REPORT ON CORROSION CONTROL SERVICES AND FACILITY PAINTING OF UNIT 14 PRODUCED WATER PLANT

REVISION HISTORY

Rev	Description	Status	Date	Activity Executed by
0	Report on Corrosion Control Services and Facility Painting Of Unit 14 Produced Water Plant	Issued for Approval	18/04/22	IDAS NIGERIA LIMITED Vendor Code: **127519**

CONTENT

1.0 SCOPE

The scope of work for this project is to carry out localised maintenance corrosion control and painting for unit 14 vessels in line with DEP 30.48.00.31-Gen. (PROTECTIVE COATINGS FOR ONSHORE AND OFFSHORE FACILITIES (INCLUDING ADOPTION OF IOGP S-715). Scope includes the CPI and ISF vessels as well as the package skids for the 5 trains. The tag no of the ISF vessels are V-1402 A/B/C/D/E and the tag no for the CPI are V-1401 A/B/C/D/E/F/G/H/I/J. The total area covered is about 1982.7sqm.

2.0 INTENT

To maintain asset integrity, protect from weather conditions and control the corrosion progress of these vessels to increase their life in service.

3.0 HSE

- A documented HSE statement and JHA which specifies the safety precautions that are to be adhered during the job execution was provided
- Required certificates ex. medical certificates etc. of the work force was produced to Shell for verification and acceptance before commencing the contract.
- Permit-to-Work was used daily during work execution.
- Working at heights required scaffolding safety harness usage.
- Toolbox meeting was conducted with all the personnel involved daily.
- A muster point was identified in a safe area outside of the work site
- Appropriate Personal Protective Equipment (PPE) was provided for all the personnel in the work and their mandatory use enforced at all times.
- Hazardous material handling and disposal was as per Shell HSE requirements.

4.0 ACTIVITY REPORT

These reports include details of weather conditions, air humidity, ambient and surface temperature, particulars of surface preparation and paint application.

Average Steel Surface Temperature & Weather Before start of work and during work execution	29^0C
Relative average humidity before and during work execution	< 85%
Paint Type: Marine Coating Shell Green	G4/S-953NEWL 211015624

SURFACE CLEANLINESS AND PROFILE

1. The surfaces of carbon and low alloy steelwork was blast-cleaned to the visual standard of Sa 2½ in accordance with ISO 8501-1 at the time of coating.
2. An inert blasting abrasive material (e.g., aluminium oxide) used in blast cleaning of vessel and tank internal.
3. The surface profile and angular anchor pattern for carbon steel, low alloy steel and stainless-steel surfaces: for coating system with DFT up to 500 μm (20 mils): 40 μm to 70 μm (1.5 mils to 3 mils)

Surface finish grade	ISO 8501	SSPC	NACE
Sweep blast cleaning	Sa 1	SP-7	No 4
Solvent cleaning		SP-1	
Power tool cleaning	St 3	SSPC SP-3	
Power tool cleaning to bare metal		SSPC SP-11	
Water jetting		SSPC SP-12	No 5

COATING

1. Zinc rich primers applied over abrasive blast cleaned carbon and low alloy steel surfaces.
2. Stainless steel and 9 % nickel steel surfaces coated, over sprayed with metallic zinc-based coatings.
3. All coating systems completely dried and cured for a specified time in accordance with coating Manufacturer/Supplier's guidelines given in their product data sheet.
4. Anti-skid material uniformly dispersed on the surface of the coating.

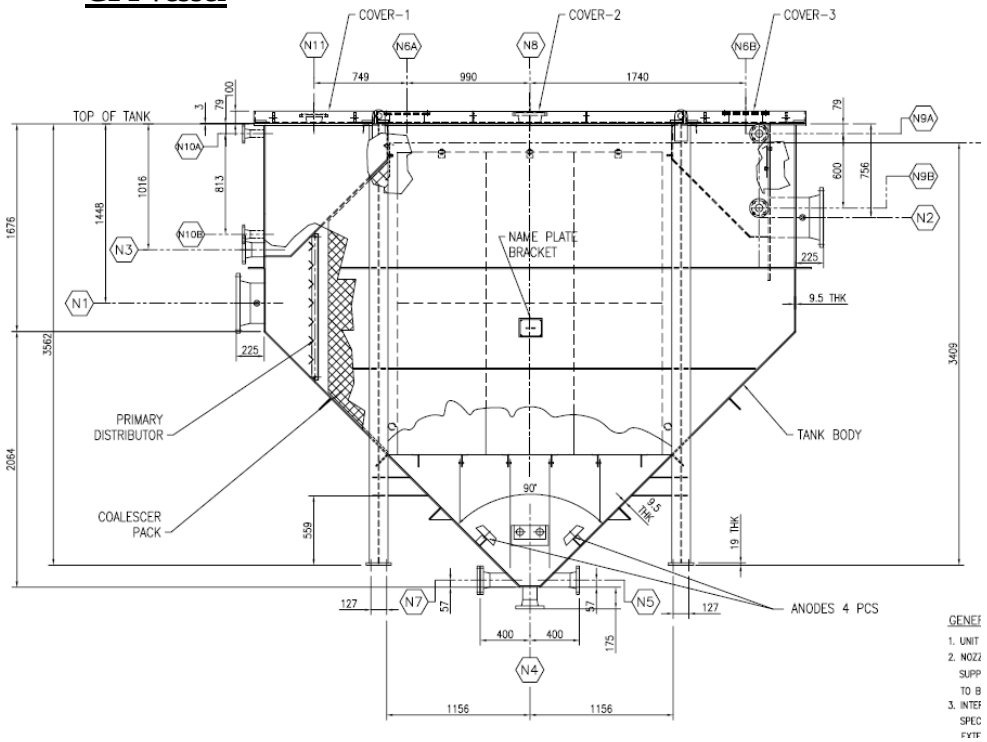
Coating category	Large scale refurbishment
External carbon steel surfaces	50 mg/m_2 (0.5 x 10 $^{-3}$ grains/in_2)
Stainless steels	20 mg/m_2 (0.2 x 10 $^{-3}$ grains/in_2)

External coating systems for ISF, SKIDS and CPI Vessel facilities

Carbon steel (EXTERNAL)	System code	Minimum number of coating layers	Total minimum NDFT, microns	Coating systems
Atmospheric exposure -35 °C to +120 °C	LC1-N	3	300 (12 mils)	Inorganic zinc silicate/ zinc rich epoxy primer, epoxy mid-coat, polyurethane

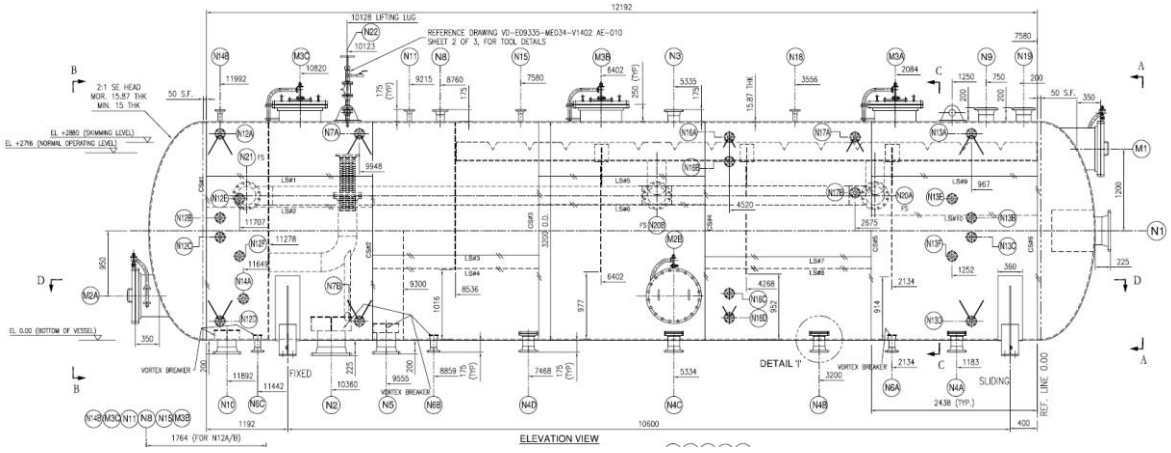
(-31 °F to +248 °F)				topcoat.
Steel Floors (walking)	LC7-N / M	3	350 (14 mils)	Zinc rich epoxy primer, solvent free epoxy, Anti slip material, polyurethane topcoat

- **CPI vessel**



A total of 10 numbers of CPI vessels (2 per train) were worked on during this project. The surface area for each vessel was 61.42m^2. This brings the total area for the 10 vessels to 614.2m^2.

- **ISF Vessel**



A total of 5 no's of CPI vessels was worked on during this project. The surface area for each vessel is 143.7m^2. This brings the total area for the 5 vessels to 718.5m^2.

- **SKID**

A total of 5 no's of skids was worked on during this project. The surface area for each of the skid is 50m^2. This brings the total area for the 5 skids to 250m^2.

- **PIPINGS**

A number of associated piping on all the trains in unit 14 were painted. The total surface area for these piping is approximately 400m^2.

Total Surface Area covered in this project = S.A of ISF vessels+ S.A of CPI vessels+ S.A of skids + S.A of associated pipes.

= 614.2 m^2 + 718.5m^2 +250 m^2 + 400 m^2

= **1,982.7 m^2**

PERFORMANCE TESTS AND ACCEPTANCE CRITERIA FOR ISF ,SKIDS AND CPI VESSEL	
Impact resistance	
Thick film cracking	> 2 J (17.7-pound force/inch), no evidence of cracking
Minimum over-coating time	No cracking
Drying/curing properties at ambient temperature	Met Manufacturer/Supplier's product data sheet of specific coating material.
Application	Met Manufacturer/Supplier's product data sheet of specific coating material.
Resistance to hot services < 120 °C (248 °F)	No flaking, cracking, or dis-bonding and discoloration
Heat resistance > 120 °C to 600 °C (248 °F to 1,112 °F)	No flaking, cracking, or dis-bonding.

5.0 PICTURES

Before Pictures:


Progress Pictures:


Completed Pictures:

6.0 REFERENCES

- Shell specification DEP. 30.48.00.31 Protective coatings for onshore and offshore facilities.
- Surface preparation and painting procedure for CPI and ISF package.
- Other International Standards and Specification as appropriate.