भारत सरकार
Government of India
विद्युत मंत्रालय
Ministry of Power
केन्द्रीय विद्युत प्राधिकरण
Central Electricity Authority
जल विद्युत परियोजना मूल्यांकन प्रभाग
Hydro Project Appraisal Division

No. 2/HP/58/CEA/2017-PAC/ 97-135 Date: 11 .02.2021

OFFICE MEMORANDUM

Subject: Accord of Concurrence to Sunni Dam (4x73 MW+1x73 MW+1x17 MW= 382 MW) Hydro Electric Project in Himachal Pradesh by M/s SJVN Ltd. under section 8 of the Electricity Act, 2003-regarding

M/s SJVN Ltd. submitted Detailed Project Report (DPR) of the Sunni Dam HEP (4x73 MW+1x73 MW+1x17 MW= 382 MW) in Himachal Pradesh to CEA vide letter dated 09.09.2019 for concurrence. Thereafter, the DPR was forwarded to various appraising groups of CEA, CWC, GSI, CSMRS, MoJS (erstwhile MoWR, RD&GR) for examination of respective aspects. After clearance from all appraising groups, the proposal was considered for accord of Concurrence in the Authority Meeting (No. 05/2020) of CEA held on 23.12.2020 through Video Conferencing (VC) based on the Agenda Note circulated vide CEA letter No. CEA-SY-25-12/1/2019-PAC Division dated 18.12.2020.

In exercise of the powers conferred to the Authority under Section 8 of the Electricity Act, 2003, the Central Electricity Authority accords Concurrence to the aforesaid Hydro Electric Project at an Estimated Cost of Rs. 2475.35 Crore (July 2020 PL) including IDC of Rs. 346.88 Crores & FC of Rs. 8.66 Crores with the following stipulations: -

The cost of the scheme as mentioned above is indicative and may change on account of following as per actual: -

a) Price Escalation
b) Change in Law
c) Change in quantities (duly approved by competent authority) due to Geological Surprises.
d) Foreign Currency Exchange Rate.

2. The abstract of approved Project Cost along with the tentative Financial Package and details of Cost of Civil Works, E&M and ATS (Associated Transmission System) Estimates are furnished at **Annex-I, I (A), I (B) and I (C) respectively.** The Salient Features of the scheme are given at **Annex- II.**

3. This Concurrence is subject to fulfillment of the following conditions: -

(i) M/s SJVNL shall comply to the suggestions/observations of Central Water Commission (CWC) on aspects of Hydrology, Dam Design, Hydel Civil Design, Foundation Engineering & Seismic Aspects and Inter-State etc. as given in **Annex –III** and as incorporated in the final DPR.

(ii) M/s SJVNL shall comply to the suggestions/observations of Central Electricity Authority (CEA) on aspects of E&M design & Power Evacuation etc as given in **Annex – IV** and as incorporated in the final DPR.

(iii) M/s SJVNL shall comply to the suggestions/observations of GSI as given in **Annex–V** and as incorporated in the final DPR. M/s SJVNL shall complete balance explorations/investigations, if any, as suggested by GSI. Results of explorations/investigations shall be communicated from time to time for concurrence of CEA/CWC/GSI regularly. Cost for changes required consequent to investigations shall be absorbed by M/s SJVNL.

(iv) M/s SJVNL shall comply to the suggestions/observations of Central Soil & Materials Research Station (CSMRS) on Construction material & Geotechnical aspects as given in **Annex – VI** and as incorporated in the final DPR. M/s SJVNL shall complete balance explorations/investigations and should be submitted for review and the progress of all the pending investigations must be reported periodically to CSMRS & CEA.

(v) In case, any change in e-flows is suggested by MoEF&CC in future, M/s SJVNL shall review the installed capacity & design energy of the project and furnish the same for appraisal to CEA before commencement of construction of the project. For projects where construction already started/commissioned, M/s SJVNL shall review the design energy and furnish the same for appraisal of CEA.

Further, M/s SJVNL shall also review the design energy based on revised hydrology on commissioning of the project and thereafter at interval of every 10 years and furnish the same for appraisal of CEA.

(vi) In case geological surprises in underground works are met, M/s SJVNL shall systematically maintain a record of geological surprises, those are encountered. At the same time, M/s SJVNL shall request the State Govt. to constitute an expert committee consisting of representatives from State Govt., GSI, CWC, CEA etc. Once a committee is constituted, M/s SJVNL shall submit their proposal for the enhanced cost to the expert committee, which in time shall examine and recommend impact on the cost thereof.

(vii) M/s SJVNL shall use the seismic design parameters approved by National Committee on Seismic Design Parameters (NCSDP) for design purposes.

(viii) In case, changes are made in design parameters, during construction, due to site conditions or otherwise, the same shall be intimated and got concurred from the Authority (CEA) before M/s SJVNL implements such changes.

(ix) Tariff of the project shall be as determined/ adopted by the appropriate Electricity Regulatory Commission.

(x) M/s SJVNL shall obtain Environmental and Forest clearance from MoEF&CC and shall submit a copy to CEA.

(xi) Suitable R&R plan shall be prepared by M/s SJVNL and submitted to MoEF&CC for obtaining their clearance.

(xii) M/s SJVNL Shall comply with the conditions as mentioned in the Ministry of Water Resources, RD&GR (now Ministry of Jal Shakti) letter no.15011/1/2015-PP Dated 15.12.2015 (the corrected letter as forwarded by MoWR, RD&GR. vide letter no.L-15011/1/2015-PP Dated 22.12.2016, copy attached at **Annexure-VII**) for project design and shall ensure adequate e-flow for different months as prescribed by MoEF&CC particularly during lean months and longitudinal connectivity.

(xiii) As per ISM-2 Dte., CWC letter dated 15.10.2019, there should not be any consumptive use of water as no allocation of Satluj water has been made to State of Himachal Pradesh as per Bhakra Nangal Agreement, 1959 and other conditions mentioned in BBMB letter dated 13.01.2012 (**Copy enclosed at Annex-VIII**).

(xiv) If any impact on wild life is observed, M/s SJVNL would obtain clearance from National Board of Wild Life and shall submit the same to CEA.

(xv) If Scheduled Tribe population is getting affected at project site, clearance under Forest Right Act/Ministry of Social Justice & Empowerment/ Ministry of Tribal Affairs, Govt of India/State Government shall be obtained by M/s SJVNL and shall submit the same to CEA.

(xvi) M/s SJVNL shall take appropriate precautions to avert flooding of powerhouse by adopting measures listed at **Annexure – IX**.

(xvii) M/s SJVNL shall take appropriate preventive measures of Disaster Management in case of Dam failure or sudden release of water as per conditions contained in **Annex-X.**

(xviii) M/s. SJVNL shall obtain the clearance from Ministry of Defence & shall comply with the conditions stipulated therein.

(xix) M/s SJVNL shall obtain clearance from Ministry of Home Affairs regarding participation of foreign companies in tender works packages and shall comply with the conditioned stipulated therein.

(xx) M/s SJVNL have obtained clearance from International angle from Ministry of Water Resources, RD&GR (now Ministry of Jal Shakti) vide letter no.Y-19011/7/2015-IT/1027-30 Dated 12.03.2018. M/s SJVNL shall comply with the condition stipulated in the clearance letter (copy attached at **Annex-XI**).

(xxi) M/s SJVNL shall comply with the guidelines for participation of foreign Companies in tendering for work packages of Hydro Electric Projects in sensitive areas, issued by Ministry of Power vide No. 7/1/2002-DO(NHPC) [Vol. II], dated 03.09.09 appended at **Annex-XII**.

(xxii) M/s SJVNL shall deploy modern tools / software for construction monitoring of the project by establishing IT based monitoring systems and linking the same to CEA network.

(xxiii) M/s SJVNL shall ensure availability of adequate quantities of rock/sand from quarries/excavated muck/burrow areas to meet the requirement of coarse & fine aggregates for both wearing & non-wearing surfaces.

(xxiv) Fly ash and fly ash based products shall be used in the construction of various works to the extent possible in accordance with MoEF notification dated 14.09.1999 and its amendment dated 27.08.2003 and as revised on 06.11.2008. Construction material surveys shall include the required investigations for use of fly ash and fly ash based products in various works, infrastructure facilities etc. and their feasibility shall be ascertained by M/s SJVNL.

(xxv) M/s SJVNL shall submit the final updated DPR to the concerned State Government/s, appropriate Electricity Regulatory Commission and the Transmission Utility under intimation to the Authority. M/s. SJVNL shall also forward a copy of final updated DPR to co-basin States and Indus wing of MoJS under intimation to the Authority.

(xxvi) Information in respect of tying up essential inputs/statutory clearances, results of investigations/studies shall be submitted by M/s SJVNL to CEA/CWC/GSI/CSMRS on receipt of same from time to time.

(xxvii) The broad technical aspects of the project proposal in the project report have been scrutinized in CEA in consultation with CWC, GSI, CSMRS and other concerned agencies. The scrutiny is based on the data, assessment and certificates presented in the report and information/clarifications received as compliances to the observations on the assumption that the data and information furnished are accurate and have been collected reliably by the project authorities from dependable sources and/or after carrying out detailed surveys and investigations as presented in the report.

(xxviii) Project is scheduled to be completed within 63 months from the zero date of 01st June, 2021.

i) Unit –wise commissioning schedule of the project is given below:

- Unit-I (73 MW) : 61 months
- Unit-II (73 MW) : 61 months
- Unit-III (73 MW) : 62 months
- Unit-IV (73 MW) : 62 months
- Unit-V (73 MW) : 63 months
- Unit-VI (17 MW) : 63 months

(xxix) In case time gap between Concurrence accorded to the scheme by CEA and award of one of major civil packages (either Dam or HRT or Powerhouse) by M/s. SJVNL is three years or more, a fresh Concurrence of CEA shall be obtained by M/s. SJVNL.

(xxx) The project developer has to approach CTU to seek connectivity/Long Term Access (LTA) as per CERC regulations at least five years before the anticipated commissioning of the project. The transmission system for the project would be firmed up after grant of LTA, as per CERC Regulations. The developer must

ensure that generating machines are capable of operation in synchronous condenser mode.

(xxxi) Revalidation of Concurrence can also be considered, in case, the reason for delay in award of one of major civil packages (either of Dam/HRT/Powerhouse) is beyond the control of developer. However, proposal for revalidation shall be submitted three months before the expiry of validity of the Concurrence, which is three years from the date of issue of this Concurrence Memorandum.

(xxxii) Concurrence is subject to compliance by M/s SJVNL of various policies/guidelines etc. issued by Govt. of India from time to time.

(xxxiii) M/s SJVNL shall comply strictly the "Public Procurement (Preference to make in India) Order, 2017 (PPP-MII Order)" issued by Department of Industrial Policy and Promotion, Ministry of Commerce & Industry, Govt. of India vide its letter no. P-45021/2/2017-B.E.-II dated 15.06.17. **(Copy enclosed at Annex-XIII).**

4. Monthly Status Report of compliance of the conditions stipulated under para 3 of this Concurrence letter shall be submitted by M/s. SJVNL to Chief Engineer (HPA), CEA.

5. Monthly Progress Report of the project shall be submitted by M/s. SJVNL to Hydro-Project Monitoring (HPM) Division of CEA. Three (3) copies of the half-yearly progress reports on both physical progress of the scheme and expenditure actually incurred, duly certified by statutory auditors shall be submitted to the Authority till the Commercial Operation Date of the plant. The project authorities shall give free accessibility to CEA officers and staff to have on the spot assessment of various aspects of the project.

6. Monthly status of the project from the date of Concurrence to date of Commercial Operation (CoD) of the project shall be furnished by M/s. SJVNL to Chief Engineer (HPA), CEA as per the proforma enclosed at **Annex-XIV.**

7. The Authority reserves the right to revoke this Concurrence, if the conditions stipulated in this Office Memorandum are not complied with to the satisfaction of the Authority.

Encls: Annexures I, I (A) , I (B) , I (C) II, III, IV, V, VI, VII, VIII, IX, X , XI ,XII , XIII & IV.

(V.K. Mishra) 11/2/21
Secretary, CEA

To,
As per list

1. Chairman-cum-Managing Director, M/s SJNV Ltd., Corporate Office Complex, Shanan, Shimla-171006 (HP).
2. Secretary, Ministry of Power, Govt. of India, Shram Shakti Bhawan, Rafi Marg, New Delhi –110119.
3. Secretary, MoEF&CC, Government of India, Paryavaran Bhawan, CGO Complex, Lodhi Road, New Delhi – 110003.
4. Chairperson, Central Electricity Regulatory Commission, 3rd & 4th Floor, Chanderlok Building, 36, Janpath, New Delhi-110001.
5. Chairperson, Central Electricity Authority, Sewa Bhawan, R.K. Puram, New Delhi- 110066.
6. Chairperson, Central Water Commission, Sewa Bhawan, R.K. Puram, New Delhi – 110066.
7. Principal Secretary (MPP&Power), Department of Power, Government of Himachal Prasdesh, Shimla-171002
8. Chairman-cum-Managing Director, Power Grid Corporation of India Limited, Saudamini, Plot No.2, Sector 29, Gurgaon - 122001 (Haryana).
9. Adviser (Energy), Neeti Ayog, Yojana Bhawan, New Delhi – 110001
10. Member (Hydro/Planning/Thermal/Grid Operation & Distribution/Economic & Commercial/Power Systems), CEA, Sewa Bhawan, R.K. Puram New Delhi – 110606.
11. Member (D&R), Central Water Commission, Sewa Bhawan, R. K. Puram, New Delhi - 110606.
12. Joint Secretary (Hydro), Ministry of Power, Shram Shakti Bhawan, Rafi Marg, New Delhi-110119.
13. Commissioner (Indus Wing), Ministry of Water Resources, RD&GR, 2nd Floor, Block-3, CGO Complex, Lodhi Road, New Delhi-110003.
14. Chief Engineer (HPA/PSP&PA-I/F&CA/TCD/Legal/HEPR/HPP&I/HE&TD), CEA, Sewa Bhawan, R.K. Puram, New Delhi – 110606.
15. Chief Engineer (PAO), CWC, Sewa Bhawan, R.K. Puram, New Delhi – 110066.
16. Chief Engineer, Design (NW&S), CWC, Sewa Bhawan, R.K. Puram, New Delhi – 110066.
17. Director (LHIM&EPE Division), Geological Survey of India, A-II, Pushpa Bhawan, Madangir Road, New Delhi – 110062.
18. Director , CSMRS, Olof Palme Marg, Hauzkhas , New Delhi-110016
19. Director{PA(N)/Hydology(N)/CMDD(NW&S)/HCD(NW&S)/FE&SA/ISM/CA-HWF/ CMC/Instrumentation}, CWC, Sewa Bhawan, R.K. Puram, New Delhi – 110066.

Annex – I

Sunni Dam HEP (382 MW), Himachal Pradesh
Abstract of Cost Estimates (July 2020 PL)

(Figures in Rs. crores)

S.N.	Description	Amount
a	Civil Works	1525.13
b	E&M Works	542.96
c	Associated Transmission System Part	51.72
d	**Hard Cost (a+b+c)**	**2119.81**
e	IDC	346.88
f	FC	8.66
	Project Cost (1+2+3)	**2475.35**

Tentative Financial Package

(Present Day Cost at July, 2020 Price Level)

Debt Equity Ratio=70.30

Source of Financing	Rs. Crores
Equity (Internal resources)	742.60
Debt i) Domestic Commercial Borrowing	1732.75
Total (Equity + Debt)	**2475.35**

Terms of Loan

Sl. No.	Item	Details
1	Source of debt	Commercial Banks
2	Loan Amount	1732.76 Crore
3	Interest rate	8.35%
4	Financing	0.50% of debt

Annex-I (A)

Sunni Dam HEP (382 MW), Himachal Pradesh
Abstract of Civil and HM Cost (July 2020 PL)

(Figures in Rs. Lakh)

SI. No	Description	Amount
A	**DIRECT CHARGES**	
I	**I-WORKS**	
1	A-Preliminary	2097.52
2	B-Land	29239.19
3	C-Works	48092.54
4	J- Power Plant Civil Works	39467.52
5	K-Building	7220.19
6	M-Plantation	20.00
7	O-Miscellaneous	2899.00
8	P-Maintenance	947.80
9	Q-Special T&P	68.50
10	R-Communication	1297.45
11	X- Env & Ecology	10711.60
12	Y-Losses on Stock	236.95
	I-WORKS	**142298.26**
II	Establishment	9402.95
III	T&P	200.00
IV	Suspense	0.00
V	Receipts and Recoveries	-18.72
TOTAL DIRECT CHARGES		**151882.49**
(i)	Audit & Accounts charges @0.25% of I-works	355.75
(ii)	Capitalization of abatement of Land revenue (5% of Cost of Culturable Land)	274.47
TOTAL INDIRECT CHARGES		**630.22**
Total Cost including Direct and Indirect Charge (A+B)		**152512.71**
Total Civil Cost in Rs. Crore		**1525.13**

Annex-I (B)

Sunni Dam HEP (382 MW), Himachal Pradesh

Abstract of Cost Estimates of Electro-Mechanical Works (July, 2020 Price Level)

		Feb 2020, Price Level
Sl.No.	**Item**	**Approved Cost** (In INR Lakhs)
1	**Preliminary (only cost of model tests)**	**180.00**
2	**Generating plant and equipment**	
a)	Generator, turbine and accessories	20779.70
b)	Auxiliary electrical equipment for power station	3183.68
c)	Auxiliary Mechanical equipment and services for power station	1426.69
d)	Goods GST @ 18% on 2(a), 2(b) and 2(c)	4570.21
e)	Transportation, handling and Insurance charges (@ 6% of 2(a),2(b), and 2(c)	1523.40
f)	Erection and commissioning charges (@8% of 2(a),2(b), and 2(c) excluding spares)	1945.07
g)	Service GST @18% of 2(e) & 2(f)	624.32
	Subtotal (Generating plant and equipment)	**34053.08**
3	**Substation equipment, auxiliary equipment and service of switchyard**	
a)	Substation equipment, auxiliary equipment and service of switchyard	536.33
b)	Goods GST @18% on 3(a)	96.54
c)	Transportation, handling and Insurance charges (@ 6% of 3(a)	32.18
d)	Erection and commissioning charges (@8% of 3(a) excluding spares)	41.80
e)	Service GST@18% on 3 (c) and 3(d)	13.32
	Subtotal (Substation equipment, auxiliary equipment and service of switchyard)	**720.18**
4	**Gas insulated switchgear**	
a)	220 kV Gas insulated switchgear with accessories	11421.62
b)	Goods GST @ 18% on 4(a)	2055.79
c)	Transportation, handling and Insurance charges (@ 6% of 4(a)	685.30
d)	Erection and commissioning charges (@8% of 4(a) excluding spares)	887.12
e)	Service GST@18% on 4 (c) and 4 (d)	283.03
	Sub-total (GIS)	**15332.96**
5	Contingencies @1% on items 2, 3 and 4	501.06
6	Tools and plants @ 0.5% of items 2, 3 and 4	250.53
7	**Sub-total (Item 1 to 6)**	**51037.81**
8	Establishment @ 6%	3006.37
9	**Sub-total (Item 7 and 8)**	**54044.19**
10	Audit and account charges @ 0.5% of Item-1,2,3,4	251.53
	TOTAL (E&M works)	**54295.62**
		542.96

Annexure- I(C)

Abstract of Cost Estimates for ATS (Associated Transmission System) (July, 2020 PL)

Estimates (in INR Crore)

S.N.	**Description**	**Unit/Quantity**	**Amount submitted by SJVNL**	**Amount vetted by CEA (July 2020 PL)**
1	220 kV Twin Zebra D/C transmission line from Sunni Dam Switchyard to Nange Pooling Station	**25 kms**	**43.08**	**43.40**
2	220 kV, GIS bays (at common pooling station)	**2 nos.**	**8.26**	**8.32**
	Total		**51.34**	**51.72**

Annex-II

Sunni Dam HEP (382 MW) in Himachal Pradesh by M/s SJVN Ltd.

Salient Features

Location		
•	State	Himachal Pradesh
•	District	Shimla and Mandi
•	River	Sutlej
•	Coordinates	
	o Dam Site	31° 11' 53"N, 77° 12' 39"E
	o Powerhouse	Right bank of river
Scheme of Hydro Electric Project (RoR/Storage)		**RoR**
Hydrology		
•	Catchment Area at diversion site	52955 km^2
•	Design Flood (PMF)	15473.0 m^3/s
•	Diversion Flood	773.0 m^3/s
•	Location of Catchment	Catchment Extent to 30.5° N to 33.5° N and 77° E to 83° E
•	Latitude (Dam site)	31° 14' 53"N
•	Longitude (Dam site)	77° 12' 39"E
•	Average Annual Rainfall	978.00 mm
•	Maximum temperature	35.7° C
•	Minimum temperature	2.3° C
Reservoir		
•	FRL/MWL	EL. 712.00 m
•	Maximum Water Level	El. 713.00 m
•	MDDL	El. 709.50 m
•	Gross Storage at FRL	82.50 $x10^6 m^3$
•	Live Storage	7.90 $x10^6 m^3$
•	Length of Reservoir	20.70 km
Diversion Tunnel		
•	No, Diameter and Shape	01 no., 10.00 m Horse shoe shape
•	Length	642.208 m
•	Diversion Discharge	773.00 cumecs
•	Invert level at entry	650.00 m
•	Invert level at exit	644.00 m
•	Diversion tunnel gate (Type of gate)	Vertical fixed wheel type

Coffer Dam		
•	Type of u/s coffer dam	Rock fill
•	Height of u/s coffer dam above river bed	18.80 m
•	Type of d/s coffer dam	Rock fill
•	Height of d/s coffer dam above river bed	9.20 m
Dam		
•	Type	Concrete Gravity Dam
•	Top of Dam	El. 715.00 m
•	Dam height above river bed level	71.00 m
•	Height of Dam from deepest foundation level	83.00 m
•	Length of Dam at top	178.00 m
•	Average River bed level	644.00 m
Spillway		
•	Type of Spillway	Combination of Low Level Spillway (LLS) and Upper Level Spillway (ULS)
•	Energy Dissipation Arrangement	Stilling Basin type
Low Level Spillway (LLS (Under sluice Spillway)		
•	Type	Sluice type
•	No. of bays	Six (06)
•	Size of opening	8.50 m (W) x 16.00 m (H)
•	Type & No. of gate	Radial Gate, Six (06)
•	Total length of LLS Blocks	87.00 m
•	Width of each Block	14.50 m
•	Crest Level	El 660.00 m
Upper Level Spillway (ULS) (Overflow Spillway)		
•	Type	Ogee with open crest overflow
•	No. of bays	One (01)
•	Size	5.00 m (W) x 4.50 m (H)
•	Type & No. of gate	Flap Gate, One (01)
•	Crest Level	707.50
Power Intake		
For Main Units		
•	Number of Intake	02 no.
•	Design Discharge (per intake)	277.84 m^3/sec
•	Centre line of intake	689.30 m
•	Invert level	685.00 m

•	**For Auxiliary Units**	
•	Number of Intake	01 no.
•	Design Discharge (per intake)	171.27 m^3/sec
•	Centre line of intake	688.60 m
•	Invert level	685.00 m
Intake Gate		
•	Type of gate	Vertical Fixed Wheel type
•	Size of intake gate (for penstock 1 &2)	6.75 m (W)x 8.60 m (H)
•	Size of intake gate (for penstock - 3)	5.65 m (W)x 7.20 m (H)
•	Design Head	27.00 m
Pressure Shaft		
Main Unit		
•	Number of Pressure Shaft	Two (02) No. with dia 8.60 m further bifurcated into (04) with dia. 5.40 m
•	Dia for Pressure Shaft-1 and Pressure Shaft-2	8.60 m
•	Design Discharge for Pressure Shaft-1 and Pressure Shaft-2	277.84 m^3/sec
•	Velocity for Pressure Shaft-1 and Pressure Shaft-2	4.78 m/s
•	Length of Pressure Shaft-1	143.96 m up to Bifurcation (43.65 m and 43.81 m for Branches after Bifurcation)
•	Length of Pressure Shaft-2	134.53 m up to Bifurcation (43.65 m and 43.81 m for Branches after Bifurcation)
Auxiliary Units		
•	Number of Pressure Shaft	1 No. 7.20 m further bifurcated into two (02) with dia. 5.40 m and 2.80 m
•	Dia for Pressure Shaft-3	7.20 m
•	Design Discharge for Pressure Shaft-3	171.27 m^3/sec
•	Velocity for Pressure Shaft-3	4.21 m/sec
•	Length of Pressure Shaft-3	137.85 m up to Bifurcation (43.61 m and 50.98 m for Branches after Bifurcation)
Tail Race Tunnel		
•	Number and type	Two (02), underground
•	Size and Shape of Tunnel	10.50 m Dia. and 9.00 m Dia Horse Shoe Shaped
10.50 m Dia Tail Race Tunnel (for Unit No. 1,2 &3)		
•	Design Discharge	416.76 cumecs
•	Length	279.352 m
9.00 m Dia Tail Race Tunnel (for Unit No. 4,5 &6)		
•	Design Discharge	310.19 cumecs

•	Length	202.768 m
•	No. of outfall gates and their size	Six (06) No., 8.40 m (W) x 4.20 m (H)
•	Type of gate	Vertical fixed wheel gate
•	Sill level	647.20 m
•	Design Head (m)	28.20 m
•	Minimum TWL	El. 647.50 m
•	Normal TWL	El. 651.20 m
•	Maximum TWL	El. 656.60 m (corresponding to 2000 cumecs)
•	Head Loss	2.12 m
•	Rated Head	57.85 m
•	Gross Head	59.97 m
Transformer Hall		
•	Type and number of transformer hall	Underground, 1 No.
•	Size of Transformer Hall Cavern	175.00m (L) x 18.70 m (W) x 27.00 m (H)
Powerhouse		
•	Type	Underground
•	Installed Capacity & No. of Units	4x73 MW=292 MW (Main Plant), 1x73MW+1x17MW =90MW (Env. Units)
•	Status of Overload Capacity of Unit	Capability for 10% continuous overload
•	Status of Butterfly Valve Chamber(yes/No)	No
•	Rated Head including Maximum Net Head % Minimum Net Head	Maximum Net Head- 64.50 m Minimum Net Head-56.18 m Rated Net Head-57.85 m
•	Type of Turbine	Francis
•	Turbine efficiency	94%
•	Synchronous Speed	137 rpm for Main Plant and 300 rpm for Env. Plant
•	Power factor	0.85
•	Generator efficiency	98.50%
•	Generation Voltage	11 kV
•	Generator Bearing Arrangement (Type)	Umbrella for 73MW and Semi-Umbrella for 17MW unit
•	Bus duct (Type, Rating)	IPBD, 6300 A for 73 MW and IPBD, 2000A for 17 MW
•	Generator Step up Transformer (Type, Rating, Nos)	13x31.5 MVA, 11/220kV, Single Phase for Main Plant 3x31.5 MVA, 11/220kV Single Phase and 1x22 MVA,11/220 kV Three phase for Env. Units
•	EOT Cranes (Nos., Capacity & Location)	• 2 x 175 T with auxiliary hook of 25 T and one 10 T monorail hoist in Power House. • One 10T crane in GIS cavern

•	Transport Limitation	• Width of 3750.00 mm • Weight :40R (i.e. 40.00T rolling including weight of trailor) • Heaviest component to be transported; 31.50 MVA, 11/220kV, Single Phase Transformer. • Approx. weight of heaviest component to be transported alongwith carriage: 37.00T
•	Other parameters • High Flood Level • MAT Entry Level • Machine Hall Level • PHY level	 • El 675.40m • El. 682.00 m • El. 649.50 m • El. 710.00 m
Switchyard & Power Evacuation		
•	Generation Voltage	11 kV for Main Plant and Environmental Units
•	Transmission Voltage	220 kV for Main Plant and Environmental Units
•	**Transmission System** - Name of transmission line (indicating voltage level, no. of ckts, type of conductors and Length (in km)	Power generated in Sunni Dam HEP shall be evacuated through 220 kV Twin Zebra D/C line to 220/400kV pooling substation of CTU located at Nange near LHEP-II. Approximate line length shall be 25 kms.
•	Name of Terminal substation / Pooling station for dedicated line	Nange Pooling Station of CTU
•	**Cable**: • Type of Cable • Voltage level • Size (in mm^2) and current rating (in amp) • Length of Cable (in km)	 • XLPE for Main and Environmental Unit. • 220kV for Main and Environmental Unit • 1400mm^2 (tentatively) and 1495 A • 2.1 km (approx.)
•	**Rating of Switchgears** (Voltage level, normal current ,short time rating)	245kV, 2000A (normal current), 40kA (for 1 sec) Refer SLD
•	**Switchyard**: • Type (indoor/outdoor & AIS/GIS) • No. of Bays including Generator Bays • Switching scheme at different Voltage level. • Fault current of switchyard equipment	 • Indoor & GIS • 9 bays at 220kV Level (6 incoming bays, 2 outgoing bays and 1 Bus Coupler) • Double Bus Bar arrangement • 40kA

•	**Transformer** • Impedance and Vector group • Transformation Capacity (MVA) • Voltage Ratio (kV/kV) • No. of Transformers • Single Phase/three phase unit. • Dimension (L x W x H) • Impedance of Transformer	 • Ynd11 • 31.5 MVA for Main Plant and 31.5 MVA & 22 MVA for Environmental Unit • 11kV/220kV • 13 for Main Units and 3 of 31.5 MVA & 1 of 22 MVA for Environmental Units • Single phase unit for 31.5 MVA and 22MVA- three phase • 175.00 m x 17.70 m x 27.00 m • 12.50%
•	**Reactor** • Name of line with line reactor and rating of line reactor (Voltage level, MVAR capacity, Single/three phase units, Dimension: (LxWxH) • Bus reactor and rating of Bus reactor (Voltage level, MVAR capacity, single phase/three phase units, Dimension: (LxWxH) • Fault current limiting reactor (voltage level, reactor impedance, single phase/three phase units, Dimension: (LxWxH)	To be decided after Power system studies. **The space for one number Reactor has been kept in the switchyard.** However, one no. 125 MVAr Reactor is proposed at ISTS pooling station at Nanj
•	Whether generator can work in synchronous condensers mode	Yes, in Main Plant and No in Environmental Units
•	Whether Developer has applied for LTA/connectivity to CTU	Yes
•	**Switchyard Coordinates**	E1 (11508.634), N1 (32600.206) E2 (11577.704), N2 (32640.571) E3 (11590.318), N3 (32618.987) E4 (11521.248), N1 (32578.621)
•	**Pothead Yard** Type Size, Elevation	 Outdoor 80.0 m (L) x 24.5 m (W) El. 710.00 m
Energy Benefits		
•	Annual Energy Generation in 90% Dependable Year	1415.92 GWh (1008.91 GWh: Main Plant + 407.11 GWh : Aux. Plant)
•	Design Energy in 90% Dependable Year with 95% machine availability	1381.77 GWh (987.84 GWh: Main Plant + 393.93 GWh: Aux Plant)

•	Corresponding Annual Load Factor	42.31%
•	Minimum peaking Hours generation for Main Plant	3.65 Hours
•	**Environmental Flow**	
•	Monsoon Season (June-September)	171.27 cumecs
•	Lean Season (December to March)	21.12 cumecs
•	Non-monsoon/Non-lean Season (October-November & April-May)	72.38 cumec

Annex-III

Sunni Dam HEP (382 MW), Himachal Pradesh
(Observations/comments of CWC)

1. FE&SA Aspects

The seismic design parameters approved by National Committee on Seismic Design Parameters (NCSDP) shall be used in the design. The compliance of above may be ensured before taking up detailed design / construction and shall also be intimated to CWC. The clearance will be considered withdrawn if above conditions are not fulfilled.

2. Hydel Civil Design Aspects

a) SJVNL shall comply to all the suggestions recommended by HCD (NW&S) Dte, CWC vide letters dated 29.04.2020, 05.06.2020 and 03.11.2020 latest by pre-construction stage.

b) As per CWC's letter dated 03.11.2020, the Model Studies shall be carried out and components design (Civil/Hydro), if required, shall be modified accordingly as per the outcome of the model studies. The Power generation loss (if any), due to high sediment load shall also be accounted in the tariff calculations

3. Dam design Aspects

- As suggested in groutability test report, the spacing of grout holes during construction has to be planned at closer spacing to achieve the desired permeability value and carrying out the curtain and consolidation grouting.
- The roof profile of orifice spillway has been modified and its functioning verified through the model study. The modified profile is to be incorporated in the DPR.
- The Reservoir rim study needs to be completed and the issues, if any, may be duly addressed.

4. Gates Design Aspects

With respect to the flap gates provided in the auxiliary spillway for disposal of debris, the project authority may get the feedback about the performance/ functioning of the flap gates in other projects provided for rendering similar services and accordingly decide at project execution/implementation stage.

5. Inter State Aspects

a) The proposal is cleared from Indus Water Treaty angle subject to condition mentioned in Indus wing, MoWR, RD&GR letter dated 12.03.2018.

b) As mentioned in BBMB letter no. 247-50 /B-1981/3/DHD/Vol.I dtd. 13.01.12, there should not be any consumptive use of water as no allocation of Satluj water has been made to State of Himachal Pradesh as per Bhakra Nangal Agreement, 1959.

Annex-IV

Sunni Dam HEP (382 MW), Himachal Pradesh
(Observations/Comments of CEA)

I. Power Potential Studies

The installed capacity may need to be reviewed on account following:

a) Reservoir operational restrictions on account of silt management.
b) Change in various operating levels (FRL, MDDL, and TWL), etc if any,
c) Change in water conductor system Losses.
d) Change in hydrology
e) Change in environmental releases

II. Power Evacuation Aspects

a) The transmission system for the project would be firmed up after grant of connectivity/LTA.
b) Project developer shall approach CTU to seek Long Term Access (LTA) at least five years before the anticipated commissioning of the project for developing the transmission system for power evacuation. Evacuation system for the project would be firmed up after grant of LTA, as per CERC regulations.
c) Generating units at the main power house should be capable of operating in Condenser mode.

III. Construction Power Aspects

a) Considering the magnitude of works, total construction load of 5.56 MVA (4.44 MW considering pf of 0.8) seems to be generally in order.
b) The average power tariff of Rs. 7.29/kWh for constructions power considering 80% supply from Grid (@ Rs. 4.30/kWh) and 20% supply from Diesel Generating sets (@Rs. 19.23/kWh) seems to be generally in order.
c) The capital cost of construction power works is considered as Rs. 5.02 Crores.
d) The cost of non-works energy like office building, residential colony and common lighting etc. is considered as Rs. 8.77 Crores.

Annexure-V

Sunni Dam HEP (382 MW), Himachal Pradesh
(Observation/ Comments given by GSI)

a) As per groutability test report & observations of GSI, the rock mass at dam site is found to be groutable as the permeability values have decreased considerably after grouting. The detailed suggestions/advice mentioned in the observation note on groutability test report provided by SU: PH& HP, GSI, Chandigarh should be incorporated in design and in DPR & shall be followed during construction.

b) Since, poor to very poor rock mass conditions with multiple shears is expected between RD 275 m and RD 345 m in power house complex, utmost care & precautions must be taken up during excavation in underground power house and transformer hall cavern . If needed, multiple heading & benching method of excavations controlled and designed blasting, concomitant support measures etc. are to be designed, ensured and incorporated in the construction execution plan. The support measures for powerhouse and transformer hall caverns should be designed as per the 3D numerical stability analysis results conducted considering the tested values of geological parameters of CSMRS.

c) All the findings from explorations / investigations, 3D geological logging and stability modelling etc. should be incorporated in the final DPR and are to be considered for design of structures.

d) All suggestions of GSI (furnished in earlier notes and as comments) should be followed and may be incorporated as annexures in the final DPR.

Annex-VI

Sunni Dam HEP (382 MW) in Himachal Pradesh
by M/s SJVNL
Construction Materials and Geotechnical Aspects by CSMRS

Concrete:

The project authorities have carried out all the investigations as suggested by CSMRS and incorporated the reports in the updated DPR. The project authorities have reported in Vol. 1 chapter XII item No. 12.3.3 that the requirement of aggregates is being met by excavated rock material and the Khaira quarry material will be kept as standby. Since as per the test results, the excavated rock from the left bank dam site (sample No. SU/CSM/CA/6) is showing expansion of 0.189% at 28 days and falling in innocuous and deleterious category as per ASTM C1260-14 , the project authorities are advised to take necessary preventive measures as suggested in the CSMRS report no. 03/C-III/CSMRS/E/05/2019 or the aggregates from Khaira quarry can be used as proposed earlier by project authorities.

Further, Project authorities are advised to observe the following practices during construction:

a) Regular sampling of the aggregate production may fail to detect a localized feature within the quarry which might have significant effect on the quality or durability of aggregate. Hence, geological inspection and testing of soundness, Alkali Silica Reactivity (mortar-bar expansion) and Petrography examination of aggregates must also be done as a part of the routine assessment at the time of construction.
b) The water to be used in the construction should be frequently tested and checked for its conformity with the specification requirements given in IS:456.

Rock:

Following laboratory tests carried out on all the major rock types (in saturated condition) were found satisfactory:

a) Unconfined compressive strength, Modulus of elasticity, Poisson's ratio, Tensile strength using Brazilian tests, Tri-axial compressive strength.
b) Grain density, water absorption, apparent porosity, bulk saturated density, bulk dry density, slake durability index, Point load strength index.

In-situ stress measurement tests in powerhouse: It is reported in the submitted reports that due to highly jointed nature of rock-mass, it was very difficult to conduct hydro-fracturing tests and only one test could be completed. Currently, project authorities adopted an approximate wedge analysis approach to decide the orientation of the powerhouse cavern. It is suggested that detailed in-situ stress measurement (may be using some other appropriate method for highly jointed rock-mass) may be carried out at pre-construction or detailed design stage.

In-situ deformability characteristics of rock mass in powerhouse: Project authorities informed that the data of Dam drift shall be utilized as Power House is Dam Toe and there is no variation in

Rock mass. Thus, there is no additional requirement of deformability tests in powerhouse at this stage.

In addition to this, project authorities have agreed to carry out following tests in construction stage as per requirements. Hence, these may be carried out as per the requirement of the design:

(i) Petrographic tests, shear and compressional ultrasonic velocity tests, shear strength of infilling material, joint stiffness test , and swelling test.

(ii) Seismic wave velocity tests and bearing capacity tests. However, it may be noted that as per IS 12070 (Clause 8.2), plate load test is conducted on poor rocks for determination of safe bearing pressure provided the suspected safe bearing pressure of rock is less than 100 .

Rockfill

Comments made by rockfill division have been incorporated in the DPR. Hence, no further comments.

Soil:-

No comments to offer.

Annex – VII
Pg ① & ②

Immediate

No.L-15011/1/2015-PP

भारत सरकार

Government of India

जल संसाधन, नदी विकास एवं गंगा संरक्षण मंत्रालय

Ministry of Water Resources, River Development & Ganga Rejuvenation

नीति एवं योजना अनुभाग

Sharam Shakti Bhawan, Rafi Marg
New Delhi-01, Dated 22nd January, 2016

To

The Chairman,
Central Water Commission
Sewa Bhawan, Sector-1
R.K.Puram
New Delhi-110066.

Sub: Appraisal of water resources projects in view of e-flows in Ganga – reg.

Sir,

Kindly refer to this Ministry's letter of even No. dated 15.12.2015 on the subject mentioned above. In the last line of para-2, the words 'longitudinal corrections' may be read as **'longitudinal connectivity'.**

2. A copy of the corrected letter is also enclosed for necessary action, please.

Yours faithfully.

22.1.16

(S.K. Sharma)
Senior Joint Commissioner (PP)
Tel: 2371 9503

Encl : As above.

Copy for information to :

1. Commissioner(SP), MoWR, RD & GR, New Delhi.
2. PPS to Secretary(WR, RD & GR), New Delhi.

02

-23-

Annexure-VII

Pg (2) of (2)

No. 15011/1/2015-PP
Government of India
Ministry of Water Resources,
River Development & Ganga Rejuvenation

Shram Shakti Bhawan,
New Delhi-110001,
Dated: 15 December, 2015

To

The Chairman,
Central Water Commission
Sewa Bhavan, R.K. Puram
New Delhi.

Subject: Appraisal of water resources projects in view of e-flows in Ganga – reg.

Sir,

I am directed to invite your reference to D.O. letter dated 25.08.2015 (copy enclosed for ready reference) vide which it was directed that no dam or any structure be designed or approved by CWC till the report of e-flow is finalized.

2. The matter has since been reviewed and the Hon'ble Minister (WR, RD & GR) has directed that CWC may proceed with the appraisal of hydro-electric power projects other than those situated in Ganga basin rivers by ensuring adequate e-flow for different months as prescribed by MoEF & CC particularly during the lean months and longitudinal ~~corrections~~ connectivity.

Yours faithfully,

(S.K. Sharma)
Senior Joint Commissioner (PP)
Tel: 2371 9503

Encl : As above.

Copy for information to Comm (SP), MoWR, RD & GR, New Delhi.

Annexure – XIII

File No.T-85013/20/2/2019-ISM-2 DTE

भारत सरकार
जल शक्ति मंत्रालय
जल संसाधन नदी विकास एवं गंगा संरक्षण विभाग
केंद्रीय जल आयोग
अंतरराज्यीय मामले निदेशालय-2

सत्यमेव जयते

Government of India
Ministry of Jal Shakti
Dept. of Water Resources, RD&GR
Central Water Commission
ISM-2 Directorate

Sub: Inter-State aspect of DPR of Sunni dam (382MW), Himachal Pradesh- Reg

Please refer to your Lr.no.CEA-SY-25-12/1/2019-PAC Division/800-828 dated 12.09. forwarding therewith DPR of Sunni Dam HEP, Himachal Pradesh for examination from Inter-State aspect.

Project proposal

Sunni Dam HEP is a Run of the River type project located on Satluj river near Khaira village, in Shimla and Mandi Districts of Himachal Pradesh. The project envisages construction of a concrete gravity dam of ±83m high above the river bed. The Dam is located at Longitude 77°12'39" E and Latitude 31°14'53"N. On U/S of project lies 412MW Rampur HPS,which utilizes water discharged from further U/S 1500MW Nathpa-Jhakri project. On D/S of project lies 800MW Kol Dam HPS (FRL 642m).Dam FRL is at EL 712m, MDDL at EL 709.50m. Dam gross storage and live storage are 82.5MCM and 7.9MCM respectively.The installed capacity of power house will be 382MW.

The project has been examined from the Inter-State aspect and comments are as under:

Comments:

Sunni Dam HEP (382 MW) is a part of Multi stage Luhri HEP project proposed on river Sutlej which is one of the Eatsern Rivers of Indus basin. Earlier, a chapter on Inter-state/ International aspect and plan on general layout of Sunni Dam project was examined in this Directorate and comments were issued vide letter dated 20.03.2018. As per Annexure 4.2 of chapter IV of the DPR, the proposal was cleared from Indus Water Treaty angle subject to condition mentioned in Indus wing, MoWR, RD & GR letter Dated 12.03.2018.

In this regard, it is reiterated that there are no further comments to offer from Inter-state angle as communicated for 775MW Luhri Hydro Electric Project, vide CWC letter no. 7/2/6(H.P)/iv/2002-IP(N)/2019, Dtd. 27.3.12 (copy enclosed) subject to conditions mentioned in BBMB letter no. 247-50/B-1981/3/DHD/Vol.I, dtd.13.1.12 (copy enclosed).

Encl: As above

15/10/19
(Rajesh Kumar)
Director

Director,(HPP&I), Central Electricity Authority, Sewa Bhavan,New Delhi.
F.No.2/10/ISM-2/2017/320-21 Date: 15.10.2019
Copy to:
Director(PAC), Central Electricity Authority, Sewa Bhavan,New Delhi.

5 वां तल, सेवा भवन (द.)
राम कृष्ण पुरम, नई दिल्ली -110066
दूरभाष: 011-29583268,
ई मेल: ism-2dte-cwc@nic.in
ism2dte@gmail.com
जल संरक्षण-सुरक्षित भविष्य

5th Floor(South), Sewa Bhawan,
R.K. Puram, New Delhi-110066
Tel: 011-29583268,
E-mail: ism-2dte-cwc@nic.in
ism2dte@gmail.com
Conserve Water- Save Life

Bhakra Beas Management Board,
Plot No. 6-B, Sector 19-B,
Madhya Marg, Chandigarh-160019.

Tel No 0172-5011758
Fax No 0172-2549857
E-mail. secy@bbmb.nic.in

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From

The Secretary

To

The General Manager (Corporate Planning),
Corporate Planning Department,
SJVN Limited,
Himfed Building,
New Shimla – 171009
Telefax: 0177 -2670180

No. 247-50 /B-1981/3/DHD/Vol. I Dated: 13-1.2012

Subject: CEA comments on DPR of Luhri Hydroelectric Project – regarding.

With reference to your office letter No. CC/CP/LHEP/2011-859 dated 18.8.2011 on the above cited subject, I am directed to intimate that BBMB has no objection to the execution of Luhri Hydroelectric Project by Satluj Jal Vidyut Nigam Limited being a run-of-the river type Project. It is subject to the condition that there should not be any consumptive use of water as no allocation of Sutlej water has been made to State of H.P. as per Bhakra Nangal Agreement, 1959. It is brought out that any construction activity with un-controlled and haphazard disposal of excavated material at the project site may add to sedimentation in the downstream Projects by increasing the silt load and also would have an impact on the life of Bhakra Reservoir. It is, therefore, requested that the excavated material from the various components of the Project be got dumped at the designated disposal sites in a scientific manner. Adequate provisions may also be made in the tender documents specifying proper management of muck excavated during the execution of project including a penalty clause in case of violations.

23/1/12

सचिव के अधीन
Secretary 13/01/12

CC -

1. Principal Secretary (Power) to the Government of Himachal Pradesh, Department of MPP and Power, Shimla -2 with reference to his office letter No. MPP(F)2-22/2009-Loose dated 8.9.2011 for information please.
2. Chief Engineer/Bhakra Dam, BBMB, Nangal Township with reference to this office endst No. 27140/B-1981/3/DHD dated 26.9.2011.
3. Director/Water Regulation, BBMB, Nangal Township

02

(313)

CENTRAL WATER COMMISSION
IRRIGATION MANAGEMENT ORGANISATION -80-

204 (S), Sewa Bhavan
R.K. Puram, New Delhi-66

Sub: DPR(Revised) of Luhri H.E. Project(775MW)- Himachal Pradesh.

Ref: Letter No.CWC UO No: 29/68/2009/PA(N)/160dated 19.01.2012and
(ii) CWC UO No:-29/68/2009/PA(N)/277 dated:-21/02/2012

Kindly refer to the letters cited on the above subject. The compliance to the observations of this office letter No. 7/2/6(HP)/IV//IP(N)/2002/496 dated 20.06.2011 has been examined . BBMB has given no objection for the above project subject to the condition that there should not be any consumptive use of water as no allocation of Sutlej water has been made to the State of H.P. Subject to that Luhri H.E. Project H.P. can be considered acceptable from Interstate angle.

This issues with the approval of CE (IMO).

27/03/2012
Director, IP (N)

Director, PA (North) Dte., CWC, Sewa Bhawan, R.K. Puram
CWC U.O. No. 7/2/6(H.P.)/iv/2002-IP(N)/ 279 Dated: 27 March 2012

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Annex - IX

Sunni Dam HEP (382 MW) in Himachal Pradesh
by M/s SJVNL

Measures to be adopted to avert flooding of Power House

1. Installation of submersible type dewatering pumps of sufficient capacity in the dewatering sump.
2. In addition to drainage and dewatering pumps, provision of suitable number of submersible pumps of adequate capacity at MIV floor with provision for automatic starting by means of level switches.
3. Location of control panels for dewatering & drainage pumps at a floor higher than that of turbine floor.
4. Provision of suitable float switches in the P.H. building on MIV floor to give closing signal to the MIV in the event of inundation of P.H. due to penstock rupture or leakage in penstock or for some other reasons.
5. i) Provision of hoisting individual mechanism for draft tube gate of each unit for quick closing.

   ii) The draft tube gates to be capable of closing under unbalance condition of water pressure.
6. Provision of operation and control of surge shaft gates from remote for quick isolation of water conductor system in case of failure of other line of defense / protection.
7. In the catchment area of the project, discharge measuring system may be installed to give advance warning on the occurrence of flood in the river so as to take action for timely shut down of power house.
8. The unit control panels, unit protection panels etc. to be located at the machine hall to the extent possible.
9. D.C. Batteries, batteries chargers & D.C. Distribution Boards to be placed at a floor higher than that of machine hall.
10. Location of Station Service Transformers and Station Service Board on floor at higher level. Provision of D.G. set connected to Station Service Board capable of operating dewatering pumps in case of failure of supply from other sources.
11. The hydro power station may employ quick methods for determination of silt concentration in the water. One simple method for measurement of silt concentration in the river water is to weigh silted water of a given volume and compare with relatively silt free water of same volume and correlation may be established between the difference in weight and silt concentration. With this, approximate silt concentration will be ascertained quickly and decision may be taken for shut down of power house if silt level exceeds the permissible limit.

Note: Provisions under para 5(ii) may be reviewed at detailed design stage.

Annex-X

Sunni Dam HEP (382 MW) in Himachal Pradesh
by M/s SJVNL

Key preventive measures for disaster management in case of dam failure or sudden release of water

1. Setting-up of an empowered institutional framework for dam safety both at the Central, State and field unit level.
2. Preparation of Operation and maintenance manual for each dam;
3. Provisions to keep perpetual surveillance; carry out routine and periodic inspections; and monitor the operation and maintenance of the dam;
4. Establishment of well designed hydro-meteorological network and an inflow forecasting system;
5. Establishment of an emergency flood warning system for the probable flood affected areas downstream of the dam;
6. Comprehensive safety evaluation of each large dam by the independent Dam Safety Review Panel at the specified interval.
7. Make available the information relating to maximum anticipated inflows and outflows including flood warning and an adverse impact of the same, if any, on persons and property towards the upstream or downstream of the dam, to the concerned authorities and also make available such information in public domain;
8. Preparation of emergency action plan for each dam. In the emergency action plan, set out the procedures to be followed for the protection of persons and property upstream or downstream of the dam in the event of an actual or imminent dam failure or to mitigate the effect of the disaster; identification of the likely catastrophic flood in the event of any failure of the dam, along with probable areas, population, structures and installations likely to be adversely affected due to flood water released from the reservoir; warning proce4dures, inundation maps and advance preparations for handing efficiently and in the best possible manner the likely adverse situations especially to avoid loss of human life;
9. Provision to put the emergency action plan into action as and when conditions arise which are or likely to be hazardous to a dam or potentially hazardous to public safety, infrastructure, other property or the environment.
10. Provision that every owner of the specified dam shall, while preparing and updating emergency action plan, undertake a consultation process with all disaster management agencies and other concerned department entrusted with disaster management and relief in the area likely to be affected and owners of other dams in the immediate vicinity likely to be affected, so as to bring transparency and allay any unwarranted fear on dam safety issues.
11. Provision for proper cooperation by the dam owner to Disaster Management Authorities under the Disaster Management Act, 2005 to meet or mitigate any disaster or emergency arising out of the specified dams.

Annex-XI

5

No. Y-19011/7/2015-IT/1021-30
Ministry of Water Resources, River Development and Ganga Rejuvenation
जल संसाधन, नदी विकास एवं गंगा संरक्षण मंत्रालय
Indus Wing / सिंधु स्कंध

Block No.11, 8th Floor,
CGO Complex, Lodhi Road,
New Delhi – 110 003
Dated 12.03.2018

To,

General Manager
Corporate Planning Deptt.
Sutlej Jal Vidyut Nigam Ltd.
SJVN Corporate Office Complex
Shanan, Shimla – 171006.

Subject: Sunni Dam HE Project (373 MW) on Sutlej River, Himachal Pradesh – **Clearance from Indus Waters Treaty 1960 angle.**

Ref: **SJVNL Letter No. CC/CP/Sunni Dam-06-7/3418 dated 14.02.2018.**

Sir,

This is regarding the Sunni Dam HE Project (373 MW) received vide cited reference for clearance from Indus Water Treaty angle.

The proposal indicates that the project is located in between existing Rampur HEP (u/s) and Kol Dam (d/s) on the river Sutlej which is one of the three Eastern Rivers of Indus basin allocated to India for exclusive use as per the Indus Waters Treaty.

In view of the above, Sunni Dam HEP Project may be treated as cleared from Indus Waters Treaty angle subject to the condition that the project authorities/ State Govt shall provide all requisite information and support as and when required by this Ministry in this regard.

However, aspects related to the techno-economical consideration, interstate matters, sharing / allocation of waters, design aspects, environmental flow requirement etc. will be examined separately by CWC/ CEA in consultation with concerned Ministries/departments as per the laid down procedure for clearance of such projects.

12/3/18

(Rajveer Singh)
Deputy Commissioner (Indus)
TeleFax-24360332.

Copy to:
1. Chief Engineer, PAO, CWC, Sewa Bhawan, R K Puram, New Delhi
2. Chief Engineer, Design (NW&S), CWC, WB-II, R K Puram, New Delhi
3. Director, PAC Directorate, Central Electricity Authority, Sewa Bhawan, New Delhi

Annex – XII

No. 7/1/2002-DO(NHPC) Vol.III
Government of India
Ministry of Power

Shram Shakti Bhawan, Rafi Marg
New Delhi, dated-03.09.2009

OFFICE MEMORENDUM

Sub: Guidelines for participation of foreign companies in tenders for work packages of Hydroelectric Projects in sensitive areas.

The Government hereby lays down the following guidelines for participation of foreign companies in tenders for work packages of Hydroelectric Projects in sensitive areas.

1. (a) These guidelines may be called 'Guidelines for participation of foreign companies in tenders for work packages of Hydroelectric Projects in sensitive areas, 2009' and shall be applicable from the date of their issue.

2. (a) These guidelines have been framed, on the considerations that:-

National security will be a critical determinant while making choices in regard to hydro-electric projects in sensitive regions and border areas. Along the border, the concerned area may extend to a width of 50 kms on the Indian side of the international border with neighbouring countries. Every hydro-electric project, within this belt, with foreign participation of any form will need prior security clearance. This would extend to both public and private sector projects.

Prior clearance would apply in the case of similar hydro-electric projects being set up in certain sensitive locations, even if these are away from the border. Specific guidelines will be drawn up in consultation with the Ministry of Home Affairs to draw up a list of such sensitive locations.

Security aspects of hydro projects also need to be kept in view elsewhere as well. These would involve ensuring the safety and security of structures such as dams, intakes, tunnels, etc. Security implications shall inevitably form part of any pre-contract discussions and must be addressed prior to the actual commencement of the project or assigning of a project to any party.

3. (a) These guidelines shall be applicable to all Hydro-Electric Projects, being set up in the Central and State Sector and by Independent Power Producers with foreign participation of any form, regardless of the Project size or investment limit, located in the State of Jammu & Kashmir, or the North Eastern States including Sikkim and within an aerial distance of 50 kilometers on the Indian side of the international border with neighboring countries or of the line of control (LOC) with Pakistan, or the Line of Actual Control (LAC) with Tibet Autonomous region (China), or within any notified restricted/Protected areas, or within sensitive locations as identified by Ministry of Home Affairs from time to time.

4. (a) The State Government, before allotting any Hydro-Electric project covered by criteria at 3 above to a foreign company or to a company involving foreign collaboration in any form including Build Own Operate (BOO) or Build Operate Transfer (BOT), shall seek prior clearance from Ministry of Home Affairs.

(b) Similarly, a Developer of any Hydro-Electric Project covered by the criteria at 3 above, before appointing a foreign contractor or sub-contractor, shall seek prior clearance from Ministry of Home Affairs, through the State Government concerned. The details of the foreign companies shall be provided by the Developer.

(c) In case of a bid process for selection of a developer, contractor or sub-contractor such clearance from Ministry of Home Affairs shall be sought at the stage of Request for Qualification (RFQ).

5. (a) The Ministry of Home Affairs shall give its clearance/advise within 6 weeks on the reference from the State Government or from the Developer through the State government, as to whether the foreign developer/ contractor/ sub-contractor needs to be eliminated on the grounds of national security, invoking a clauses to be inserted in all bid documents to the effect that any bid can be rejected without assigning any reason.

(b) The period of 6 weeks shall commence from the date complete details are made available in the reference/questionnaire to the Ministry of Home Affairs.

(c) If the clearance/advice from Ministry of Home Affairs is not received within 6 weeks, the bid process would continue its normal course.

6. Once a foreign developer/ contractor/ sub-contractor has been qualified at the RFQ stage to submit his commercial bid, he should not be eliminated on the ground of national security.

7.(a) The project developer would evaluate and determine the optimum number of foreign employees required to be deployed at the project being awarded or sub-contracted to a foreign company, keeping in view the project's requirements, location and technical necessities. The number of foreign employees would be kept to the minimum and be confined only to technical/supervisory staff.

(b) Foreign employees would ordinarily be expected to confine their stay and movements to the designated place of stay and project site. Any visits outside the project site in any Restricted/Protected areas would only be undertaken after permission from the competent authority is obtained through the company in which they are employed, failing which they will be liable to action as per prevalent rules and orders. It will be the specific responsibility of the developer to ensure that the contract with the foreign company carries a clause that if the personnel of that Company are found indulging in activities prejudicial to India's national security interest, then the project developer may cancel the contract without any liability.

(c) The project developer shall furnish the list of foreigners (consultants, contractors, employees or retainers) proposed to be engaged in the project, with their full particulars (passport details, job profile/expertise, duration/location of stay, etc.) well in advance, which would be vetted before issue of visa.

(d) The Ministry of Power will certify in case of CPSUs, the project completion time and the requirement of the foreign personnel, while in case of all other projects, this will be certified by the concerned State Government.

8. (a) The Ministry of External Affairs in consultation with Ministry of Home Affairs will decide on the kind of Visa to be issued.

(b) While issuing visa/work permits, the Ministry of External Affairs will impose the necessary restrictions on specific individuals or on employees of specific companies that need to be watched, as well as the total number of visas issued at a given point of time in respect of project, so as to ensure compliance of the guidelines. Particular care would also be taken in respect of projects which are already allotted or where contracts and sub-contracts are already allotted, in the interest of national security.

9. If any equipment or electrical gadgets are proposed to be imported for the execution/implementation of the project, the promoters and CPSU's shall provide the equipment details, purpose, import route, etc., to the Department of Power/Energy in the State Government or to the ministry of Power as the case may be.

10. Considering the importance of security and safety aspects of all Hydro-Electric Projects including Hydro-Electric Projects not covered at criterion 3 above, Central Electricity Authority will, in consultation with Ministry of Home Affairs, also address the issue of ensuring safety and security of structures such as dams, intakes, tunnels etc. and, where considered necessary, issue guidelines for the purpose. These guidelines will be taken into account while according concurrence under Section 8 of the Electricity Act, 2003. Observance of such security guidelines by Hydro-Electric Projects that do not require Central Electricity Authority's concurrence under Section 8 of the Electricity Act, 2003, will be ensured by the respective State Government.

11. Prior clearance of security implications should inevitably form part of any pre-contract negotiations and must be addressed prior to the actual commencement of the Project or assigning of a Project to any Party.

12. The Ministry of Power shall ensure implementation of these guidelines by the CPSU's under its administrative control. The primary responsibility of ensuring compliance of these guidelines in respect of other Developers shall be that of the State Governments in consultation with the Ministry of Home Affairs.

Sd/-
(Kamal Bose)
Under Secretary to the Govt. of India
Tel. No. 2332.4357

Annex - XIII

No. P-45021/2/2017-B.E.-II
Government of India
Ministry of Commerce and Industry
Department of Industrial Policy and Promotion
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Dated 15th June, 2017
Udyog Bhawan, New Delhi

To

All Central Ministries/Departments/CPSUs/All concerned

ORDER

Subject: Public Procurement (Preference to Make in India), Order 2017

Whereas it is the policy of the Government of India to encourage 'Make in India' and promote manufacturing and production of goods and services in India with a view to enhancing income and employment, and

Whereas procurement by the Government is substantial in amount and can contribute towards this policy objective, and

Whereas local content can be increased through partnerships, cooperation with local companies, establishing production units in India or Joint Ventures (JV) with Indian suppliers, increasing the participation of local employees in services and training them,

Now therefore the following Order is issued :

1. This Order is issued pursuant to Rule 153 (iii) of the General Financial Rules 2017.

2. **Definitions** For the purposes of this Order:

'Local content' means the amount of value added in India which shall, unless otherwise prescribed by the Nodal Ministry, be the total value of the item procured (excluding net domestic indirect taxes) minus the value of imported content in the item (including all customs duties) as a proportion of the total value, in percent.

'Local supplier' means a supplier or service provider whose product or service offered for procurement meets the minimum local content as prescribed under this Order or by the competent Ministries / Departments in pursuance of this order.

'L1' means the lowest tender or lowest bid or the lowest quotation received in a tender, bidding process or other procurement solicitation as adjudged in the evaluation process as per the tender or other procurement solicitation.

'margin of purchase preference' means the maximum extent to which the price quoted by a local supplier may be above the L1 for the purpose of purchase preference.

'Nodal Ministry' means the Ministry or Department identified pursuant to this order in respect of a particular item of goods or services

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'*Procuring entity*' means a Ministry or department or attached or subordinate office of, or autonomous body controlled by, the Government of India and includes Government companies as defined in the Companies Act.

3 **Requirement of Purchase Preference**: Subject to the provisions of this Order and to any specific instructions issued by the Nodal Ministry or in pursuance of this Order, purchase preference shall be given to local suppliers in all procurements undertaken by procuring entities in the manner specified hereunder:

a. In procurement of goods in respect of which the Nodal Ministry has communicated that there is sufficient local capacity and local competition, and where the estimated value of procurement is Rs 50 lakhs or less, only local suppliers shall be eligible. If the estimated value of procurement of such goods is more than Rs. 50 lakhs, the provisions of sub-paragraph b or c, as the case may be, shall apply.

b. In the procurements of goods which are not covered by paragraph 3a and which are divisible in nature, the following procedure shall be followed:

i Among all qualified bids, the lowest bid will be termed as L1. If L1 is from a local supplier, the contract for full quantity will be awarded to L1.

ii If L1 bid is not from a local supplier, 50% of the order quantity shall be awarded to L1. Thereafter, the lowest bidder among the local suppliers, will be invited to match the L1 price for the remaining 50% quantity subject to the local supplier's quoted price falling within the margin of purchase preference, and contract for that quantity shall be awarded to such local supplier subject to matching the L1 price. In case such lowest eligible local supplier fails to match the L1 price or accepts less than the offered quantity, the next higher local supplier within the margin of purchase preference shall be invited to match the L1 price for remaining quantity and so on, and contract shall be awarded accordingly. In case some quantity is still left uncovered on local suppliers, then such balance quantity may also be ordered on the L1 bidder.

c. In procurements of goods not covered by sub-paragraph 3a and which are not divisible and in procurement of services where the bid is evaluated on price alone, the following procedure shall be followed.

i Among all qualified bids, the lowest bid will be termed as L1. If L1 is from a local supplier, the contract will be awarded to L1.

ii If L1 is not from a local supplier, the lowest bidder among the local suppliers, will be invited to match the L1 price subject to local supplier's quoted price falling within the margin of purchase preference, and the contract shall be awarded to such local supplier subject to matching the L1 price.

iii In case such lowest eligible local supplier fails to match the L1 price, the local supplier with the next higher bid within the margin of purchase preference shall be invited to match the L1 price and so on and contract shall be awarded accordingly. In case none of the local suppliers within the margin of purchase preference matches the L1 price then the contract may be awarded to the L1 bidder.

Contd. p 3/-

4. **Exemption of small purchases:** Notwithstanding anything contained in paragraph 3, procurements where the estimated value to be procured is less than Rs. 5 lakhs shall be exempt from this Order. However, it shall be ensured by procuring entities that procurement is not split for the purpose of avoiding the provisions of this Order.

5. **Minimum local content:** The minimum local content shall ordinarily be 50%. The Nodal Ministry may prescribe a higher or lower percentage in respect of any particular item and may also prescribe the manner of calculation of local content.

6 **Margin of Purchase Preference:** The margin of purchase preference shall be 20% .

7 **Requirement for specification in advance** The minimum local content, the margin of purchase preference and the procedure for preference to Make in India shall be specified in the notice inviting tenders or other form of procurement solicitation and shall not be varied during a particular procurement transaction.

8 **Government E-marketplace** In respect of procurement through the Government E-marketplace (GeM) shall, as far as possible, specifically mark the items which meet the minimum local content while registering the item for display, and shall, wherever feasible, make provision for automated comparison with purchase preference and without purchase preference and for obtaining consent of the local supplier in those cases where purchase preference is to be exercised

9. **Verification of local content:**

   a The local supplier at the time of tender, bidding or solicitation shall be required to provide self-certification that the item offered meets the minimum local content and shall give details of the location(s) at which the local value addition is made.

   b. In cases of procurement for a value in excess of Rs. 10 crores, the local supplier shall be required to provide a certificate from the statutory auditor or cost auditor of the company (in the case of companies) or from a practicing cost accountant or practicing chartered accountant (in respect of suppliers other than companies),giving the percentage of local content

   c Decisions on complaints relating to implementation of this Order shall be taken by the competent authority which is empowered to look into procurement-related complaints relating to the procuring entity.

   d. Nodal Ministries may constitute committees with internal and external experts for independent verification of self-declarations and auditor's/ accountant's certificates on random basis and in the case of complaints.

   e Nodal Ministries and procuring entities may prescribe fees for such complaints

   f. False declarations will be in breach of the Code of Integrity under Rule 175(1)(i)(h) of the General Financial Rules for which a bidder or its successors can be debarred for up to two years as per Rule 151 (iii) of the General Financial Rules along with such other actions as may be permissible under law

   g A supplier who has been debarred by any procuring entity for violation of this Order shall not be eligible for preference under this Order for procurement by any other procuring entity for the

Contd p 4/-

duration of the debarment. The debarment for such other procuring entities shall take effect prospectively from the date on which it comes to the notice of other procurement entities, in the manner prescribed under paragraph 9h below.

h. The Department of Expenditure shall issue suitable instructions for the effective and smooth operation of this process, so that:

i. The fact and duration of debarment for violation of this Order by any procuring entity are promptly brought to the notice of the Member-Convenor of the Standing Committee and the Department of Expenditure through the concerned Ministry /Department or in some other manner.

ii. on a periodical basis such cases are consolidated and a centralized list or decentralized lists of such suppliers with the period of debarment is maintained and displayed on website(s).

iii in respect of procuring entities other than the one which has carried out the debarment the debarment takes effect prospectively from the date of uploading on the website(s) in the such a manner that ongoing procurements are not disrupted

10. **Specifications in Tenders and other procurement solicitations**

a. Every procuring entity shall ensure that the eligibility conditions in respect of previous experience fixed in any tender or solicitation do not require proof of supply in other countries or proof of exports

b Procuring entities shall endeavour to see that eligibility conditions, including on matters like turnover production capability and financial strength do not result in unreasonable exclusion of local suppliers who would otherwise be eligible, beyond what is essential for ensuring quality or creditworthiness of the supplier.

c. Procuring entities shall, within 2 months of the issue of this Order review all existing eligibility norms and conditions with reference to sub-paragraphs 'a' and 'b' above

d If a Nodal Ministry is satisfied that Indian suppliers of an item are not allowed to participate and/ or compete in procurement by any foreign government, it may, if it deems appropriate restrict or exclude bidders from that country from eligibility for procurement of that item and/ or other items relating to that Nodal Ministry. A copy of every instruction or decision taken in this regard shall be sent to the Chairman of the Standing Committee

e For the purpose of sub-paragraph 10 d above, a supplier or bidder shall be considered to be from a country if (i) the entity is incorporated in that country, or ii) a majority of its shareholding or effective control of the entity is exercised from that country, or (iii) more that 50% of the value of the item being supplied has been added in that country. Indian suppliers shall mean those entities which meet any of these tests with respect to India

Contd p 5/-

11. **Assessment of supply base by Nodal Ministries**: The Nodal Ministry shall keep in view the domestic manufacturing / supply base and assess the available capacity and the extent of local competition while identifying items and prescribing minimum local content or the manner of its calculation, with a view to avoiding cost increase from the operation of this Order.

12. **Increase in minimum local content**: The Nodal Ministry may annually review the local content requirements with a view to increasing them, subject to availability of sufficient local competition with adequate quality.

13 **Manufacture under license/ technology collaboration agreements with phased indigenization** While notifying the minimum local content, Nodal Ministries may make special provisions for exempting suppliers from meeting the stipulated local content if the product is being manufactured in India under a license from a foreign manufacturer who holds intellectual property rights and where there is a technology collaboration agreement / transfer of technology agreement for indigenous manufacture of a product developed abroad with clear phasing of increase in local content

14 **Powers to grant exemption and to reduce minimum local content**: Ministries /Departments of Government of India and the Boards of Directors of Government companies or autonomous bodies may, by written order,

a reduce the minimum local content below the prescribed level;

b reduce the margin of purchase preference below 20% ;

c exempt any particular item or procuring or supplying entities or class or classes of items or procuring or supplying entities from the operation of this Order or any part of the Order.

A copy of every such order shall be marked to the Member-Convenor of the Standing Committee constituted under this Order.

15 **Directions to Government companies**: In respect of Government companies and other procuring entities not governed by the General Financial Rules, the administrative Ministry or Department shall issue policy directions requiring compliance with this Order

16. **Standing Committee**: A standing committee is hereby constituted with the following membership

Secretary, Department of Industrial Policy and Promotion—Chairman
Secretary Commerce—Member
Secretary, Ministry of Electronics and Information Technology—Member
Joint Secretary (Public Procurement), Department of Expenditure—Member
Joint Secretary (DIPP)—Member-Convenor

The Secretary of the Department concerned with a particular item shall be a member in respect of issues relating to such item The Chairman of the Committee may co-opt technical experts as relevant to any issue or class of issues under its consideration

Contd.p 6/-

17. **Functions of the Standing Committee**: The Standing Committee shall meet as often as necessary but not less than once in six months. The Committee

    a. shall oversee the implementation of this order and issues arising therefrom, and make recommendations to Nodal Ministries and procuring entities.

    b. shall annually assess and periodically monitor compliance with this Order

    c. shall identify Nodal Ministries and the allocation of items among them for issue of notifications on minimum local content

    d. may require furnishing of details or returns regarding compliance with this Order and related matters

    e. may, during the annual review or otherwise, assess issues, if any, where it is felt that the manner of implementation of the order results in any restrictive practices, cartelization or increase in public expenditure and suggest remedial measures

    f. may examine cases covered by paragraph 13 above relating to manufacture under license/ technology transfer agreements with a view to satisfying itself that adequate mechanisms exist for enforcement of such agreements and for attaining the underlying objective of progressive indigenization

    g. may consider any other issue relating to this Order which may arise.

18. **Removal of difficulties**: Ministries /Departments and the Boards of Directors of Government companies may issue such clarifications and instructions as may be necessary for the removal of any difficulties arising in the implementation of this Order.

19. **Ministries having existing policies**: Where any Ministry or Department has its own policy for preference to local content approved by the Cabinet after 1st January 2015, such policies will prevail over the provisions of this Order. All other existing orders on preference to local content shall be reviewed by the Nodal Ministries and revised as needed to conform to this Order, within two months of the issue of this Order

20. **Transitional provision** This Order shall not apply to any tender or procurement for which notice inviting tender or other form of procurement solicitation has been issued before the issue of this Order.

(B. S Nayak)
Under Secretary to Government of India
Ph. 23061257

Annex - XIV

PROFORMA

Monthly status of progress in respect of Power Generation Schemes already accorded Concurrence by CEA and which are yet to achieve financial closure/investment sanction.

1. Name of the Project : Sunni Dam HEP (4x73 MW+1x73 MW+1x17 MW= 382 MW)

2. Name of Power Company : **M/s SJVN Ltd.**

3. Date of Concurrence :

4. Status of Power Purchase Agreement :

5. Status of tie-up of finances :

6. Status of Contracts :

7. Date of Financial Closure

(a) Details of financial tie-up :

(b) Name of Banks/Financial Institutions :

(c) Debt : Equity :

8. Reasons/constraints for delays in achieving the financial closure:

9. Expected COD :

10. Status of Site Activities :
(Land acquisition, R&R activities, site development works etc.)

11. Status of Environment & Forest Clearance:

A. Status of MOEF Clearance:

S. No.	Description	Applied on	Clearance received on	Status Pending at Developer/ State/Central Level
1.	Pre-construction activities			
2.	Environmental Clearance			
3.	Stage-I Forest Clearance			
4	Stage-II Forest Clearance			

B. Project Affected Families/ People:

Description	**Total**	**SC**	**ST**
Nos. of Families Affected			
Nos. of Persons Affected			
Nos. of Families Loosing Home			
Nos. of Families Loosing Land			
Nos. of Families Loosing Home & Land both			

12. Status of Compliance of the conditions imposed at the time of issue of Appraisal.