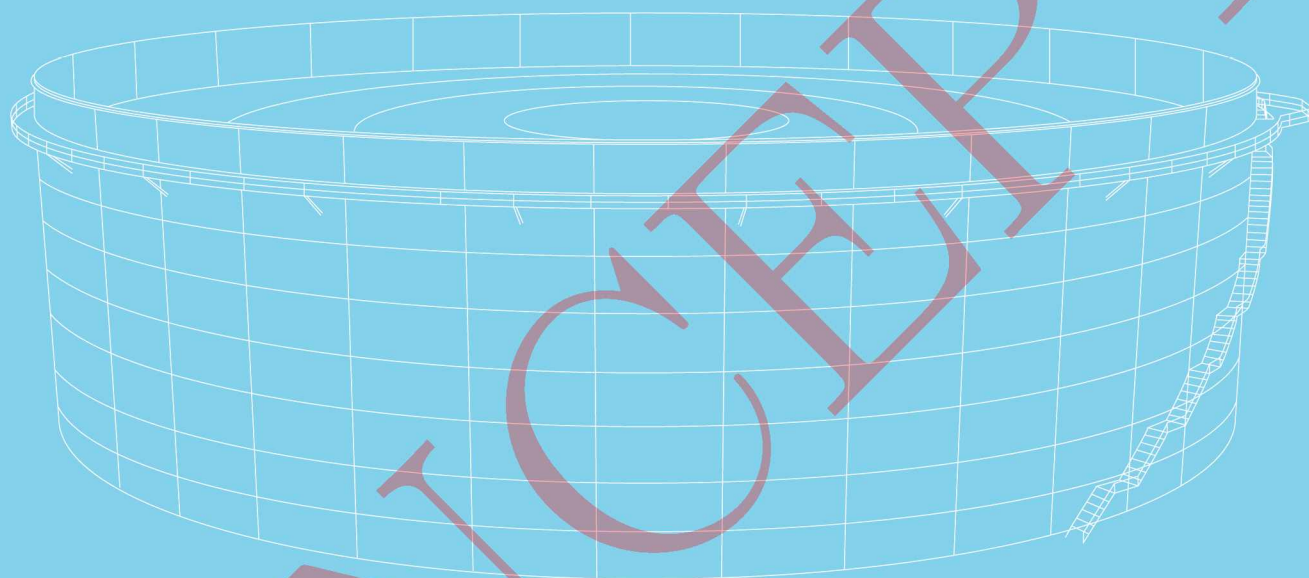




Study according to BPRR Site Technical Practice

based upon EEMUA 159 3rd edition



Tank:	TK146
Client:	BP Raffinaderij Rotterdam
Print date:	25-05-2021
File name:	rbi-report_105.concept.pdf
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Study status:	Ready for review

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1 Summary

The conclusions and recommendations mentioned in this case study are based on a qualitative assessment of the several investigations and inspections conducted on the storage tanks. The interpretation of the individual measurements are valued against the rejection limits stated within the EEMUA 159 3rd edition. Engineering judgement is used to combine the individual results into an overall judgement and to compose mitigating actions.

Onstream	TTAR
[mm-yyyy]	[mm-yyyy]
12-2024	12-2036

1.1 Results of analysis

Study according to BPRR Site Technical Practice

Component	Part	DM	RL	K	Inspection interval	Manual interval	Last inspection	Next inspection	
			[yr]		[yr]	[yr]	[mm - yyyy]	[mm - yyyy]	
Roof	Center deck	general-thinning	50.00	0.80	20.00	8	12-2016	12-2024	
	Pontoons ¹	pontoon-thickness	Status: ok				12-2016	12-2036	
Shell	Course 8	general-thinning	47.64	<div><div></div></div>	1.00	20.00	8	12-2020	12-2028
	Course 7	general-thinning	47.64	<div><div></div></div>	1.00	20.00	8	12-2020	12-2028
	Course 6	general-thinning	47.64	<div><div></div></div>	1.00	20.00	8	12-2020	12-2028
	Course 5	general-thinning	47.64	<div><div></div></div>	1.00	20.00	8	12-2020	12-2028
	Course 4	general-thinning	47.64	<div><div></div></div>	1.00	20.00	8	12-2020	12-2028
	Course 3	general-thinning	47.64	<div><div></div></div>	1.00	20.00	8	12-2020	12-2028
	Course 2	general-thinning	47.64	<div><div></div></div>	1.00	20.00	8	12-2020	12-2028
	Course 1	general-thinning	29.74	<div><div></div></div>	1.00	20.00	8	12-2020	12-2028
Floor-to-shell	Fillet weld	fillet-weld-thickness	Status: ok				12-2016	12-2036	
Floor	Membrane	general-thinning	50.00		0.70	20.00	-	12-2016	12-2036
	Membrane	pitting	40.18		0.70	20.00	-	12-2016	12-2036
	Annular	general-thinning	50.00		0.70	20.00	-	12-2016	12-2036
	Annular	pitting	48.65		0.70	20.00	-	12-2016	12-2036
	Annular proj.	annular-projection	Status: ok				10-2020	10-2040	
	Sump 1	general-thinning	50.00		0.70	20.00	-	12-2016	12-2036
	Sump 1	pitting	50.00		0.70	20.00	-	12-2016	12-2036
	Sump 2	general-thinning	50.00		0.70	20.00	-	12-2016	12-2036
	Sump 2	pitting	50.00		0.70	20.00	-	12-2016	12-2036
	Sump 3	general-thinning	50.00		0.70	20.00	-	12-2016	12-2036
Foundation	Sump 3	pitting	50.00		0.70	20.00	-	12-2016	12-2036
	Sump 4	general-thinning	50.00		0.70	20.00	-	12-2016	12-2036
	Sump 4	pitting	50.00		0.70	20.00	-	12-2016	12-2036
	Tank pad	planar-tilt	Status: ok				11-2020	11-2040	
	Tank pad	sagging	Status: ok				06-2016	06-2036	
	Tank pad	bottom-ripples	Status: undefined				undefined	undefined	
	Tank pad	voids	Status: undefined				undefined	undefined	
	Tank pad shoulder	edge-settlement	Status: ok				06-2016	06-2036	
	Tank pad shoulder	differential-settlement	Status: ok				11-2020	11-2040	
	Nozzles	No data to display							

■	Wind load
■	Liquid load

¹Not considered in determination of next inspection



1.2 Conclusion

Conclusie

 14-09-2017

Om voor tank TK146 middels RBI de inspectietermijn te bepalen, is de aanwezige historische data, documenten en metingen bestudeerd en beoordeeld.

De tank is in 2014 in TAR gegaan. In de aanbeveling stond opgenomen dat er nulmetingen op de de tankonderdelen (bodem, wand, dak) zouden worden uitgevoerd. Helaas is dit niet gebeurd, hierdoor is het niet mogelijk om een op RBI gebaseerde termijn vast te stellen.

Met name mist er data over de sumps van de bodem, hoeveel en met welke dikte zijn deze geplaatst. Daarnaast zijn de pontoons nog nooit gemeten.

Het wordt aanbevolen informatie op te zoeken van de sumps die zijn geplaatst en om een uitgebreide ISI uit te voeren op wand en dak om zo toch de assessment af te kunnen maken.

Het opgeslagen product (G29 = GasOlie?????????) valt onder groep 4 en hiermee komt de interval voor in service inspectie neer op 8 jaar volgens tabel B3.1 van EEMUA 159.

Implementatie risico gedreven inspectietermijn

 01-02-2021

TK146 is per 3 december 2016 in gebruik genomen.

Met ingang van deze datum worden de diverse degradatie mechanismen, zoals zetting en corrosie, gestart.

Tijdens de TTAR zijn de bodem en het dak in het geheel vervangen.

De sumps zijn volgens het standaard model uitgevoerd. Hier was eerder nog onduidelijkheid over. Zie general notes.

Uit de studie blijkt dat de combinatie van de restlevensduurberekening en de berekende risicofactor een datum berekent die boven de 50 jaar ligt (m.u.v. bodem pitting). Echter hoger dan 50 jaar wordt niet gerapporteerd.

De volgende inwendige inspectie wordt op de wettelijke maximum termijn van 20 jaar terug gebracht.

Gasolie valt in groep 4. deze bepaalt de uitwendige inspectie termijn van 8 jaar.

Bottom ripples en voids worden doorgaans niet gerapporteerd als deze niet aanwezig zijn. Deze blijven op "undefined" tot deze worden aangetroffen bij een volgende TTAR.

De tank i.c.m. de terp heeft een verwaarloosbaar risico op bodemverontreiniging van enige relevantie en scoort met 140 punten ruimschoots de A status. Deze wordt behouden tot de geprojecteerde datum van de volgende TTAR.

2 Remaining life

2.1 Roof

Part	DM	ABT	t_{last}	$t_{min.acc.}$	TA	CR	RL
		[mm]	[mm]	[mm]	[mm]	[mm/yr]	[yr]
Center deck	general-thinning	5	5	2.5	2.50	0.028	50.00
Pontoons ²	pontoon-thickness	Status: ok					

2.2 Shell

Part	DM	ABT	t_{last}	$t_{min.acc.}$	TA	CR	RL
		[mm]	[mm]	[mm]	[mm]	[mm/yr]	[yr]
Course 8	general-thinning	8	6.7	5.84	0.86	0.018	47.64
Course 7	general-thinning	8	7.1	6.49	0.61	0.013	47.64
Course 6	general-thinning	8	7.3	6.82	0.48	0.010	47.64
Course 5	general-thinning	9.7	9.2	8.72	0.48	0.010	47.64
Course 4	general-thinning	12.1	11.3	10.82	0.48	0.010	47.64
Course 3	general-thinning	14.6	13.7	13.18	0.52	0.011	47.64
Course 2	general-thinning	17.8	16.9	16.00	0.90	0.019	47.64
Course 1	general-thinning	21	17.2	15.69	1.51	0.051	29.74

 Wind load
 Liquid load

2.3 Floor-to-shell

Part	DM	t_{nom}	t_{last}	$t_{min.acc.}$	TA	CR	RL
		[mm]	[mm]	[mm]	[mm]	[mm/yr]	[yr]
Fillet weld	fillet-weld-thickness	Status: ok					

2.4 Floor

Part	DM	ABT	t_{last}	$t_{min.acc.}$	TA	CR	RL
		[mm]	[mm]	[mm]	[mm]	[mm/yr]	[yr]
Membrane	general-thinning	8	8	2.5	5.50	0.040	50.00
Membrane	pitting	8	8	1.25	6.75	0.168	40.18
Annular	general-thinning	12	12	6	6.00	0.040	50.00
Annular	pitting	12	12	3	9.00	0.185	48.65
Annular proj.	annular-projection	Status: ok					
Sump 1	general-thinning	13	11.8	4	7.80	0.040	50.00
Sump 1	pitting	13	11.8	2	9.80	0.168	50.00
Sump 2	general-thinning	13	11.8	4	7.80	0.040	50.00
Sump 2	pitting	13	11.8	2	9.80	0.168	50.00
Sump 3	general-thinning	13	11.8	4	7.80	0.040	50.00
Sump 3	pitting	13	11.8	2	9.80	0.168	50.00
Sump 4	general-thinning	12	11.8	4	7.80	0.040	50.00
Sump 4	pitting	12	11.8	2	9.80	0.168	50.00

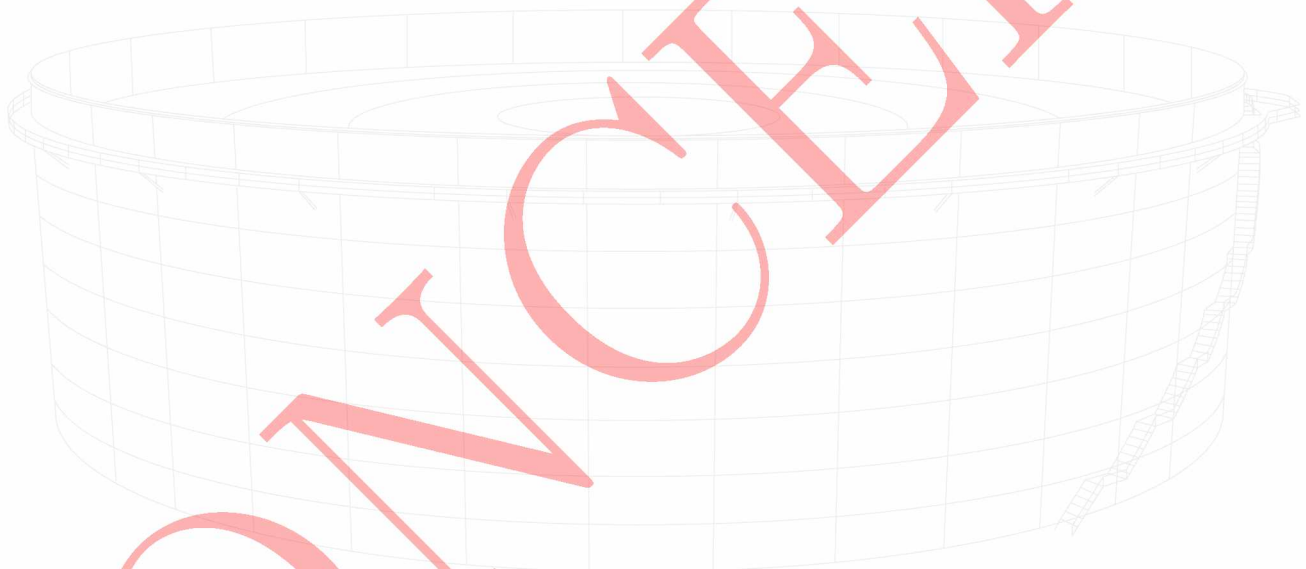
²Not considered in determination of next inspection



2.5 Foundation

2.5.1 Non-trendable parts

Part	DM	Status
Tank pad	planar-tilt	ok
Tank pad	sagging	ok
Tank pad	bottom-ripples	undefined
Tank pad	voids	undefined
Tank pad shoulder	edge-settlement	ok
Tank pad shoulder	differential-settlement	ok



3 Notes and assumptions

3.1 Fitness for purpose

Lasefficientiefactor

 24-08-2020

Lasefficientiefactor E aangepast van 0,85 naar 1. Bouwjaar is 1972. Voor tanks gebouwd na 1968 mag een E toegepast worden van 1.

3.2 General

Dak definitie

 14-09-2017

-X / +3X seal op basis van tekening 831-001-REV A - SealMaster BP RR T-146 (For Approval - V150306).pdf

Bodemsumps

 24-08-2020

Volgens BPRR tek. 0120-02-12-10592 (Mercon tek. P14054-041 Rev. Z) zijn er 4 bodemsumps geïnstalleerd. Hier zijn echter geen tekeningen van.

Volgens Mercon Cert. nr. 12092-029 (zie MDR van Mercon) zijn zgn. tellerbodems (Duitse helm) geplaatst met een nominale dikte van 12 mm. Volgens bij het certificaat behorende maatprotocol is actuele dikte: 11,8 mm

Wijziging nominale diktes

 22-01-2021

Tijdens de TAR zijn bodem en dak in het geheel vervangen. Hier zijn andere nominale diktes gebruikt dan de vorige variant.

Deze nominale diktes zijn gewijzigd. Evenals de keurcriteria in de fit for purpose analyse

4 Tank details

This chapter displays all tank specifications and component properties. Note that when a foundation or a floor-to-shell connection has been installed this will not appear in this chapter as these components have no configurable properties.

4.1 Tank specifications

Property	Value
Tank name	TK146
Tank nr.	0042-0146
Location	OME
Date of construction	01-01-1972
Design code	BS 2654
Type	Non pressure tank
Diameter [m]	48.768
Height [m]	19.507
Maximum filling height [m]	18.847
Capacity [m ³]	36000
Design pressure [mbar]	0
Design vacuum pressure [mbar]	5
Design wind speed [m/s]	45
Operational max. temperature [°C]	60
Operational min. temperature [°C]	-10
Has heating coil	No
Group	-
Class	K3
PV vents	-
Comments	Maximale vulhoogte: Tankhoogte 19507 - Foamdam hoogte 610 - schuimhoogte 50 = 18.847 meter
Circumference [m]	153
Surface [m ²]	1868

4.2 Roof specifications

Property	Value
Roof type	Floating roof
Seal range	-X/+3X
Superimposed load [N/mm ²]	0
Roof plates load [N/mm ²]	0
Roof framing load [N/mm ²]	0
Top angle load [N/mm]	0.7
Roof columns	No
Roof insulation	No

4.3 Shell specifications

Property	Value
Shell insulation	No
Youngs modulus [N/mm ²]	210000



4.4 Floor specifications

Property	Value
Floor type	Cone up
Youngs modulus [N/mm^2]	210000
Coated	Internally
Double bottom with leak detection	No
External coating applied at	-

4.5 Product details

Property	Value
Product name	G29
Product group	Gas Oil
Specific gravity [-]	0.86
Flash point [$^{\circ}C$]	60
Toxicity	Toxic substance

4.6 Product group details

Product group '**Gas Oil**' with service condition group '**Group 4**' has the following theoretical corrosion rates:

Tank part	Theoretical corrosion rate
Bottom plates [mm/yr]	0.1
Shell liquid exposed area [mm/yr]	0.05
Shell vapour exposed area [mm/yr]	0.1
Fixed roof plates [mm/yr]	0.1
Fixed roof supporting structure [mm/yr]	0.1
Floating roof plates [mm/yr]	0
Floating pontoon area [mm/yr]	0

5 Risk analysis tank roof

5.1 Analysis results

Probability rating	Risk assessment matrix						Risk rating	Factor K	Established factor K
$\xi = 1.14$	Probability	H	L	H	E	E	N	0.90	0.80
Consequence rating		M	L	M	H	E	*L*	*0.80*	Sum of credit and debit points
$\chi_{ecc.} = 1.50$		L	N	L	M	H	M	0.70	0.00
$\chi_{h.\&s.} = 2.67$		*N*	N	N	*L*	M	H	0.60	Adjusted factor K
$\chi_{env.} = 2.00$			N	L	*M*	H	E	0.50	0.80
						Consequence			

5.2 Probability of failure analysis

Question	Answer
Internal coating is applied on tank roof plates	Internal coating not existing
External coating is applied on tank roof plates	External coating applied and quality is sound (or material is SS)
Storage conditions	Between 40 and 85 °C
Vapour corrosivity	Group 4, Risk L
The tank is operated with an inert blanket system above product	No, but storage temperature is below 85 °C
Is roof supporting structure located below roof plates?	No, roof supporting structure is placed on top of roof plates or the roof is of the self-supporting or membrane type
Is roof supporting structure located on top of roof plates?	No, roof supporting structure is not located on top of roof plates and proper water draw-off is secured at all times
Is tank roof insulated and rain water may cause corrosion under insulation (CUI)?	No, tank roof is not insulated

5.3 Consequence of failure analysis

5.3.1 Economical

Question	Answer
Time to repair	Internal entry required, limited repair (< 3 months)
Cost of repair	Negligible, or less than 5% of capital cost
Probable magnitude of product loss	No release of product

5.3.2 Health & safety

Question	Answer
Likelihood of injury to personnel	Minor injury
Product flammability	Class II(2) and class III(2) product
Product toxicity	Toxic substance
Location of tank farm	Flat tank farm
Is tank near public fence	No

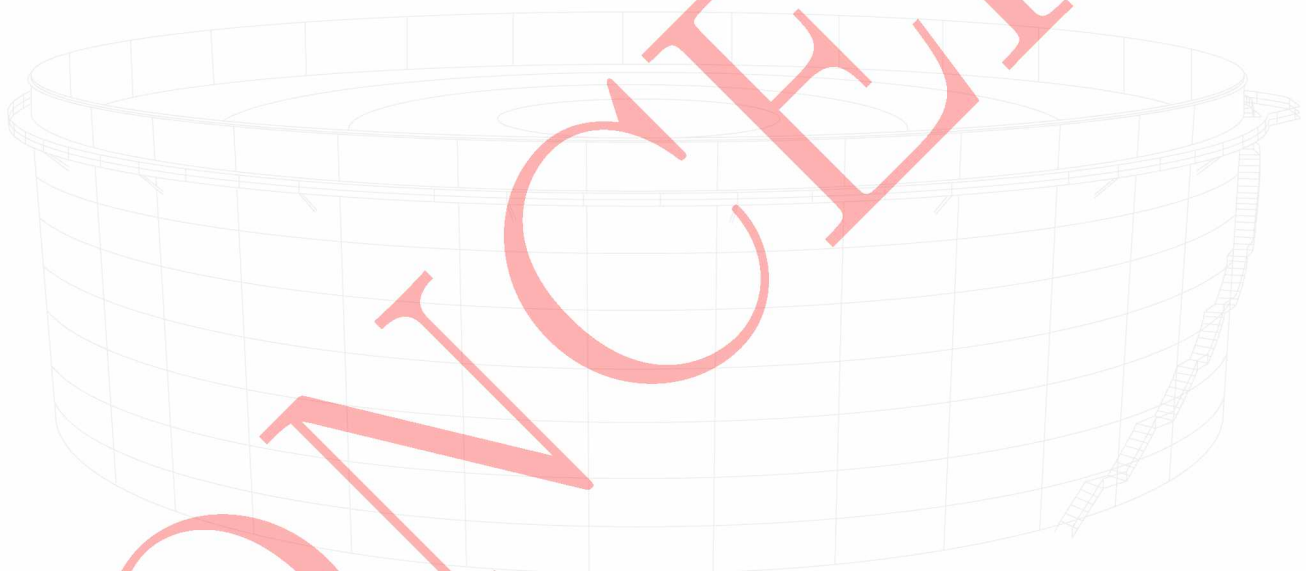
5.3.3 Environment

Question	Answer
Environmental hazard to soil and water has the potential to cause	Environmental nuisance affecting neighbourhood
Vapour emission	No or negligible harmful (toxic) release



5.4 Confidence analysis

Question	Answer
NDT method used and extent of coverage (number of readings) to establish actual roof plate thickness	Visual + spot ultrasonic (US)
Frequency of inspections performed during service life of tank	No or minimal inspection data available
Differential settlements between the tank structure and the supports of the piping to/from the tank will affect the allowable minimum thickness of roof plates	No moments in roof nozzles or supporting structures



6 Risk analysis tank shell

6.1 Analysis results

Probability rating	Risk assessment matrix						Risk rating	Factor K	Established factor K
$\xi = 1.36$	Probability	H	L	H	E	E	N	0.90	0.80
Consequence rating		M	L	M	H	E	*L*	*0.80*	Sum of credit and debit points
$\chi_{ecc.} = 2.00$		L	N	L	M	H	M	0.70	0.20
$\chi_{h.\&s.} = 2.67$		*N*	N	N	*L*	M	H	0.60	Adjusted factor K
$\chi_{env.} = 2.00$			N	L	*M*	H	E	0.50	1.00
						Consequence			

6.2 Probability of failure analysis

Question	Answer
Internal coating is applied to tank shell plates	Internal coating not existing
External coating is applied to tank shell plates	External coating applied and quality is sound (or material is SS)
Storage conditions	Between 40 and 85 °C
Heating coils in tank	No, or not in direct contact with shell plates
Product corrosivity	Group 4, Risk L
Vapour corrosivity	Group 4, Risk L
Tank shell has been insulated, and rain water may cause corrosion under insulation (CUI)	Tank shell is not insulated

6.3 Consequence of failure analysis

6.3.1 Economical

Question	Answer
Time to repair	Internal entry required, limited repair (< 3 months)
Cost of repair	5-10% of capital cost
Probable magnitude of product loss	< 5% of tank contents

6.3.2 Health & safety

Question	Answer
Likelihood of injury to personnel	Minor injury
Product flammability	Class II(2) and class III(2) product
Product toxicity	Toxic substance
Location of tank farm	Flat tank farm
Is tank near public fence	No

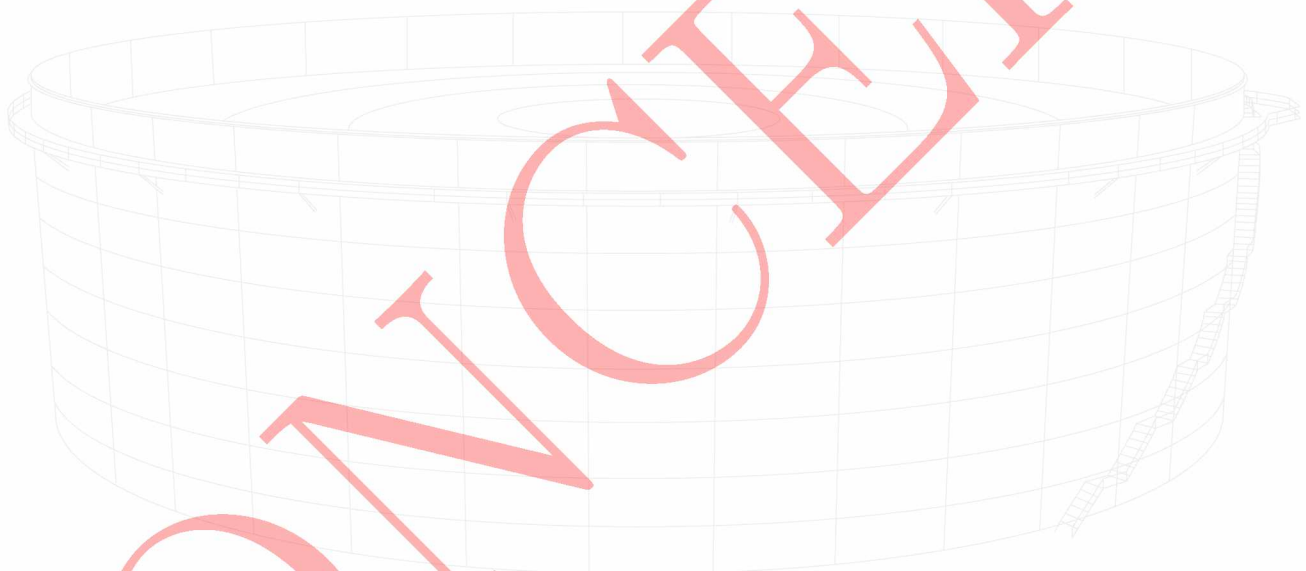
6.3.3 Environment

Question	Answer
Environmental hazard to soil and water has the potential to cause	Environmental nuisance affecting neighbourhood
Vapour emission	No or negligible harmful (toxic) release



6.4 Confidence analysis

Question	Answer
NDT method used and extent of coverage (no. of readings) to establish actual shell plate thickness	Crawler / beetle + US
Frequency of inspections performed during service life of tank	Multiple inspections carried out
Corrosion on wind girders will effect the tank's stability and thus the allowable minimum thickness of shell plates under external loads (wind and vacuum)	No corrosion on windgirder
Buckles in shell plates will effect the tank's stability and thus the allowable minimum thickness of shell plates under external loads (wind and vacuum)	No buckles on tank shell plates
Bending moments in shell nozzles, induced by differential settlements between the tank structure and the supports of the piping to/from the tank, will effect the allowable minimum thickness of shell plates	No moments in shell nozzles or structures available which reduce nozzle loads



7 Risk analysis tank floor

7.1 Analysis results

Probability rating	Risk assessment matrix						Risk rating	Factor K	Established factor K
$\xi = 1.94$	Probability	H	L	H	E	E	N	0.90	0.70
Consequence rating		M	L	M	H	E	L	0.80	Sum of credit and debit points
$\chi_{ecc.} = 3.00$		L	N	L	M	H	*M*	*0.70*	0.00
$\chi_{h.\&s.} = 2.67$		*N*	N	N	L	*M*	H	0.60	Adjusted factor K
$\chi_{env.} = 2.00$			N	L	M	*H*	E	0.50	0.70
						Consequence			

7.2 Probability of failure analysis

Question	Answer
Impressed cathodic protection	Readings are below 0.60 V thus no effective CP existing or CP does not exist
Sacrificial cathodic protection	Sacrificial CP not available nor operating
Internal coating or lining is applied to bottom plates	Internal coating applied and quality is sound (or material is SS)
External coating is applied to bottom plates (other than shop primer)	Not existing
Storage conditions temperature of product	Between 40 and 85 °C
Type of bottom	Cone up
Heating coils in tank	No, or not in direct contact with bottom plates
Product corrosivity	Group 4, Risk L
Foundation type	2E pad with annular ring of coarse granular material
Tank bottom free from contact with water	Yes
Effectiveness of drainage	Slope of tank pad shoulder allows for adequate drainage away from tank bottom

7.3 Consequence of failure analysis

7.3.1 Economical

Question	Answer
Time to repair	Internal entry required, major repair (3-8 months)
Cost of repair	10-50% of capital cost
Probable magnitude of product loss	> 5% of tank contents

7.3.2 Health & safety

Question	Answer
Likelihood of injury to personnel	No injury or near miss
Product flammability	Class II(2) and class III(2) product
Product toxicity	Toxic substance
Location of tank farm	Flat tank farm
Is tank near public fence	No

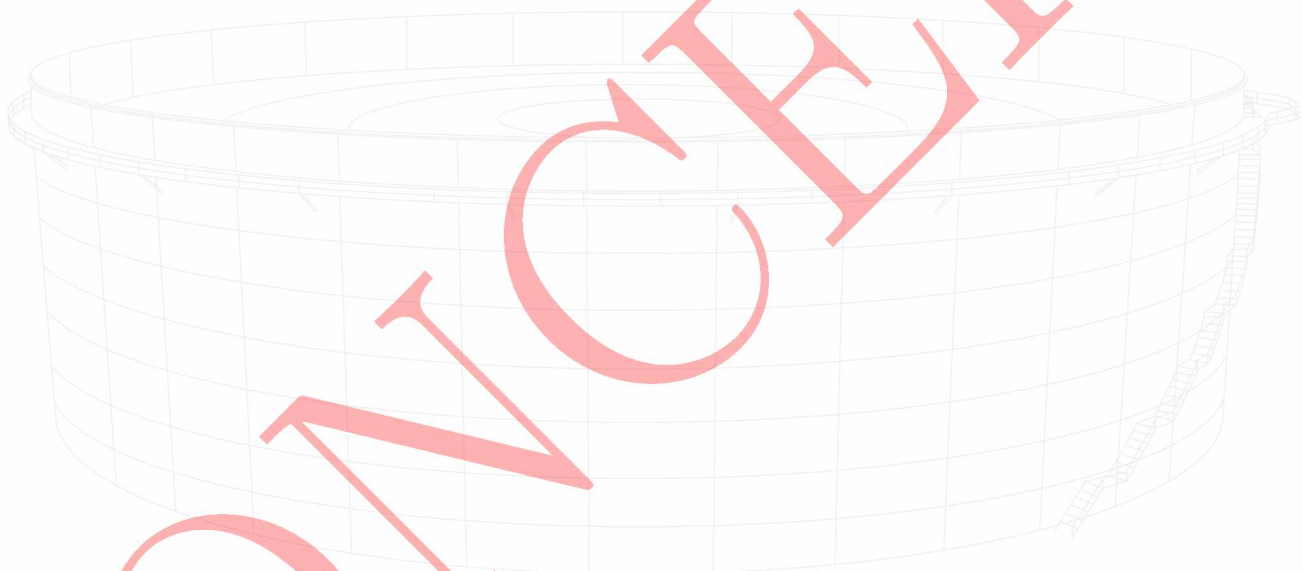


7.3.3 Environment

Question	Answer
Environmental hazard to soil and water has the potential to cause	Environmental nuisance affecting neighbourhood
Vapour emission	No or negligible harmful (toxic) release

7.4 Confidence analysis

Question	Answer
NDT method used and extent of coverage (number of readings) to establish actual bottom plate thickness	US on gridline system
Frequency of internal inspections performed during service life of tank	No or minimal inspection data available
Type of interconnecting bottom plate welds outside of annular section	Double pass lap welds



A Tank history

This chapter describes the tank history of the storage tank for the tank components which are evaluated within RBIT360°, it is therefore not necessarily the complete tank history. The Tank Integrity Assessor notes on the individual measurements are also presented here. The actual values of these individual measurements are left out of this overview and can be found in RBIT360°.

Date	Type	Subtype	Note
01-01-1972	Measurement	Membrane, annular, sump	Ontwerpdikte als nulmeting ingevoerd.
01-01-1972	Measurement	Course	Ontwerpdikte als nulmeting ingevoerd.
01-01-1972	Measurement	Center deck	Ontwerpdikte als nulmeting ingevoerd.
01-08-1978	Measurement	Course	De onderste wandring is gemeten, de minimaal gevonden waarde minus 0.7 mm coatingcorrectie is ingevoerd. Bron: TK146 OUDE WIN FILES.PDF
01-11-1980	Measurement	Center deck	Het dak is d.m.v. een kruismeting gemeten, de minimaal gevonden waarde minus 0.7 mm coatingcorrectie is ingevoerd. Bron: TK146 OUDE WIN FILES.PDF
01-11-1980	Measurement	Membrane, annular, sump	De bodem is d.m.v. een kruismeting gemeten, de minimaal gevonden waarde is ingevoerd. Geen coatingcorrectie toegepast. Bron: TK146 OUDE WIN FILES.PDF
01-11-1980	Measurement	Course	De wandringen zijn langs de trap gemeten, de minimaal gevonden waarde minus 0.7 mm coatingcorrectie is ingevoerd. Bron: TK146 OUDE WIN FILES.PDF
01-05-1985	Measurement	Course	De wandringen zijn langs de trap gemeten, de minimaal gevonden waarde minus 0.7 mm coatingcorrectie is ingevoerd. Bron: TK146 OUDE WIN FILES.PDF
01-07-1990	Measurement	Center deck	Het dak is d.m.v. een kruismeting gemeten, de minimaal gevonden waarde minus 0.7 mm coatingcorrectie is ingevoerd. Bron: TK146 OUDE WIN FILES.PDF
01-07-1990	Measurement	Course	De wandringen zijn langs de trap gemeten, de minimaal gevonden waarde minus 0.7 mm coatingcorrectie is ingevoerd. Bron: TK146 OUDE WIN FILES.PDF
01-07-1990	Measurement	Membrane, annular, sump	De bodem is d.m.v. een kruismeting gemeten, de minimaal gevonden waarde is ingevoerd. Geen coatingcorrectie toegepast. Bron: TK146 OUDE WIN FILES.PDF
01-11-1995	Measurement	Center deck	Het dak is d.m.v. een kruismeting gemeten, de minimaal gevonden waarde minus 0.7 mm coatingcorrectie is ingevoerd. Bron: TK146 OUDE WIN FILES.PDF
01-11-1995	Measurement	Course	De wandringen zijn langs de trap gemeten, de minimaal gevonden waarde minus 0.7 mm coatingcorrectie is ingevoerd. Bron: TK146 OUDE WIN FILES.PDF
12-01-2000	Measurement	Course	Tankwand is langs de trap gemeten. De minimaal gevonden waarde minus de genoteerde verftoeslag van 1,6 mm is ingevoerd. Bron: TK146_2000.01.12.SGS-US.RApp.nr..48421.pdf De topring en 4e ring zijn op meerdere punten gemeten, ook hiervan is de minimaal gevonden waarde minus de genoteerde verftoeslag van 1,6 mm is ingevoerd.
28-03-2002	Measurement	Membrane, annular, sump	Er is een floorscan gemaakt door Rosen, hierbij had de diepste pit een afname van 79% t.o.v. de nominale dikte van 6 mm. De annularplaten zijn ook gescand, maar omdat alles boven de 50% afname is gemarkeerd kan er van uit worden gegaan dat de afname daar maximaal 50% bedroeg. Bron: TK146 2002-03-28 Rosen MFL Rapp.0860.pdf
25-09-2006	Measurement	Annular projection	Uitwendige annularrand gemeten op 77 locaties, de minimaal gevonden waarde is ingevoerd. Bron: TK146 OUDE WIN FILES.PDF
10-10-2006	Measurement	Course	Beetlemeting uitgevoerd. Bron: TK146 OUDE WIN FILES.PDF
22-05-2012	Measurement	Annular projection	Uitwendige annularrand is op 77 locaties gemeten, de minimaal gevonden waarde is ingevoerd. Bron: TK146 2012-05-22 RTD UT_RT RAPP. 103.22.2012 SIGNED.PDF
28-06-2012	Measurement	Course	Beetlemeting uitgevoerd op de tankwand. Bron: TK146 2012-06-28 RTD BEETLE REPORT NO 1106-2012-0252 SIGNED.PDF
23-06-2016	Measurement	Sagging	Bron: MDR: Mercon



Date	Type	Subtype	Note
23-06-2016	Measurement	Edge settlement	Bron: MDR Mercon
30-08-2016	Measurement	Planar tilt	Scheefstand is gemeten op 16 locaties rondom de tank. De grootste afwijking per 4 meetpunten is voor elke windrichting ingevoerd. Bron: D19 36019 46991.PDF
30-08-2016	Measurement	Differential settlement	Vulhoogte: 0 meter Differentiele zetting is gemeten door 2E is. Bron: D19 36019 46991.PDF
03-12-2016	Measurement	Pontoon	Alle waarden zijn de as built thickness zonder enige tolerantie
03-12-2016	Measurement	Center deck	De vermelde waarde is de as built thickness zonder tolerantie waarden die bij de materiaalklasse hoort.
03-12-2016	Measurement	Membrane, annular, sump	Gehele bodem is vervangen tijdens de TAR. As-built thickness voor membraan en annular volgens BPRR tek. 0120-02-12-10591 (Mercon tek. P14054-040 Rev.Z). As-built thickness voor de 4 bodemsumps volgens maatprotocol Mercon Cert. no. 120192-029. Overeenkomstig het material certificaat is tnom = 12 mm. Van zowel bodem als de sumps zijn geen "0"-metingen uitgevoerd..
03-12-2016	Measurement	Fillet weld	
13-10-2020	Measurement	Annular projection	Bron: TK146 2020-10-16 SGS UT 40294048 TM-6613879 Rev.1 IP7&22.pdf
20-11-2020	Measurement	Differential settlement	Bron: TK146 2020-11-20 Prismagroep Zetting Rapp. 200854 IP5-24-25
20-11-2020	Measurement	Planar tilt - numbered	Bron: TK146 2020-11-20 Prismagroep Zetting Rapp. 200854 IP5-24-25
17-12-2020	Measurement	Course	Bron: TK146 2020-12-17 SGS UT Linescan Rapp. 40294048.pdf