Annexure - 1


(भारत सरकार का उद्यम)

NHPC Limited

(A Government of India Enterprise)

फोन/Phone :


संदर्भ सं./ Ref. No. एन एच/टी एन्ड आर ई / टी -2/ 735 दिनांक/Date : 29.03.2011

(C)

To,
Shri A.C. Sharma.
Director (Electrical),
Himachal Pradesh Power Corporation Ltd.,
Himfed Bhawan, Panjari, Old MLA Quarters,
Shimla - 723101

विषय: Sainj HEP (2 x 50 MW) – Power Evacuation Plan.

संदर्भ: Your letter No. HPPCL/ Dir (E)/ Sainj/ 2011-390-91 dated 28.02.2011. (15)

Sir,

Reference your above letter in regard to proposal for evacuation of 100 MW power from Sainj HE Project at 400 kV level through LILO of Prabati-II - Parbati-III single circuit line or through a 400 kV single circuit line either to Parbati-II or to Parbati-III. In this regard, it is intimated that due to various technical constraints enclosed herewith as Annexure-I, evacuation of power of Sainj HEP (100 MW) through Parbati-II/ Parbati-III lines is not technically feasible.

It is to further intimate that various designs, manufacturing and supplies have already been commenced as per Parbati-II/ Parbati-III prevailing evacuation system. Thus the above said proposal is not only technically feasible but also there will be multiple contractual problems if any changes are considered/ carried out at this late stage which could delay the execution of the Parbati-II/ Parbati-III.

Thanking you.

Encl.: As above.

भवदीय,

(सेन सिन्हा)
कार्यपालक निदेशक (टी एन्ड आर ई)


पंजीकृत कार्यालय : एन एच पी सी ऑफिस कॉम्प्लेक्स, सेक्टर-33, फरीदाबाद, हरियाणा-121 003 (भारत)
Regd. Office : NHPC Office Complex, Sector-33, Faridabad, Haryana-121 003 (India)
Website : www.nhpcindia.com; E-mail : webmaster@nhpc.nic.in; Fax : 0129-2277941; EPABX No. : 0129-2278421

Annexure - I

| A. | Power Evacuation of PBT- II and PBT- III as original contract and two ckts from PB-II and PB-III were going to PGCIL Pooling station and there is no cut between PBT-II to PBT-III | | | | |
|---|---|---|---|---|---|
| S. No. | Item | Unit | PBT - II | PBT - III | Sainj |
| 1 | Power | MW | 800 | 520 | |
| 2 | GIS | A | 2000 | 4000 | |
| 3 | Rated Overload Current | A | 1411 | 917 | |
| 4 | Rated Voltage | KV | 400 | 400 | |
| 5 | CT | A | 1600-800-400/1 | 2400-1200-300/1 | |
| 6 | Wave Trap | A | 2000 | 3150 | |
| 7 | I SC for GIS | kA | 40 | 63 | |
| 8 | 400kV XLPE Cable | A | NA | 2400 | |
| 9 | I SC for XLPE Cable | kA | NA | 40 | |
| | | | | | |

| B. | Modified PBT-II and PBT-III power evacuation system one ckt each from PBT-II and PBT-III is going to PGCIL pooling station one ckt from PBT-II to PBT-III | | | | |
|---|---|---|---|---|---|
| S. No. | Item | Unit | PBT - II | PBT - III | Sainj |
| 1 | Power | MW | 800 | 520 | |
| 2 | GIS | A | 4000 | 4000 | |
| 3 | Rated Overload Current | A | 2328 | 2328 | |
| 4 | O/L current at U/V condition | A | 2587 | 2587 | |
| 5 | Rated Voltage | KV | 400 | 400 | |
| 6 | CT | A | 2400-1600-400/1 | 2400-1200-300/1 | |
| 7 | Wave Trap | A | 4000 | 3150 | |
| 8 | I SC for GIS | kA | 63 | 63 | |
| 9 | 400kV XLPE Cable | A | NA | 2400 | |
| 10 | I SC for XLPE Cable | kA | NA | 40 | |
| | | | | | |

| C. | LILOing - Sainj Power Evacuation | | | | |
|---|---|---|---|---|---|
| S. No. | Item | Unit | PBT - II | PBT - III | Sainj |
| 1 | Power | MW | 800 | 520 | 100 |
| 2 | GIS | A | 4000 | 4000 | |
| 3 | Rated Overload Current | A | 2505 | 2505 | |
| 4 | O/L current at U/V condition | A | 2783 | 2783 | |
| 5 | Rated Voltage | KV | 400 | 400 | |
| 6 | CT | A | 3150/1 | 3150/1 | |
| 7 | Wave Trap | A | 3150 | 3150 | |
| 8 | I SC for GIS | kA | 63 | 63 | |
| 9 | 400kV XLPE Cable | A | NA | 3150 | |
| 10 | I SC for XLPE Cable | kA | NA | 63 | |
| | | | | | |

Ratings already modified in PBT-III contract for LILO arrangement of PBT-II and PBT-III

Ratings in PBT-II & PBT-III have already been got modified from BHEL and under execution.

400kV XLPE cable need to be replaced approx 4km - NOT POSSIBLE AT THIS STAGE (2500 mm²)

Annexure-2

एन एच पी सी लिमिटेड
(भारत सरकार का उद्यम)

NHPC Limited
(A Govt. of India Enterprise)

NH/T&RE /2376

Dt:24.10.11

Chief Engineer(SP&PA)
Central Electricity Authority
Ministry of Power, 3rd floor,
Sewa Bhavan, R K Puram
NEW DELHI-110066

Sub: Request for review of voltage level / Power Evacuation system for Kotlibhel-1A H E Project in Uttrakhand

Sir,

This is in reference to the power evacuation system of Kotlibhel H E Projects(Stages-1A,1B & II) in Uttrakhand . In this respect, it is mentioned that as per TEC approval, the power evacuation system was at 220 KV voltage level using integrated LILO systems among these projects .Later the transmission voltage level was revised to 400 KV as per the deliberations of NRPC/CEA/PTCUL.

However, the Forest Advisory Committee (FAC) in the meeting held on 30th and 31st May,2011 has recommended clearance only for Kotlibhel H E P, Stage-1A and not for Stage-1B & II. In view of this and since there is only one power plant of 195 MW, it is felt that the transmission voltage level and the power evacuation plan may need to be reviewed suitably . Simultaneously the aspect that Power Evacuation from this project may not become disproportionate in comparison to overall cost of the project need to be looked into .

In view of above CEA is requested to review and confirm the evacuation plan/transmission voltage level to NHPC so that system requirement and technical specifications for electro-mechanical packages of Kotlibhel H E P, Stage-1A can be reviewed if required.

Thanking you,

Yours faithfully

(NAIN SINGH)
EXECUTIVE DIRECTOR(T&RE)

CC:

1. Director (Project),Power Transmission Corporation of Uttrakhand Ltd.,132 KV Substation Campus,Majra,Dehradun UTTRAKHAND)248001

Shri BKS Khanna 31/10

Sh. Rajeev SCM issue 31/10



SB-SPA 27/10/11

Annexure – 3

pstcl

**PUNJAB STATETRANSMISSION CORPORATION LIMITED**

(Regd. Office: PSEB Head Office, The Mall, Patiala)

**Office of Engineer-in-Chief/Transmission Lines,**

**B-2, Shakti Vihar, Patiala.**

To

The Executive Director,
System Engineering & Feasibility,
PGCIL, Sector-29,
Gurgaon.

Memo.No. 902 /

Dated: 20.6.2011

**Subject:** **Request for enhancement of capacity from 315 MVA to 500 MVA for additional Power Transformer approved by NRPC.**

Dear Sir,

NRPC in its 18th meeting held at Jammu approved additional transformer of 315 MVA at 400 KV Amritsar station of PGCIL. On account of load growth in the state of Punjab, it is requested to consider enhancing this capacity from 315 MVA to 500 MVA. 3 No. 220 KV additional line bays for this transformer may also be provided at the station.

Thanking you,

Yours sincerely,

Engineer-in-Chief/TL,
PSTCL, Patiala.

CC: Er. K.R. Suri, GM/PSTCL Project Incharge, Jammu for follow up.

Annexure - 4

pstcl

**PUNJAB STATETRANSMISSION CORPORATION LIMITED**
(Regd. Office: PSEB Head Office, The Mall, Patiala)
**Office of Engineer-in-Chief/Transmission Lines,**
**B-2, Shakti Vihar, Patiala.**

To

The Executive Director,
System Engineering & Feasibility,
PGCIL, Sector-29,
Gurgaon.

ED SEF

Memo.No. 1114 /
Dated: 8.8.2011

**Subject:** **Augmentation of ICTs installed at various 400 KV Substations of PGCIL.**

The issue regarding upgradation/augmentation of 400 KV Transformers at different locations came up for discussion during 20th TCC meeting held at Ooty on 28th /29th July, 2011. It was desired by Chairman, NRPC that Power Grid should come up with a consolidated proposal before Standing Committee of CEA after taking information from all the States where ICTs are required to be augmented.

In this regard, it is brought out that the following ICTs at different substations need augmentation. This may be considered in the proposal to be submitted to Standing Committee:

| Sr.No. | Name of the Grid substation | Existing Capacity | Proposed |
|---|---|---|---|
| 1. | 400 KV Moga 765KV/ 400 KV (2x1500) | 3x250 MVA + 1x315 MVA | Existing 3x250 MVA to be upgraded to 3x500 MVA. |
| 2. | 400 KV Bala Chak (Amritsar) | 2x315 MVA | Additional 1x500 MVA. |
| 3. | 400 KV Ludhiana | 2x315 MVA | Additional T/F of 1x500MVA is proposed instead of 1x315 MVA. |

This is for information and further necessary action.

Engineer-in-Chief/TL,
PSTCL, Patiala.

CC:

1. Chief Engineer/SO&C, PSTCL, Ablowal, Patiala with reference to his note dated 2.8.2011.
2. Dy.CE/Trans.Design, PSTCL, Patiala.

Annexure - 5

09/12 2011 12 0

257172

PUNJAB STATE TRANSMISSION CORPORATION LIMITED

From

Er.-in-Chief/TL,
(Planning Section)
PSTCL, Patiala.

To

Chief Engineer/SP&PA,
Central Electricity Authority ,
Govt. of India, Sewa Bhawan,
R.K.Puram, New Delhi – 110066 .
Fax 011-26103242.

Memo No. 1625 P-1/138
Dated: 9/12/2011

**Sub: Agenda for consideration in 30th meeting of Standing Committee on Power System Planning of Northern Region - Creation of a new 400KV grid station in Patran/ nearby Patran (Punjab) under system strengthening scheme .**

A partial grid disturbance in Punjab had taken place on 20th July, 2011. Power System Operation Corporation Limited sent a report on this partial disturbance vide letter No.NRLDC/Punjab/TS-34/2131/2126, dated 29.9.2011 (copy enclosed). As per this report, a new 400 KV Grid Substation at Patran has been suggested to take care of the future load growth in the area.

In this regard, it is intimated that there is lot of agriculture load in Patiala and Sangrur Districts. Presently, there are 6 Nos. 400 KV Grid Substations of PGCIL which cover major portion of Punjab, but this pocket is still not covered with inter-connection of Interstate transmission system. Patran is surrounded by 5 Nos. 200 KV Grid Substations having installed capacity of 1180 MVA. Additional 3 Nos. 220 KV substations having installed capacity of 300 MVA are also coming up in the area to take care of future load growth. It is further added that in Punjab, initially a 220 KV substation is planned with only 100 MVA capacity which is subsequently increased to 300 MVA after full load comes on the transformer.

In view of the above, it becomes essential to have 400 KV Grid substation in this area. This grid can provide connectivity either by loop in loop out of 400 KV Phagan Majra-Hissar line at Patran or LILO of 400 KV Phagan Majra –Kaithal line.

It is requested that the Standing Committee may consider to approve a new 400 KV Grid substation (**under Regional System Strengthening Scheme**) around Patran area with installed capacity of 1x500 MVA + 1x315 MVA = 815 MVA. Two transformers are being proposed from reliability point of view. This may please be included as Agenda Item in the forthcoming meeting of Standing Committee on Power System Planning to be held on 19th December, 2011.

DA/As above .

Engineer-in-Chief/TL,
PSTCL,Patiala .

CC:

i) Executive Director/SEF,
Corporation Engg Division , Power Grid Corporation of India Ltd,
Sandamini, Plot No. 2, Sector 29 ,Gurgaon-122007
for information and necessary action please.

ii) CE/SOS.C, PSTCL, Patiala , for information please. It is requested to follow up the case for standing committee meeting

Annexure-6

NUCLEAR POWER CORPORATION OF INDIA LIMITED
*(A Government of India Enterprise)*
DIRECTORATE OF OPERATIONS
*9-5-30, Vikram Sarabhai Bhavan, Anushaktinagar, Mumbai-400 094.*

No.NPCIL/(Trans)/2011/M/220

December 8, 2011

To

Sh.K.K.Arya
Chief Engineer(SP&A)
Central Electricity Authority
Sewa Bhawan
R.K.Puram
New Delhi
110066

**Sub: Grid related issues pertaining to RAPS-5&6**

**Ref.: Lr. No. 1/9/SP&PA-2011/1622-23 dated 11/11/2011**

Sir,

This is to acknowledge above cited reference on the given subject. As desired, a layout of Rajasthan Site switchyard is enclosed and we have following comments:

1. RAPS 3&4 has it power evacuation at 220 KV level (marked as A in the drawing), whereas RAPS-5&6 has been provided with two switchyards i.e. one each at 220 KV (marked as B) as well as at 400 KV (marked as C).

2. While 220 KV switchyard (RAPS-5&6) is used for energising Start Up Transformers (SUT, one each for each unit), 400 KV switchyard is used for accommodating power evacuation lines. As regards RAPS-3&4, 220 KV switchyard is used for energising SUTs as well as for power evacuation lines.

3. The proposed ICTs (400/220 KV, assuming 2*315 MVA) may be needing two number of bays at 220 KV as well as at 400 KV switchyards.

4. From the enclosed drawing it can be seen that 220 KV switchyard of RAPS-5&6 does not have any spare bay(s) as it is accommodating bays for 2*SUTs (RAPS-5&6), tie lines to Anta and RAPS-3&4. The expansion of this switchyard is planned to accommodate the following i.e.

a. 2*SUT bays for RAPP-7&8.
b. Additional Tie line from RAPS-3&4.
c. 2*220/33 KV Transformers for "In House" requirement.

5. Thus to accommodate any additional 220 KV bay(s), the switchyard needs to be expanded either eastwards or westwards. From the enclosed drawing it can be seen that any eastward expansion (RAPS-5&6 switchyard) may interfere with the existing 400 KV tower, connecting Generator Transformers of Unit 5&6 to the 400 KV switchyard. Similarly any westwards expansion of RAPS-5&6 switchyards, is likely to interfere with the existing 220 KV tower/ lines i.e. RAPS-5&6-Anta S/C and RAPS-5&6-RAPS 3&4 S/C.

6. The feasibility of connecting 220 KV switchyards of RAPS-3&4 with 400 KV switchyard of RAPS-5&6 has also been explored. It can be seen that this will also call for expansion of 220 KV switchyard as well as crossing of existing power evacuation lines.

7. While designing of towers to cross existing transmission lines is technically possible, you will agree that implementing the same may be a very involved job as it will call for movement of men & machines across the energised switchyards of operating stations, calling for undesired planned outage of switchyard elements (which may not be easy to come specially from regulatory considerations) apart from any unforeseen unit outage which is very likely under such circumstances. Further lead time of 2*ICTs is expected to be around 30-36 months. More-so even with the ICTs, under credible contingency, power flow on 220 KV lines of RAPS-3&4 needs to be studied and established , so that there is no overloading of 220 KV lines. Any overloading of 220 KV lines may call for laying of additional lines to address the issue.

8. As against it, advancing an approved 400 KV line to Kota (proposed through LILO of one circuit of agreed 400 KV RAPP-7&8-Jaipur D/C at Kota), offers a better solution as provision of bay is available, and line can be terminated without any operational problems in the existing 400 KV switchyard.

9. Considering above mentioned issues i.e. tower crossings/operational problems and likely overloading of 220 KV lines from RAPS-3&4, we feel that 400 KV line from RAPS-5&6 offers a better solution for stable operation of RAPS-5&6 units.

10. In above background, it is requested that this issue may be discussed in the forthcoming meeting of the Standing Committee of Transmission Planning of the Northern Region.

11. We are willing to discuss with POWERGRID/CEA to further clarify any issues/doubts on the subject.

Regards,

Yours faithfully,

(R.K.Oke)
CE(Trans.)

CC: Sh.Y.K.Sehgal, } with a copy of switchyard layout
Executive Director(SEF&CE)
POWERGRID
Saudamini, Plot No.2,
Sector 29,
Gurgaon 122001

CC: Shri Y.K. Raizada,
Director (Tech.)
RRVPNL,
Vidyut Bhavan, Janpath
Jyotinagar, Jaipur 302005

CC: Shri P.K. Pahwa,
Member Secretary,
Northern Regional Power Committee
18-A,S.J.S. Marg,
Katwaria Sarai,
New Delhi 110016

CC: CMD - for kind information please

Cc: Dir.(Tech.) – for kind information please

Cc: Dir.(O) / ED(O) – for kind information please

Cc: ED(E&P)

Cc: Site ED(RR site)

Cc: Station Director, RAPS-5&6

Cc: Station Director, RAPS-3&4

Cc: Shri K. Jagannath, AD(ED&C&I)

Cc: Sandeep/F-131/MF

Annexure-7

एसजेवीएन लिमिटेड
(भारत सरकार एवं हिमाचल प्रदेश सरकार का संयुक्त उपक्रम)
SJVN LIMITED
(A Joint venture of Government of India & Government of H.P.)
A Mini Ratna & Schedule "A" PSU

No.SJVNL/LHEP/Coord./Vol XIX - 635 Dated:- 23/9/2011
To

The Director(PAC)
Central Electricity Authority,
Sewa Bhawan, R.K.Puram,
New Delhi.

Sub:- **Detailed Project Report (DPR) of Luhri HEP.**

Ref:- **Your office letter Nos.2/HP/CEA/07-PAC/6486-88 dt.14.09.2011**

Madam,

This has reference to above mentioned letter vide which comments of CEA on "Power Evacuation aspects" were received in this office. The point wise reply to the comments is given in the Annexure – I (5Copies).

DA/- As above.

Yours faithfully,

Dhaka

**GM (~~Civil~~ Design)**
**SJVN Ltd., Himfed Building,**
**New Shimla – 9.**

Registered & Corporate Office: HIMFED Building, New Shimla, Shimla-171009 (H.P.)
EPABX: 91-177-2670741,2670064,2670490,2670521, Fax: 2670542
Website: www.sjvnindia.com

Annexure-I

Power Evacuation Aspects:

1) Though POWERGRID has envisaged the following tentative arrangement for power evacuation of LHEP :-

- LILO of 400kV Rampur Nallagarh DC line at Luhri HEP.
- 400kV Luhri-Mohali DC line.

This office is of the opinion that LILO of 400kV Rampur Nallagarh DC line would not add to total transmission capacity of Nathpa Jhakri Hydro Power Station (NJHPS) and is unnecessary adding to expenditure of Luhri HEP. Moreover, it will consume lot of space of Switchyard/GIS i.e. 4 bays. This aspect needs a re-look for bays of Switchyard and an agenda on this issue is being put up for TCC meeting.

2) SJVN Limited shall accordingly apply for connectivity and long-term open access to POWERGRID.

3) Provision of 125MVAR reactor shall be tentatively kept in DPR and cost of additional bays will be included in the cost estimate of DPR. This size of reactor is yet to be frozen based upon specific system studies yet to be done and outcome of deliberation at TCC for evacuation system, as this will have a bearing on the space availability at site and transportion limits.

**Switchyard Provision:**

3) The power evacuation arrangement has been shown with the GIS with double bus system in DPR.

We are in the process of revising the scheme from earlier proposed GIS (double bus) to AIS system with 1 ½ breaker scheme for power evacuation. Accordingly, bays' provision and cost estimate will be revised.

**Cost Estimate:**

Cost estimate for 400kV XLPE cable is based upon inputs from Consultant/market rates.

Annexure - 8



**HIMACHAL PRADESH STATE ELECTRICITY BOARD LTD.**
**(A STATE GOVT. UNDERTAKING).**

No.HPSEBL/ESCH/W-56(C)/2011:- 6128-29 Dated:- 22-10-2011

To

The Executive Director(B.D.)
PGCIL Sector-29
Gurgaon(Haryana).
Fax No:- 0124 - 2571861

**Subject:-** **LILOing of 220 KV D/C Jalandhar-Hamirpur Line at Nehrian near Amb in District Una(HP).**

Ref:- 10th Meeting of TCC and 11th meeting of NRPC held on 5th and 6th January,2009 at Sariska Alwar.

Sir,

Jai Hind'.

In this context, it is submitted that HPSEBL has proposed to construct 220/132 KV,1x160/200 MVA Sub Station by LILOing of both circuits of 220 KV D/C Jalandhar-Hamirpur line of PGCIL at Nehrian near Amb instead of Gagret in District Una(HP) as discussed in above meeting vide item No.6 of "Transmission Schemes agreed in the standing committee on Power System Planning for northern region" under new commercial issues and simultaneously confirmed in 11th TCC and 12th NRPC meeting held on 21st April,2009.

This is for your information and necessary action please.

Yours faithfully,

Superintending Engineer,
Elect. System Circle,
HPSEB Ltd.Hamirpur(HP).

Copy to the Chief Engineer(ES) HPSEB Ltd.Hamirpur for kind information please.

Superintending Engineer,
Elect. System Circle,
HPSEB Ltd.Hamirpur(HP).

Ref:C/BD/HP/220kV Nehrian

Date:18.11.2011

To

Superintending Engineer,
Electrical System Circle,
Himachal Pradesh State Electricity Board Ltd.
Hamirpur, Himachal Pradesh.

Fax No: 0197-2259097

Sub: LILO of 220 kV D/C Jalandhar-Hamirpur line of POWERGRID at Nehrian near Amb in District Una(HP).

Dear Sir,

This has reference to your letter dated 22.10.2011 regarding LILO of 220 kV D/C Jalandhar-Hamirpur line of POWERGRID at HPSEBL's proposed 220/132 kV substation at Nehrian near Amb in District Una(HP).

In this regard, it is to inform you that the subject work is related to the system planning which is being looked into by our Engg-SEF Deptt. Accordingly, your request has been forwarded to Engg-SEF Deptt. Henceforth, you are requested to communicate with our Executive Director, Engg-SEF Deptt., POWERGRID, Plot no-2, Sector-29,Gurgaon-1, Haryana(Telephone no.0124-2571806) for further action in this regard.

Thanking you and assuring you our best services at all times.

Yours faithfully,

(मुकेश कुमार)
Dy. General Manager
Business Development Department
Fax No: 0124-2571861

Copy to: 1. ED(SEF & Cost Engg),C.C.
2. ED(BDD & PI). C.C
3. Sh.Mukesh Khanna,DGM(SEF),C.C. - As discussed.