RBICortek Wtritten Scheme of Examination

Proposal Report

Assessment General Information	
Assessment Name:	New Excel Proposal 11-10-20
Assessment Date:	2016-12-17
Assessment Method:	Semi-Quantitative PoF and Semi-Quantitative CoF
Risk Analysis Period (months):	36
Equipment General Information	
Equipment Number:	HKâ€•6710B1
Equipment Type:	Tank
Design Code:	Tank
Site:	SITE2
Facility:	HoÃ n Kiáº¿m
Manufacturer:	Lab411
Commission Date:	2020-03-05
Equipment Name:	Day la Equiment Name
Process Description:	Day la Process Description
Component General Information	
Component Number:	cai nay la Component Number
Component Type:	Shell
API Component Type:	COURSE-1
Component Name:	cai nay la Component Name
Risk Links to Equipment Risk:	No

Equipment Properties	
Administrative Control for Upset Management:	Yes
Steamed Out Prior to Water Flushing:	No
Downtime Protection Used:	Yes
PWHT:	No
Heat Traced:	No
Cyclic Operation:	Yes
Pressurisation Controlled by Admin:	No
Interface at Soil or Water	Yes
Liner Online Monitoring:	No
Type of Soil:	Fine Sand
Distance to Ground Water:	10.0
Component is Welded:	Yes
Tank is Maintained in Accordance with API 653:	Yes
Equipment is Operating for Many Years at Lowest Expected Temperature:	No
Material is Exposed to Fluids, Mists or Soids Containing Chlorine Externally:	

	Yes
Presence of Sulphides, Moisture and Oxygen Duruing Operation:	No
Presence of Sulphides, Moisture and Oxygen Duruing Shutdown:	Yes
External Environment:	Low
Thermal History:	Stabilised Before Welding
System Management Factor:	0.1
Equipment Volume:	13.0
Adjustment for Settlement:	None
Environmental Sensitivity:	Low
Online Monitoring:	Amine low velocity corrosion - Corrosion coupons

Component Properties	
Tank Diameter:	100.0 mm
Nominal Thickness:	215.0 mm
Minimum Measured Thickness:	180.0 mm
Min. Required Thickness:	150.0 mm
Current Corrosion Rate:	113.0 mm/yr
Delta FATT	0.0
Presence of Cracks:	No
Structural Thickness:	15.0 mm
Weld Joint Efficiency:	0.5
Component Volume:	30.0 m^3
Maximum brinnell Hardness of Weld:	Below 200
Allowable Stress at Assessment Temperature:	12.0MPa
Level of Confidence in Corrosion Rate:	Low
Minimum Structurel Thickness Governs:	Yes
It is fabricated from P-1 and P-3 steels where the design temperature is less than or equal to 343Â°C(650Â°F):	No
The equipment satisfied all requirements of a reecognized code or standard at the time of fabrication:	No
The equipment or circuit is no subject to shock chilling:	No
Cyclic service, fatigue or vibration service is not a design requirement per design code:	Yes

The nominal operating conditions have been essentially the same and consistent with

the specified design conditions for a significant period of time, and more severe conditions are not expected in the future:	No
The CET at the MAWP is greater than or equal to -29Â°C (-20Â°F) if it is a pressure vessel or -104Â°C(-155Â°F) if it is a piping circuit:	Yes
Complexity of Protrusions:	Below average
Brittle Fracture Governing Thickness:	0.0
Shell Course Height:	Yes m
Release Prevention Barrier:	No
Concrete or Asphalt Foundation:	No
Severity of Vibration:	High

Operating Conditions Properties	
Max. Operating Temperature:	330.0 Â°C
Min. Operating Temperature:	111.0 Â°C
Max. Operating Pressure:	280.0 MPa
Min. Operating Pressure:	25.0 MPa
Critical Exposure Temperature:	50.0 Â°C
Flow Rate:	4.0 m^3/hr
% Operating at -12Â°C to -8Â°C:	20.0 %
% Operating at -8Â°C to 6Â°C:	0.0 %
% Operating at 6Â°C to 32Â°C:	10.0 %
% Operating at 32Â°C to 71Â°C:	30.0 %
% Operating at 71Â°C to 107Â°C:	0.0 %
% Operating at 71Â°C to 107Â°C:	0.0 %
% Operating at 107Â°C to 121Â°C:	0.0 %
% Operating at 121Â°C to 135Â°C:	20.0 %
% Operating at 135Â°C to 162Â°C:	0.0 %
% Operating at 162Â°C to 176Â°C:	10.0 %
% Operating at 176Â°C or Above:	0.0 %
Operating Hydrogen Partial Pressure:	0 %

Stream/Process Flow	
Fluid	
Fluid in Tank:	Light Diesel Oil
Fluid Height:	100.0 m
Percentage of Fluid Leaving the Dike:	4.0
Percentage of Fluid Leaving the Dike but Remains on Site:	5.0
Percentage of Fluid Going Offsite:	7.0
Maxium Operating Temperature:	330.0 Â°C
Minium Operating Temperature:	111.0 Â°C
Maxium Operating Pressure:	280.0 MPa
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Operating Hydrogen Partial Pressure:	day la Operating Hydrogen Partial Pressure MPa
Flow Rate:	4.0 m^3/yr
NaOH Concentration(%):	4.0
Release Fluid Percent Toxic(%):	2.0
Chloride Ion (ppm):	5.0
CO3 Concentration in Water (ppm):	7.0
H2S Content in Water (ppm):	10.0
pH of Water:	7.0
Toxic Constituents:	No
Exposed To Acid Gas Treating Amine:	Yes
Exposed To Amine:	None
Amine Solution Composition:	Monoethanolamine MEA
Aqueous Phase During Operation:	No
Aqueous Phase During Shutdown:	No
Environment Consatins H2S:	No
Presence of Hydrofluoric Acid:	No
Presence of Cyanides:	No
Process Contains Hydrogen:	No
Environment Contains Caustic in Any Concentration:	No
Exposed to Sulphur-Beaning Compounds:	No
Material is Exposed to Fluids, Mists, or Solids:	No

Material Properties	
Material:	SAâ€•105
Design Pressure:	40.0 MPa
Design Temperature:	5.0 Â°C
Tensile Strength:	30.0 MPa
Yield Strength:	15.0 MPa
Reference Temperature	5.0 Â°C
Sigma Phase(%):	0.0
Corrosion Allowance:	222.0 mm
Austenitic Steel:	Yes
Carbon or Low Alloy Steel:	Yes
Nickel-based Alloy:	No
Susceptible to Temper:	No
Sulfur Content:	None
Chromium >= 12%:	Yes
Min. Design Temperature:	15.0 Â°C
Heat Treatment:	None
Material Cost Factor:	1.0
Material is Susceptible to PTA:	No
Max. Design Temperature:	5.0 Â°C
PTA Material Grade:	None
Material is Susceptible to HTHA:	No
Steel Product Form:	None

HTHA Material Grade:	None

Coating, Cladding, Insulation, and Lining	
Coating	
Internal Coating:	Yes
External Coating:	No
External Coating Installation Date:	None
External Coating Quality:	None
Support Configuration Which Does not Allow Coating Maintenance:	No
Cladding	
Internal Cladding:	Yes
Cladding Corrosion Rate:	1.0 mm/yr
Cladding Thickness:	4.0 mm
Insulation	
External Insulation:	No
Insulation Contain Chloride:	Yes
External Insulation Type:	None
Insulation Condition:	None
Lining	
Internal Lining:	Yes
Internal Liner Condition:	Average
Internal Liner Type:	Castable refractory

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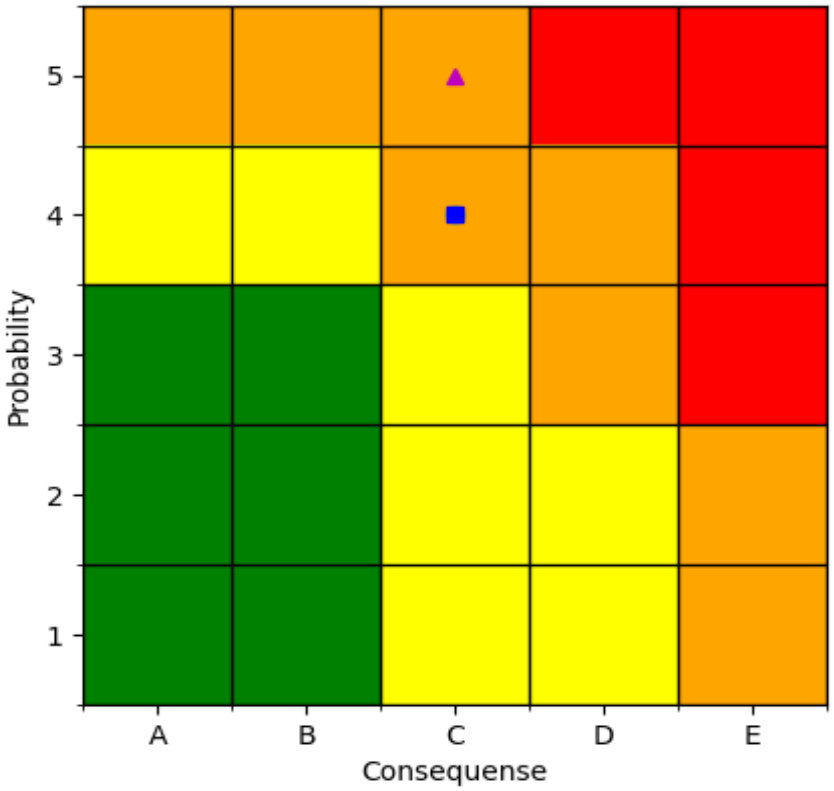
Risk Summary



Description	36 months	72 months	108 months	RLI (months)
Risk	4C	4C	5C	0

Damage Mechanisms

Damage Mechnisms	DF AP1	DF AP2	DF AP3
Thinning Damage Factor	3.9556	4.7783	3202.5829
Internal Lining Degradation Damage Factor	0.5	0.5	2.0
Caustic Stress Cracking Damage Factor	500.0	500.0	1533.5493
External Corrosion Damage Factor	9.6607	9.6607	9.6607
Corrosion Under Insulation Damage Factor	9.5952	9.7022	9.8114