Product Pipeline (NMPP) Project

50-A09 – ULSD ACCUMULATOR DATASHEET

2684358-U-TM1-ME-DS-084

Revision 5 – Issued for Construction

Sign-Off

Organisation	Name	Signature	Date
NMPP Alliance Approved	S. PATERSON MECH ENG.		18-FEB-'11
	S DALZIEL		21/02/11
Transnet Capital Projects Accepted	JACK DAVIES		2011/03/03

Revision Description Sheet

Rev.	Paragraph	Revision Description
A		Issued for Enquiry
B		Issued for Enquiry
1		Issued for Construction
2		Issued for Tender
3		Issued for Order
4		Approved (Updated for new TM1 layout – Tag change from 50-A07 to 50-A09)
5		Issued for Construction: Refer to Employer's Instruction 210

TRANSNET

NMPP Alliance

Uhde

INDEX OF REFERENCE SHEETS & REVISIONS

Technical Specifications

Item Number : **50-A09**

Item Description : **ULSD ACCUMULATOR**

PROJECT	NMPP
NMPP Document No.	Rev
2684358-U-TM1-ME-DS-084	5
Client Document No.	Rev
2684358-U-TM1-ME-DS-084	5

1. Status of Revision

Rev No.	Date	Prepared By	Revised Sheet	Revision	Approvals (Signatures)	
					Checked By	Approved By
A	14.04.08	C Wray	All	Issued for Enquiry	MH	FdP
B	16-May-08	H Montgomery	1-7 & 9	Issued for Enquiry	MH	FdP
1	01-Nov-08	H Montgomery	All	Issued for Construction	DA	FdP
2	04-Mar-09	D Govender	All	Issued for Tender	DA	FdP
3	16-Oct-09	SVT	1...5,7-9	Issued for Order	HM	FdP
4	07/04/2010	SVT	All	Approved	HM	FdP
5	15-Feb-11	R Davies	All	Issued for Construction		

2. Reference Sheets

Page No.	Size	Description	Latest Rev.
1	A4	COVER SHEET	5
2	A4	API STANDARD 650 STORAGE TANK DATA SHEET - Sht 1	5
3	A4	API STANDARD 650 STORAGE TANK DATA SHEET - Sht 2	5
4	A4	NOZZLE INDEX AND ORIENTATION	5
5	A4	SKETCH 1 - GENERAL LAYOUT	5
6	A4	SKETCH 2 - MISCELLANEOUS DETAILS	5
7	A4	**GENERAL NOTES**	5
8	A4	INDEX OF APPLICABLE CODES AND SPECIFICATIONS (Sheet 1)	5
9	A4	INDEX OF APPLICABLE CODES AND SPECIFICATIONS (Sheet 2)	5
10	A4	NOZZLE LOAD TABLE	5
		ATTACHMENTS	
		2684358-KT-TM1-FP-DS-008 Rev 00 E&I Instrument Specification - Temperature Switch	

NMPP Alliance | Uhde | CLIENT: TRANSNET | Page 2 | NMPP DOCUMENT No: 2684358-U-TM1-ME-DS-084

Equipment Data Sheet

DESIGN DATA SHEET FOR TANKS

Tank No. **50-A09**

Equipment Description: **ULSD ACCUMULATOR** | Ref. P&ID: **2684358-U-TM1-PR-PD-120**

	Rev	Info					Rev	Info			
1			Customer / User		Transnet	62			2640		
2			Erection Site: Name of Plant / Location		Coastal Terminal	63	05		Max fill rate	m³/h	2640
3			Quantity required		1	64			Max withdrawal rate	m³/h	3000
4			Design code		API 650	65			Gas evolution rate	m³/h	0
5	05		Inspection by		NMPP Alliance / AIA	66	05		Breathing gas rate In/Out	Nm³/h	4829 / 4004
6	05		Wind pressure		2684358-U-A00-ME-SP-007	67			Max fill level oper. Cond	mm	21 800
7			MDMT	°C	0	68			Heat radiation	kJ/h	na
8			Atmospheric pressure	kPa a	101.3	69			Rad. Heat absorption	kJ/h	na
9			Design temperature	°C	65	70			Derusting Outer Shell		Yes
10	05		Design pressure	kPa g	ATM+FW (Note 5)	71	05		Pickling / Passivating		Yes (Note 10)
11	05		Maximum Operating temperature	°C	40 (Note 7)	72	05		Painting		Yes (Note 11)
12			Operating pressure	kPa g	Atmospheric	73			Insulation hot	mm	None
13	05		Vapour Pressure	kPa a	<0.1	74	05		Venting		Notes 6, 9
14			Test pressure	kPa g	Per Code & Specation	75			Lightning Protection		Earthed
15			Roof Uniform Live Load	kN/m²	1	76					
16			Corrosion allowance	mm	Note 1	77					
17	05		Joint efficiency		Refer to Code Section 8	78			Delivery weight	kg	VTA
18			Radiographic examination		Per Code & Spec	79			Filled weight (water)	kg	VTA
19			Ultrasonic Test		Where RT is not possible	80			Filled weight (proc. fluid)	kg	VTA
20			Vacuum Box Test		Yes (Bottom Only)	81	NOTES:				
21			Surface treatment		2684358-U-A00-ME-SP-009	82	1) Bottom and first 1000 mm of shell: 3.0 mm				
22			Heat treatment		To Code	83	Remaining shell, roof nozzles: 1.5 mm				
23			Test Fluid		Water	84	2) Geodesic type				
24	05		Maximum Capacity (API 650 5.2.6 Figure 5-4)		22 393	85					
25			Net Working Capacity	m³	20 000	86	3) TANK SIZE :				
26			Overfill protection (API 2350)	mm	22 000	87	Shell height (m) : Contractor to advise (X)				
27	05		Process fluid		ULSD(Note 8)	88	DIAMETER : 36 m				
28	05		Density	kg/m³	858	89					
29			Lethal / Toxic / Flammable		No / No / Yes	90	4) LEVELS:				
30			Corrosive / Concentration / pH		No / n.a / n.a	91	LLLL = 1 480 mm				
31	05		Test Fluid		Water	92	LLL = 1 750 mm				
32			Part		Material	93	NL = 21 400 mm				
33			Shell		SABS 1431 Gr. 300 WC	94	HLL = 21 600 mm				
34			Floor		SABS 1431 Gr. 300 WC	95	HHLL = 21 800 mm				
35			Roof Plates		Aluminium	96	5) FW = Water fill to underside of overfill slot				
36			Internals		Carbon Steel	97	6) Venting rate for fire case is 43633 Nm³/h of air				
37			Inner Manway Necks		N/A	98	7) When storing petrol the storage temperature is 35°C				
38	05		Shell Nozzle Flgs	outside	SA-105 N (Note 10)	99	8) Possibility to change duty to Petrol in the future				
39	05			inside	SA-105 N (Note 10)	100	9) Venting during tank equalistion = 12205 Nm³/h				
40	05		Shell Nozzle Pipes	outside	SA-106 Gr.B (Note 10)	101	10) All internal piping attached to nozzles 3"NB & smaller				
41	05			inside	SA-106 Gr.B (Note 10)	102	to be ASTM A312 TP316L, flanges to be ASTM A182 F316L				
42						103	11) Refer to Additional Requirements on Page 3				
43						104					
44						105					
45						106	Shell Design Details:				
46			Bolts / Nuts	outside	SA 193-B7 / SA 194-2H	107					
47				inside	SA 193-B7 / SA 194-2H	108		X	Basic Standard 650		
48			Gaskets	outside	GRAPHITE ENCAPSULATED	109			Appendix A		
49				inside	GRAPHITE ENCAPSULATED	110		X	Appendix F		
50			Bottom Plates		SABS 1431 Gr. 300 WC	111					
51			Shell Pits / Reinf. Pits./Clips		SABS 1431 Gr. 300 WC	112	Tank Roof Design Details:				
52			Shell Canopy			113					
53			Manway Necks		SABS 1431 Gr. 300 WC	114		X	Basic Standard 650		
54			Floating roof		Aluminium	115			Appendix C (External Floating Roof)		
55			Dome (Note 2)		Aluminium	116		X	Appendix H (Internal Floating Roof)		
56	05		Fire Protection Piping - Cooling Water / Foam		SAF2205	117		X	Appendix G (Aluminium Dome)		
57						118					
58						119	Frangible Roof Joint:				
59						120			Yes		
60						121		X	No		
61						122					

X = Information required from Vendor

Rev	Date	Name	Check
5	15-Feb-11	R Davies	

Technical Specification — Uhde

Item: ULSD ACCUMULATOR

Item No.: 50-A09

GENERAL REQUIREMENTS
TANKS

Rev	GENERAL
	1) Stress analysis shall be performed by the manufacturer in accordance with design specifications.
	2) Nozzle necks shall be at least DN 50. They shall be reduced to the required nominal flange size if necessary, or use L.W.N. flanges for nozzles less than DN50.
	NOTE: Vendor TO COMPLETE ALL DETAIL BELOW FOR APPROVAL BY PROJECT MANAGER. Vendor TO SELECT SUITABLE PLATE SIZES AND TANK HEIGHT TO ENSURE WASTAGE OF MATERIAL IS KEPT TO A MINIMUM.
	Supplies shall include the following items:

Number of Shell Courses :	Course Number:	Plate Widths:	Plate Lengths:	Plate Thickness:
		m	m	m
		m	m	m
		m	m	m
		m	m	m
		m	m	m
		m	m	m
		m	m	m
		m	m	m
		m	m	m

Tank Bottom: Plate thickness: m

Slope: 1:60 towards center of tank (refer to sketch - Page 5)

Minimum Width and Thickness of Bottom Annular Plates (API 650; 3.5): m

Additional Requirements:

Rev								
	Intermediate Wind Girder (if required)			X	Yes			No
	Top Wind Girder for use of Walkway c/w handrailing			X	Yes			No
05	Paint Shell Exterior	2684358-U-A00-ME-SP-009	System 12	X	Yes			No
05	Paint Shell Interior	2684358-U-A00-ME-SP-009	System 3	X	Yes			No
05	Paint Bottom Underside	2684358-U-A00-ME-SP-009	System 13	X	Yes			No
05	Paint Bottom Interior	2684358-U-A00-ME-SP-009	System 3	X	Yes			No
05	Paint Structural Steel	2684358-U-A00-ME-SP-009	System 1	X	Yes			No
05	Tank internal lining/ coatings	2684358-U-A00-ME-SP-009	System 3	X	Yes			No
	Landings, maximum every 3m vertical			X	Yes			No
	Gauging platform			X	Yes			No
	Platform to centre vent			X	Yes			No

Appurtenances:

	Stairway Style (with intermediate platforms, refer to Spec. 2684358-U-A00-ME-SP-007)	X	Circular		Straight
	Platforms, steps, handrails, etc, to gain access to all Tank Instruments	X	Yes		No
	Walkway	X	Yes		No

Walkway width: m Refer to Spec. 2684358-U-A00-ME-SP-007

Walkway length: m Refer to Spec. 2684358-U-A00-ME-SP-007

Other / Notes:

Rev							
	10 % Spare Bolting	X	Yes		No
	5 Spare Gaskets	X	Yes		No
05	General and Emergency Venting (API 2000) Vendor to Confirm	X	Yes		No
05	Vacuum and Pressure Relief Valves		Yes	X	No
05	Flame Arrestor integral with Relief Valves		Yes	X	No
	Earthing Connections	X	Yes		No
05	Aluminator RC Internal Floating Roof - Pontoon type mounted on adjustable leg supports	X	Yes		

Rev.	Date	Name	Checked	Description
5	15-Feb-11	R Davies		Issued for Construction

Uhde	NMPP Alliance	10 2684358-U-TM1-ME-DS-084	Page: 4 Project: NMPP
ULSD ACCUMULATOR			Item no: 50-A09

NOZZLE INDEX AND ORIENTATION

Nozzle Symbol	Designation	NPS Note 1	Class	ASME Standard	Flange Type	Flange Facing	Pipe dimen. mm	Nozzle s / out mm	Dist. from ref.-level mm	Orientatn on Circ	Notes	Rev
A1	Inlet nozzle	16	150#	B16.5	WN	RF	tbc	tbc	tbc	tbc	Note 5	
A1 - Stub	Inlet nozzle Stub	2	150#	B16.5	WN	RF	tbc	tbc	tbc	tbc		
A2	Spillback and flush nozzle	16	150#	B16.5	WN	RF	tbc	tbc	tbc	tbc	Note 5	
A2 - Stub	Spillback and Flush Nozzle Stub	2	150#	B16.5	WN	RF	tbc	tbc	tbc	tbc		
A3	Flush tank return	2	150#	B16.5	WN	RF	tbc	tbc	tbc	tbc		
A4	Spare nozzle (Future Spillback)	16	150#	B16.5	WN	RF	tbc	tbc	tbc	tbc	Note 9	05
A5	Fixed foam chamber inlet nozzles	8	150#	B16.5	WN	RF	tbc	tbc	tbc	tbc	Note 7	
A6	Fixed foam chamber inlet nozzles	8	150#	B16.5	WN	RF	tbc	tbc	tbc	tbc	Note 7	
A7	Inlet nozzle	16	150#	B16.5	WN	RF	tbc	tbc	tbc	tbc	Note 5	
A7 - Stub	Inlet nozzle Stub	2	150#	B16.5	WN	RF	tbc	tbc	tbc	tbc		05
A8	Fixed foam chamber inlet nozzles	8	150#	B16.5	WN	RF	tbc	tbc	tbc	tbc	Note 7	05
B1	Outlet nozzle	24	150#	B16.5	WN	RF	tbc	tbc	tbc	tbc	Vortex breaker	
B2	Spare nozzle	24	150#	B16.5	WN	RF	tbc	tbc	tbc	tbc	Note 9	05
B3	Spare nozzle	24	150#	B16.5	WN	RF	tbc	tbc	tbc	tbc	Note 9	05
B4	~~Spare nozzle (Blanked)~~	~~24~~	~~150#~~	~~B16.5~~	~~WN~~	~~RF~~	~~tbc~~	~~tbc~~	~~tbc~~	~~tbc~~		05
D1	Tank drain nozzle	6	150#	B16.5	WN	RF	tbc	tbc	tbc	tbc		
D2	Tank flush nozzle	2	150#	B16.5	WN	RF	tbc	tbc	tbc	tbc	Note 8	
G1	Gauge hatch	8	150#	B16.5	WN	RF	tbc	tbc	tbc	tbc		
L1	Level transmitter	12	150#	B16.5	WN	RF	tbc	tbc	tbc	tbc		
L2	Level switch (LL/HH)	4	150#	B16.5	WN	RF	tbc	tbc	tbc	tbc		
L3	Mechanical guided float level indicator	VTA									Note 2	05
M1	Manway - Top Entry	24	VTA	VTA	VTA	VTA	VTA	VTA	VTA		Note 2	
M2	Manway - Side Entry	24	150#	B16.5	WN	RF	tbc	tbc	tbc	tbc	Note 4	
M3	Manway - Side Entry	24	150#	B16.5	WN	RF	tbc	tbc	tbc	tbc	Note 4	
M4	Manway - Side Entry	24	150#	B16.5	WN	RF	tbc	tbc	tbc	tbc	Note 4	
M5	Manway - IFR Entry	24							tbc		Note 2	05
P1	Pressure transmitter	3	150#	B16.5	WN	RF	tbc	tbc	tbc	tbc		
S1	Sample line nozzle	2	150#	B16.5	WN	RF	tbc	tbc	tbc	tbc		
S2	Sample line nozzle	2	150#	B16.5	WN	RF	tbc	tbc	tbc	tbc		
S3	Sample line nozzle	2	150#	B16.5	WN	RF	tbc	tbc	tbc	tbc		
T1	Temperature transmitter	2	150#	B16.5	WN	RF	tbc	tbc	tbc	tbc	Note 8	
V1	Centre vent	VTA							tbc		Note 2	
V2	Vacuum breaker / Bleeder vents	VTA							tbc		Note 6	
V3	Overflow slot/s	VTA							tbc		Note 3	
V4	Overflow slot/s	VTA							tbc		Note 3	
V5	Overflow slot/s	VTA							tbc		Note 3	
V6	Overflow slot/s	VTA							tbc		Note 3	

NOTES :

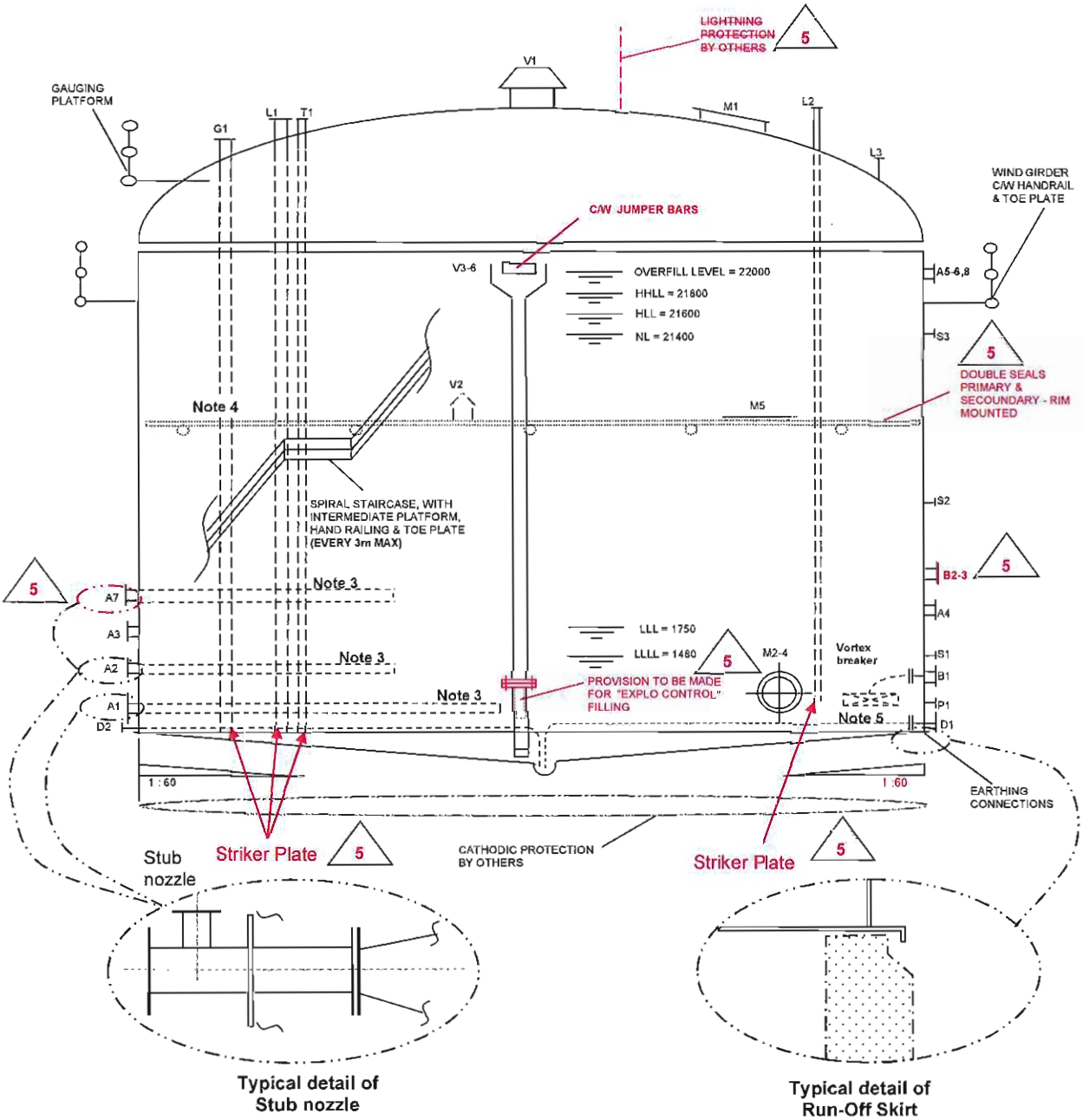
1) All nozzle sizes as per P&ID's
2) Vendor to confirm size
3) Vendor to size for maximum inflow
4) Vendor to confirm quantity of shell manholes and confirm that the floating blanket components can pass through a 24" nozzle.
5) Dispersion nozzle to be sized for maximum velocity of 1 m/s. Maximum rate for Spillback 1500m^3/h
6) Vendor to advise on size and quantity required, Vendor to size at least one for manway access.
7) Angus Fire Foam Top Pourer Set TPS 100 MK5 — 05
8) Nozzle material: 316L stainless steel. — 05
9) Blanked C/W stud bolts, hex nuts (2-off) & gaskets — 05

A) The above nozzle index shall be reproduced on the manufacturer's drawing.
B) Flange bolt holes to straddle vessel centerlines.
C) Reference level = inside of Vessel 0.00
D) The reference level must be shown on the drawing.
E) Orientation of nozzle on circumference: 0° = north for vertical vessels; 0° = top for horizontal vessels; indicate direction of view, degrees to be shown for clockwise reading.

Rev.	Date	Name	Checked	Description
5	15-Feb-11	R Davies		Issued for Construction

Sketch 1 - General Layout

50-A09



Typical detail of Stub nozzle

Typical detail of Run-Off Skirt

X = Information required from Vendor

Notes:

1) All Dimensions in mm.

2) Horizontal (Side Entry) Manways to be 120° apart 5

3) Vendor to provide dispersion nozzle to limit the liquid inlet velocity to 1 m/s

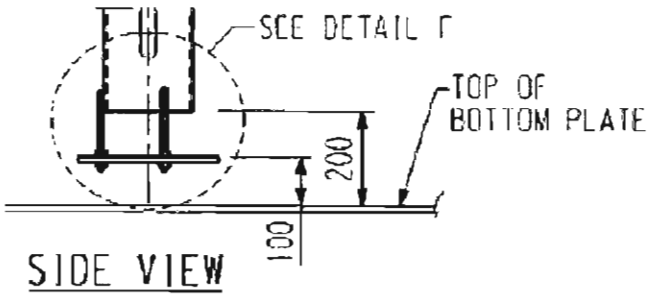
4) IFR to be earthed and connected to fixed roof with a static cable.

5) Vendor to supply vortex breaker (Short radius Elbow) 5

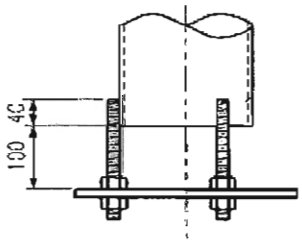
Rev.	Date	Name	Checked	Description
5	15-Feb-11	R Davies		Issued for Construction

Sketch 2 - General Layout

50-A09

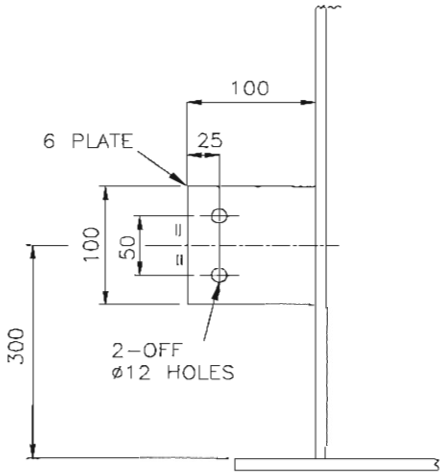


SIDE VIEW



DETAIL ~ F

TYPICAL STRIKER PLATE DETAIL



CATHODIC PROTECTION PLATE

Rev.	Date	Name	Checked	Description
5	15-Feb-11	R Davies		Issued for Construction

GENERAL NOTES

NMPP Alliance
Uhde

50-A09 Rev

1) All Dimensions in mm.

2) Manways to be 120° apart.

3) Vendor to provide size and quantity of automatic bleeder vents required on IFR — 05

4) Vendor to provide dispersion nozzle to limit the liquid inlet velocity to 1 m/s.

5) Vendor to confirm location, size and quantity of circulation vents (Overflow slot area not to considered in venting calculation) — 05

6) Nozzles L1, T1, L2 and G1 require stilling-wells.

7) Tank sump to be fabricated from a 600mm pipe end-cap.

8) The following items fitted by others:

a) Shell valves.

b) ATG Instruments, P1, T1, L1, L2 and lights (Contractor to Supply & Fit Mechanical Level Gauge) — 05

9) Cables, conduits, cable ladders, lights are supplied and fitted by others on cleats provided by tank vendor.

10) Deleted — 05

11) Deleted — 05

12) *Deleted*

13) Vendor to provide guarantee of emission levels.

14) Deleted — 05

15) Vendor to design, supply and install interconnecting walkways as shown on the tank layout drawings.

16) Vendor to verify compliance with API 650 for floating roof seals.

17) Vendor to provide an external mechanical level gauge.

18) Vendor to provide a striker plate on all stilling wells. Refer to Sketch 2 — 05

19) Vendor to provide overflow outlets in compliance with API 650, complete with trunking down to the bottom of the tank.

Provision to made for "Explo Control" . Refer to Sketch on page 6 for details — 05

20) Blind flanges, fasteners and gaskets to be supplied for all manways, drains and side sampling nozzles

21) All nozzles and overflow slots to be accessible form either ground level, spiral stairway, or platforms.

22) Vendor to provide foam dam on floating blanket (internal floating roof).

23) The Vendor shall provide lifting davit at the highest stairway platform. Davit shall be designed for live load of 15 kN (1530 kgf / 3375 lbf) in accordance with Section 3.10.6 of Specification 2684358-U-A00-ME-SP-007

24) The Vendor to incorporate following items in their scope of supply — 05

i) Supply & installation of tank cooling ring deluge system, spray nozzles and foam pourer to battery limit

- Design and supply calculations verifying that the selected foam pourers and spray rings are suitable for the application
- Cooling rings are to be designed in accordance with ASME B31.3 & fabricated in accordance with line class SA (Refer to piping specification 2684358-U-A00-PI-SP-011 Rev 03). Process design by Kantey & Templer (K&T)
- The roof & shell cooling rings must slope towards the riser pipe to ensure adequate draining of the rings
- The battery limit of the cooling rings & foam pourer lines will be 3m aboveground on the riser pipe
- All lines must be flanged

ii) Fire detection for Floating Roof

- Provide Fitting/Clips to install heat detection cables (Type: Kidde Alarmline Digital Sensor Cable Model H9650) The cable is installed above the secondary seal using mounting clips every 1m, mounted on the foam dam.
- Provide Fitting/Clips for the junction box to be fitted on floating blanket
- ProvideSupport on tank roof for the retractable reeler
- Modification to the dome roof to allow for the retractable cable to run from the dome to the junction boxon the floating roof

iii) Earthing of Internal Floating Roof

- Provide a suitable grounding of the internal floating roof to meet the the requirements of API 545
- Provide a reliable retractable reel grounding system having a very low impedance, direct connection between the tank roof & shell , using a wide thick-braided wire cable, spring-loaded on a heavy stainless reel to provide retraction as the roof rises, so the line remains taut at the minimal distance need for grounding (Impedance:1 ohm or Less)
- Two straps are required for tanks between 20m & 50m

iv) Supply & install 1-off 100x100x6mm plate with 2- Ø10 Holes welded to the tank shell for Cathodic Protection

25) The Vendor to supply removable backing strips on annular-bottom welds — 05

Rev.	Date	Name	Checked	Description
5	15-Feb-11	R Davies		Issued for Construction

INDEX OF APPLICABLE SPECIFICATIONS

SHEET 1 OF 2

Document No.: 2684358-U-TM1-ME-DS-084

Item No.: 50-A09

Rev			Issue	
	1. DESIGN CODES AND STANDARDS			
	X	Act No. 85	1993 Amend	Occupational Health and Safety Act,
	X	API 2610	2nd Edit	Design, Construction, Operation, Maintenance & Inspection of Terminal & Tank Facilities
	X	API 650	11th Edit	Welded Steel Tanks for Oil Storage
		API 653	3rd Edit	Tank Inspection, Repair, Alteration, and Reconstruction
	X	API 2000	Apr-98	Venting Atmospheric and Low-Pressure Storage Tanks
	X	API-RP2003	Jan-08	Protection Against Ignition Arising out of Static Lightning and Stray Currents
	X	API 2350	3rd Edit	Overfill Protection for Petroleum Storage Tanks
	X	NFPA 11	2005	Low Expansion Foam & Combined Agent Systems
	X	NFPA 15	2006	Standard for Water Spray Fixed Systems for Fire Protection
	X	NFPA 30	2008	Flammable and Combustible Liquids Code
	X	EN 10204	2004	Inspection Documents for Delivery of Metallic Products
	X	SANS 10160	1989	The general procedures and loadings to be adopted in the design of building
	X	SANS 10089-1	2003	Storage and distribution of petroleum products in above-ground bulk installations
	X	SANS 10400	1990	The Application of National Building Regulation
	2. REFERENCE NMPP PROJECT STANDARDS			
	X			Tanks Works Information (Section C3)
	X	2684358-J-A00-AM-ST-001	01	CAD Manuals and Procedures
05	X	2684358-U-A00-ME-SP-007	03	Field Erected Storage Tanks
05	X	2684358-U-A00-ME-SP-008	02	Welding - Carbon Steel Storage Tanks
	X	2684358-U-A00-ME-SP-009	04	Painting Specification
05	X	2684358-U-A00-PI-SP-011	03	Facililies Piping Specification
	X	PL 100	003	Drawings Standards Document
	X	PL 101	003	Plant and Equipment Tag Numbering Standards
	X	PL 102	001	Equipment, Instrument and Electrical Symbology Standards
	X	PL 103	003	General Drawing Standards
05	X	2684358-U-A00-ME-DD-001	01	Nameplate Standard for API650 Tanks
05	X	2684358-J-TM1-CI-SK-71140		Typical 20 000 m³ tank foundation (TBC)
05	X	2684358-U-TM1-PI-DA-002	04	Plot Plan
	3. OTHER REFERENCE STANDARDS			
	X	ASME B16.5	2003	Pipe Flanges and Flanged Fittings
	X	ASME B36.10M	1996	Welded and Seamless Wrought Steel Pipes
		ASME B16.47	1990	Large Diameter Steel Flanges (Series B)
	X	WRC297	1987	WRC Bulletin Local Stresses in Cylindrical Shells due to External Loadings on Nozzles
	4. FIRE PROTECTION FACILITIES			
05	X	2684358-J-TM1-FP-PD-07002	F	P&ID Reticulation
05	X	2684358-J-TM1-FP-PD-07004	F	P&ID - Sheet 2
05	X	2684358-J-TM1-FP-PD-07005	F	P&ID - Sheet 3
05	X	2684358-J-TM1-FP-PD-07006	F	P&ID - Sheet 4

INDEX OF APPLICABLE SPECIFICATIONS

SHEET 2 OF 2

Document No.: 2684358-U-TM1-ME-DS-084

Item No.: 50-A09

Rev		5. PROJECT SPECIFICATIONS	Issue	
	X	2684358-U-A00-ME-SP-021	00	Vessels & equipment; Clips for ladders and platforms
	X	2684358-U-A00-ME-SP-022	00	Vessels & equipment; Clips for guide & support brackets for piping, type C
		2684358-U-A00-ME-SP-023	00	Vessels & equipment; Lifting lugs & lifting trunnions for erection of steel vessels
		2684358-U-A00-ME-SP-024	00	Vessels & equipment; Nameplates for vessels & equipment (ASME)
		2684358-U-A00-ME-SP-025	00	Vessels & equipment; Nameplates for vessels & equipment (API)
	X	2684358-U-A00-ME-SP-026	00	Vessels & equipment; Swivel devices for manhole closures
	X	2684358-U-A00-ME-SP-027	00	Clips: Calculation of additional stress acting on vessel/tank shells
	X	2684358-U-A00-ME-SP-029	00	Vessels & equipment; Earthing terminals for vessels & equipment
		2684358-U-A00-ME-SP-030	00	Vessels & equipment; Saddle supports for horizontal steel vessels
		2684358-U-A00-ME-SP-031	00	Vessels & equipment; Skirts for vertical steel vessels
		2684358-U-A00-ME-SP-032	00	Vessels & equipment; Bracket supports for vertical steel vessels
05	X	2684358-U-A00-ME-SP-034	A	Vessels & equipment; Vortex breakers, feed deflectors and ladder rungs
	X	2684358-U-A00-ME-SP-043	00	Vessels & equipment; Surface treatment of austenitic steels after welding
	X	2684358-U-A00-ME-SP-044	00	Water quality for pressure tests & flushing of equipment, pipelines & other components
		2684358-U-A00-ME-SP-048	00	Vessels & equipment; Pressure vessels
		2684358-U-A00-ME-SP-049	00	Vessels & equipment; Atmospheric vessels
	X	2684358-U-A00-ME-SP-055	01	Specification for Aluminium Geodesic Dome Roofs
	X	2684358-U-A00-ME-SP-056	01	Specification for Hydrostatic Testing Procedure
	X	2684358-U-A00-ME-SP-057	00	Guide & Support Brackets for Piping of Vessels & Equipment
	X	2684358-J-TM1-ST-DD-03602	00	Structural Steel - General Notes
	X	2684358-J-TM1-ST-DD-03604	00	Anchor Bolt Details - Sheet 2
	X	2684358-J-TM1-ST-DD-03605	00	Typical details, Floor Grating
	X	2684358-J-TM1-ST-DD-03606	00	Typical details, Catladders
	X	2684358-J-TM1-ST-DD-03607	00	Typical details, Steel Stairs

Rev	Date	Prepared	Checked	Description
5	15-Feb-11	R Davies		Issued for Construction

Technical Specification

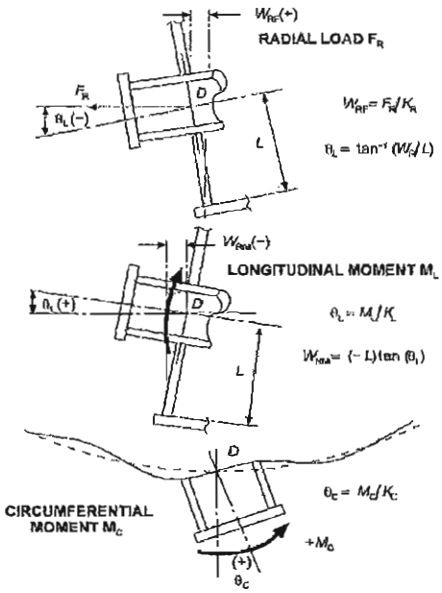
TANKS
NOZZLE LOADS

Preliminary nozzle forces and moments, from external process piping, which must be allowed for in the tank design, where no other values are given in the tank design data sheets, are tabulated below.

Origin: API 650, 11th Edition

Nominal Nozzle Diameter (")	Radial Force FR (N)	Longitudinal Moment ML (Nm)	Circumferential Moment MC (Nm)	Negative Longitudinal Moment ML (Nm)
2	1750	590	550	-
3	2080	800	700	-
6	7000	3000	4000	-
8	-	-	-	-
16	95000	99000	170000	-100000
18	-	-	-	-
20	43000	100000	130000	-100000
24	38000	110000	92000	-90000

Forces & moments shall be assumed to act simultaneously at the junction of nozzle & shell in each of the possible axes. A schematic sketch for forces & moments is given below. The stress analysis shall be undertaken by the tank manufacturer, at the manufacturer's expense, in accordance with a recognised method, (preferably WRC 297). The above nozzle loads are preliminary. Vendor must submit design values (unrestrained tank movement, stiffness coefficient, etc.) to the NMPP Alliance for acceptance in order to finalise actual tank nozzle loads.



Rev.	Date	Name	Checked	Description
5	15-Feb-11	R Davies		Issued for Construction

GENERAL	1	Tag Number		See Note			
	2	Service		Temperature Switch			
	3	Line Number	P&ID No	n/a		2684358-J-TM1-FP-PD-07003 to 07006	
	4	Equipment Number					
	5	Haz Area Classification		Zone 0			
	6	Function		Fire detector inside tank			
ENVIROMENTAL DATA	7	Ambient Temperature	Humidity	-10 to 50	°C	10 to 85	RH
	8	Vibration		-0.5 to 0.5			
SPECIFICATION	9	Supply Voltage		IS			
	10	Hazard Rating		Ex'ia' T4			
	11	Sensing cable type		Suitable for 36m diameter tank / 10m diameter tank (see note)			
	12	Sensing cable length		Suitable for 36m diameter tank / 10m diameter tank (see note)			
	13	Mounting		To be supplied for mounting on internal floating roof / blanket foam dam.			
	14	Sensing cable type		Digital linear heat detection cable			
	15	Sensing cable length		Suitable for 36m diameter tank / 10m diameter tank (see note)			
	16	Sensing cable alarm temperature setting		240 deg C nominal			
	17	Sensing cable outer sheath material		Fluoropolomer			
	18	Sensing cable time to respond to flame		20 seconds (flame touching)			
	19	Sensing cable life expectancy		20 years			
	20						
	21						
	22						
	23						
	24						
	25						
JUNCTION BOX	26	Location		One inside the tank, one mounted on tank roof, including SC/ OC resisitors			
	27	Cable Entry		M20 x 3			
	28	IP Rating		IP 65			
	29	Haz Area Rating		Ex'ia' T4			
	30						
	31						
FLEXIBLE CABLE	32	Type		Retractable cable; suitable for Internal Floating Roof / Blanket tank			
	33	Length		up to 20m			
	34						
	35						
	36						
	37						
	38						
OPTIONS	39	IS Barrier		To be provided with matched IS barrier included in fire control panel.			
	40						
	41						
	42						
CERTIFICATES REQUIRED	43	Haz Area Certificate		Yes, including local Independent Authority Certification			
	44	Intrinsic Safe Loop Certification		Yes, certified by local independent Authority			
	45						
	46						
PURCHASE	47	Manufacturer		Kidde			
	48	Model		Cable: H9650			
	49	Supplier		Alpret			

Notes:
For Tag 50TS187A; 50TS187B; 50TS187C; 50TS187E; 50TS187F; 50TS188B; 50TS188C; 50TS188D; 50TS188E; 50TS188F (36m diameter tank)
For Tag 50TS189A; 50TS189B (10m diameter tank)

NMPP Alliance
Arup – WorleyParsons JV

TRANSNET

K&T

REV	DATE	BY	REMARKS
00	20/10/2010	TD	Issued for Construction

PROJECT TRANSNET
PROJ No 2684358
Instrument Specification
Temperature Switch

DOC No 2684358-KT-TM1-FP-DS-008
CLIENT No
CODE No :
REV : 00

CHKD:
APRVD: