Annex F

Investigation Report

Investigation Report of CEMS Exceedances

Date	1 – 31 January 2023
Time	Continuous monitoring throughout January 2023
Monitoring Location	Continuous Environmental Monitoring System (CEMS)
Parameter	Various emission parameters of the Cogeneration Units (CHPs) , Ammonia Stripping Plant (ASP), and Standby Flaring Gas Unit
Exceedance Description	1. Continuous monitoring was carried out at the CAPCS, CHP and ASP throughout the reporting period using the CEMS. According to the EM&A Manual, exceedance is considered if the emission concentration of the concerned pollutants is higher than the emission limits stated in Tables 2.2, 2.3 and 2.5 of the EM&A Manual (Version F) for CAPCS, CHP and ASP respectively. The concentration of the concerned air pollutants were monitored on-line by the CEMS. Exceedances of various emission parameters were recorded on the CEMS including: • NOx and SO_2, from the CHPs; and • NOx, SO_2 and NH_3 from ASP; and • CO, VOCs, HCl and HF from Standby flaring Gas Unit 2. The Contractor has investigated the cause of the exceedance and identified that • The exceedances of SO_2 from the CHPs and ASP occurred due to tripping of the de-sulphurisation system resulted from the residue of sulphur accumulated at the exhaust heat exchangers. • The exceedances of NO_x and NH_3 from CHPs and ASP occurred due to system instability caused by prolonged usage of the CHPs and the ongoing performance optimisation of the ASP, resulting in a lowered temperature of the system and the incomplete combustion of biogas. • The exceedances of CO, VOCs, HCl and HF from Standby Flaring Gas Unit occurred due to biogas bypass trial.
Action Taken / Action to be Taken	The Contractor has arranged cleaning of the heat exchangers of all CHPs to remove potential sulphur residue from the exhaust gas system. The Contractor has also replaced all catalytic convertors with an aim to improve the CO removal efficiency of the system.
Remedial Works and Follow-up Actions	The Contractor has arranged a specialist to review the CEMS system performance and accuracy. The specialist will carry out in-depth investigation and propose any remediation needed.

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