Annexure-03

Analysis of limestone, water & instrument air

Lime-Stone:

Absorbent Name	LIMESTONE
Grain Size	Medium
Bond Index	13kWh/short-ton

Type of Absorbent	☑ Rock ☐ Powder ☐ Slurry ☐ Others :

Feed Condition to Absorber	☐ Powder ☑ Slurry 30 wt% ☐ Others :

Absorbent Composition			Limestone			Note
			Design	Normal	Guarantee	
$CaCO_3$		wt%-d	79 (*1)	-	89 (*1)	
Dolomite($MgCa(CO_3)_2$)		wt%-d	0	-	0	
	CaO	wt%-d	47-51.0 (*1)	-	-	
	MgO	wt%-d	0.9-2.0	-	-	
Inert	Cl_2	wt%-d	<0.015	-	-	
	Al_2O_3	wt%-d	1.19-2.1	-	-	
	Si_2O_3	wt%-d	2.1-4.5	-	-	
	Fe_2O_3	wt%-d	0.45-1.0	-	-	
	TiO_2	wt%-d	<0.02	-	-	
	Na_2O	wt%-d	<0.16	-	-	
	K_2O	wt%-d	<0.01	-	-	
	P_2O_5	wt%-d	Traces	-	-	
	LOI	wt%-d	39.0-41.3	-	-	
	Total Sulphur	wt%-d	<0.1	-	-	
	Mn_2O_3	wt%-d	<0.12	-	-	
Density		kg/m^3	1400			For volume
		kg/m^3	1700			For torque, drive calculation and structual load calculation

N/D : Not detectable

(*1) Design condition limestone purity $CaCO_3$ 79%; Guarantee condition limestone purity $CaCO_3$ 89%

Process Water:

			Raw water (*1)		
			Minimum	Normal	Maximum
Temperature at B.L.		deg.C		27	45
Pressure at B.L.		MPaG	-	-	-
pH		-	-	8.8-9.2	-
S.S.		mg/l	-	-	-
Composition					
	Ca^{2+}	ppm CO_3Ca	-	620	-
	Mg^{2+}	ppm CO_3Ca	-	380	-
	Na^{+}	ppm CO_3Ca	-	468	-
	K^{+}	ppm CO_3Ca	-	-	-
	Oil and Grease	mg/l	-	-	-
	N_2H_4	mg/l	-	-	-
	HCO_3^{-}	ppm CO_3Ca	-	1032	-
	CO_3^{2-}	ppm CO_3Ca	-	-	-
	Cl^{-}	ppm CO_3Ca	-	160	-
	SO_4^{2-}	ppm CO_3Ca	-	276	-
	Silica	mg/l	-	48	-
	To-NH_4	mg/l	-	-	-
	Fe^{2+}	mg/l	-	1.2	-
	Cd	mg/l	-	-	-
	NO_3^{-}	ppm CO_3Ca	-	-	-
	B	mg/l	-	-	-
	To-Inorganic	mg/l	-	-	-
	Cu	microg/l	-	-	-
	Hg	microg/l	-	-	-
	Pb	microg/l	-	-	-
	NO_2^{-}	microg/l	-	-	-
	F^{-}	microg/l	-	-	-
	Cr^{6+}	microg/l	-	-	-
	Ni	microg/l	-	-	-
	To-Zn	microg/l	-	-	-
BOD5		mg/l	-	-	-
COD	Cr	mg/l	-	-	-
Total alkalinity		ppm CO_3Ca	-	-	-
Total Hardness		ppm CO_3Ca	-	-	-
Turbidity		NTU	-	80	-
Conductivity		micro m/m	-	-	-

(*1) Raw water Analysis is taken from tender documents (Part A-Section VI - Sub section II-A3)

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Cooling Water

Water Source		DM Water					
		Available Value			Design Value		
		Minimum	Normal	Maximum	Minimum	Normal	Maximum
Supply Temp. at TP	deg.C	-	-	-	-	35	-
Return Temp. at TP	deg.C	-	-	-	-	45	-
ΔT	deg.C	-	-	-	-	10	-
Supply Press. at TP	MPaG	-	-	-	-	0.6(*1)	-
Return Press. at TP	MPaG	-	-	-		0.3(*1)	-

(*1) Assumed value

Instrument Air

Air Source		-
Dew Point (atmospheric)	deg.C	≦-40
Oil Mist Contamination		☐ Contaminated ☑ Not Contaminated

		Available Value			Design Value		
		Minimum	Normal	Maximum	Minimum	Normal	Maximum
Temperature at TP	deg.C	-	-	-	-	45(*1)	-
Pressure at TP	MPaG	-	-	-	0.55	-	0.8

(*1) In summer