ANNEXURE 16

SALIENT FEATURES

Jayaprakash N.,
Business Associate

New Melling Power Corporation Ltd.
Date

SALIENT FEATURES

LOCATION		
State	:	Arunachal Pradesh
District	:	Tawang
River	:	Mago Chu
Nearest Airport	:	Guwahati
Nearest rail head	:	Nagaon
BARRAGE		
Latitude	:	27° 39' 0.39" N
Longitude	:	92° 04' 55.02" E
POWER HOUSE		
Latitude	:	27° 37' 52.5" N
Longitude	:	92° 03' 23.4" E
HYDROLOGY		
Catchment area at Barrage site	:	805 sq km
Design Flood	:	2469 m^3/sec (SPF)
GLOF	:	1330 m^3/sec
Diversion Flood (1: 25 yr monsoon flood)	:	349m^3/sec
RESERVOIR		
Full Reservoir Level (FRL)	:	El 2730.0 m
Minimum Drawdown Level (MDDL)	:	El 2720.0 m
Gross storage at FRL	:	0.39 M cum
Live storage	:	0.328 M cum
Area under Submergence at FRL	:	4.55 ha
DIVERSION STRUCTURE		
Type	:	Barrage
Length	:	47.8 m
Top of Barrage	:	EL 2732.0 m

SPILLWAY		
No. of Barrage bays & opening size	:	4 Nos. (9.2 m (w) x 6.0 m (h) each)
Crest Level	:	El 2710.0 m
Design Flood (SPF)	:	2469 cumec
Size of stoplog gate (1 set)	:	9.2m (w) x 11.054m (h)
Size of radial gate (6 nos.)	:	9.2 m (w) x 6.8 m (h)
DESILTING BASIN		
Number	:	Two
Size / Shape	:	14.0 m(W) x 19.0 m(H), Dufor type
Length	:	90m
Trashrack at inlet (4 sets for each basin)	:	2.50 m (w) x 18.50 m (h)
Inlet discharge	:	26.80 cumec each
Size of Stoplog gate opening (4 nos.)	:	6.0m (w) x 18.5m (h) – 2 nos. at each inlet
SILT FLUSHING DUCT		
Number	:	Two combined into one
Size of Duct upto silt flushing gate	:	Varies from 0.5m (w) x 0.8m (h) to 0.9m (w) x 1.2m (h), L= 65.0m
Size of Duct after Junction upto outlet	:	1.30m (w) x 1.6m (h), L= 20.0m
Silt flushing discharge	:	3.5 cumec through each duct
INTAKE		
Number	:	Two
Invert level	:	El 2713.5 m
Design discharge	:	23.3 cumec each
Intake Gate (two nos.)	:	3.0m (w) x 4.0m (h)
CUT AND COVER DUCT		
Number	:	Two
Size	:	3.0 m, D-Shape
Length	:	32.34 m / 56.15m.

Invert level	:	El 2713.5 m
Design discharge	:	23.3 cumec each

FEEDER TUNNELS

Number	:	Two
Size	:	3.0 m
Shape	:	D- shape
Length	:	25.47m
Design discharge	:	23.3 cumec each
Velocity	:	2.89 m/s

HEAD RACE TUNNEL

Number	:	One
Size	:	4.5 m
Shape	:	Modified Horse-Shoe shape
Length	:	3062 m
Design discharge	:	46.6 cumec
Velocity	:	2.9 m/s

SURGE SHAFT

Number	:	One
Type	:	Restricted Orifice Type
Size	:	6.5 m diameter
Orifice dia	:	2.0m
Height	:	50 m
Top EL	:	EL 2756 m
Tunnel invert	:	EL 2699.5 m
Size of gate opening (1 no.)	:	3.4m (w) x 3.4m (h)
Maximum surge level	:	EL 2754.3 m
Minimum surge level	:	EL 2709.1 m

PRESSURE SHAFT/TUNNEL

Main Pressure shaft/tunnel

Numbers	:	One

Size & Length	:	3.4 m diameter, 240.7m long
Pressure tunnel after 1st bifurcation		
Numbers	:	Two
Size & Length	:	2.8m diameter, 20.5 m long
		2.0 m diameter, 35.5 m long
Pressure tunnel after 2nd bifurcation		
Numbers	:	Two
Size & Length	:	2.0 m diameter, 30.5 m long
		2.0 m diameter, 24.5 m long
POWER HOUSE		
Type	:	Underground
Installed capacity	:	90 MW
Number of units	:	3 x 30 MW
Power house cavern size (LxWxH)	:	87 m x 19mx 38.5 m
Type of turbine	:	Vertical axis Francis turbine
C.L. of turbine	:	El 2502.7 m
Rated Head	:	211.65 m
Transformer cavern size (LxWxH)	:	40 m x 15.0mx 19.0 m
No. & Type of Transformers	:	3 Nos., 3 Phase, 40 MVA
DRAFT TUBE GATE CHAMBER		
Type	:	Underground
Size (L x W x H)	:	37.0 m x 6.0mx 8.0 m
Size of gate opening (3 nos.)	:	4.6m (w) x 2.5m (h)
TAIL RACE TUNNEL		
Type	:	Modified Horse Shoe Shape
Size	:	5.0m dia
Length	:	257.0 m
Design Discharge	:	46.6 cumec
River Bed Level	:	El 2506 m
Minimum TWL	:	El 2506.24 m
Normal TWL	:	El 2508 m

Maximum TWL	:	El 2512 m
Number & Size of TRT gate opening (1 no.)	:	5.0m (w) x 5.0m (h)
POWER GENERATION		
Installed capacity	:	90 MW (3x30 MW)
Annual energy generation		
i) 90% dependable year with 100% machine availability	:	438.32 GWh
ii) 90% dependable year with 95% machine availability	:	433.01 GWh
Plant Load Factor		
i) 90% dependable year with 100% machine availability	:	55.6%
ii) 90% dependable year with 95% machine availability	:	54.92%
COST ESTIMATES & FINANCIAL ASPECT (Rs. Crores)		
Civil & HM Works	:	480.14
Electro Mechanical Works	:	158.22
Sub Total	:	638.36
Interest during construction	:	149.85
Escalation	:	143.54
Financing cost	:	6.27
Total (Generation)	:	938.02
TARIFF (With 13% free power)		
Tariff for first year	:	Rs. 5.6/kWh
Levellised Tariff	:	Rs. 4.73/kWh
PRE-CONSTRUCTION PERIOD	:	18 months
CONSTRUCTION PERIOD	:	3.5 years

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Business Associate

New Melling Power Corporation Ltd. Jang Tawang, A.P. Date