CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI

Coram:

1. **Shri Bhanu Bhushan, Member**
2. **Shri A.H. Jung, Member**

Petition No. 40/2005

In the matter of

Approval of tariff of Nagarjuna Power Project (1015 MW) for the period 1.9.2008 onwards.

And in the matter of

Nagarjuna Power Corporation Ltd **…. Petitioner**

Vs

1. Karnataka Power Transmission Corporation Limited, Bangalore
2. Kerala State Electricity Board, Thiruvananthapuram . **Respondents**

The following were present:

1. K.S. Balachandra, NPCL
2. Praveer Sinha, NPCL
3. O. Samir Kumar, NPCL
4. R.S. Pillai, NPCL
5. Parag Sharma, CRISIL
6. Manoj Verma, CRISIL
7. Jami Satyanarayana, TCE
8. S.C. Mittal, BHEL
9. Pratap Kumar S., Govt. of Karnataka
10. R. Balachandran, KSEB

ORDER
(DATE OF HEARING : 25.8.2005)

The petitioner, Nagarjuna Power Corporation Limited has filed the present petition for approval of tariff from 1.9.2008 and onwards in respect of Nagarjuna Power Project (2x507.5 MW) in Udupi Taluk, Udupi Distt., Karnataka State.

BACKGROUND

2. The petitioner, a company registered under the Companies Act, 1956, proposes to set up a generating station, namely, Nagarjuna Power Project (hereinafter referred to as “the generating station”) in Karnataka State. The first unit of the generating station is scheduled to be commissioned on 1.9.2008 and the second unit on 1.1.2009. The petitioner seeks approval of tariff from 1.9.2008 based on the terms and conditions for determination of tariff contained in the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2004 ("the 2004 regulations”) as contained in Appendix I to the petition. We are not referring to the details of tariff since in the present proceedings we are not undertaking the exercise of tariff determination.

3. The specific prayers made in the petition are reproduced below:

> “(i) Approve the tariff for the NPCL power project as per Appendix I for the power proposed to be supplied to the Respondents, subject to the condition that the above tariff will be charged for a period beyond 31st March 2009, in line with the prevailing norms mentioned in the Central Electricity Regulatory Commission Terms and Conditions of Tariff) Regulations.
>
> (ii) Approve the specific deviation mentioned in para 20.
>
> iii) Pass any other order in this regard as the Hon’ble Commission may find appropriate in the circumstances mentioned above.”

4. The generating station is to use imported coal as a primary fuel. “In-principle” Mega power project status has been accorded to the generating station by Ministry of Power on 27.4.2004, under its guidelines for mega power projects dated 10.11.1995. 90% of the electricity to be generated at the generating station is proposed to be sold to Karnataka Power Transmission Corporation Ltd. (KPTCL) and the remaining 10% to the second respondent, Kerala State Electricity Board (KSEB).

APPROVAL OF TARIFF

5. The application is filed under Regulation 5 (3) of the 2004 regulations, according to which a generating company may make an application for determination of provisional tariff in advance of the anticipated date of completion of the project, based on the expenditure actually incurred up to the date of making the application, duly audited and certified by the statutory auditors. The present application for approval of provisional tariff cannot be taken up for consideration at this stage since under the 2004 regulations the provisional tariff is to be determined based on the expenditure (capital cost) incurred up to the date of making the application. In the case before us even the financial closure has not been achieved and, therefore, determination of provisional tariff at this stage is not being considered. However, during pendency of the petition, the Commission had proposed to amend the 2004 regulations so as to make a provision for "in principle" approval of capital cost in advance so that the uncertainty regarding the tariff on completion of the project is reduced to the minimum. The Commission felt that "in principle" approval of capital cost would provide some comfort to the investors as regards the tariff likely to be charged and this will also help the investors in achieving the financial closure of the project by arranging for loans, etc. The Commission's proposal has since been finalised and has been notified on 25.8.2005 in terms of the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) (First Amendment) Regulations, 2005. As a result of this amendment, provisos to Regulation 17 have been added. In view of the changed circumstances, the present petition was reserved for consideration in the light of the provisos to Regulation 17, reproduced hereunder:

"Provided further that any person intending to establish, operate and maintain a generating station may make an application before the Commission for ' in principle' acceptance of the project capital cost and financing plan before taking up a project through a petition in accordance with the procedure specified in the Central Electricity Regulatory Commission (Procedure for making application for determination of tariff, publication of the application and other related matters) Regulations, 2004, as applicable from time to time. The petition shall contain information regarding salient features of the project including capacity, location, site specific features, fuel, beneficiaries, break up of capital cost estimates, financial package, schedule of commissioning, reference price level, estimated completion cost including foreign exchange component, if any, consent of beneficiary licensees to whom the electricity is proposed to be sold etc.

Provided further that where the Commission has given 'in principle' acceptance to the estimates of project capital cost and financing plan, the same shall be the guiding factor for applying prudence check on the actual capital expenditure:"

THE PROJECT

6. The generating station envisages conventional steam generators which will use pulverized coal, tangentially fired, sub-critical, balance draft, single drum, single reheat, controlled circulation, dry bottom, top supported, two pass design; conventional steam turbine which will be reaction, tandem compound, single reheat, double flow LP, condensing type machines, to give gross maximum continuous rating of 507.5 MW along with all associated unit auxiliary and station auxiliary systems. The generating station shall be using seawater for condenser cooling in closed cycle and also envisages Flue Gas De-sulphurisation (FGD) plant to meet environment emission norms. The soft water requirement is to be met from desalination plant. It also envisages construction of a jetty at New Mangalore Port coupled with unloading, stacking and loading arrangement for transportation of imported coal to the project.

7. The techno-economic clearance (TEC) for the generating station was accorded by the Central Electricity Authority (CEA) vide Office Memorandum dated 29.4.1999, at a capital cost of US$ 273.795 Million plus GBP 277.40 Million plus F. Fr. 907.19 Million plus Rs. 1792.68 Crore at foreign exchange rates of Rs. 42/US$, Rs. 68.50/GBP and Rs. 7.20/ F.Fr. totaling Rs. 5496 Crs.

8. 90% of the capacity i.e. 913.5 MW gross is envisaged to be supplied to KPTCL for which Power Purchase Agreement (PPA) has been firmed up. The PPA is under consideration of Government of Karnataka and would be signed by KPTCL after their approval. The balance capacity of 10% (101.5 MW) is proposed to be allocated to KSEB.

9. The petitioner has gone for International Competitive Bidding for the award of Engineering, Procurement & Construction (EPC) contract and on the basis of bid evaluation, recommendation/advice of TCE Consulting Engineers Ltd., execution of the generating station was decided to be taken up through the following three separate contracts:

(i) EPC Contract : LOI placed on M/s Bharat Heavy Electricals Ltd. (BHEL) on 10.9.2004

(ii) Civil Works Contract: LOI placed on M/s Simplex Concrete Piles (India) Ltd. on 10.9.2004

(iii) External Coal Handling System Contracts: LOI placed on M/s Navayuga Engineering Co. Ltd. on 31.12.2004

10. According to the petition, the capital cost including the cost of Flue Gas De-sulphurisation (FGD) plant, De-salination plant and external coal handling system &

Jetty, has been brought down to US$55.13 million + Euro 66.0 million + Rs.3673.85 Crore, totaling Rs.4299.82 Crore based on Foreign Exchange rate of Rs.44 per US$ and Rs.58 per Euro in comparison to CEA approved cost of Rs. 5496 Crore.

11. The tariff proposal is based on the capital cost of Rs. 4299.82 Crore with Debt and Equity in the ratio of 70:30. However, the capital cost has been negotiated with KPTCL and as per PPA with them, a project cost of US$40 Million + Euro 66.0 million + Rs.3745.86 Crore totaling Rs.4299.12 Crore has been agreed to. The negotiations are under way with the consortium of the lending institutions led by Power Finance Corporation (PFC).

12. The tariff proposal is based on the following operational norms:

Target Availability (%)	80
Target PLF for incentive (%)	80
Gross Station Heat Rate (kCal/kWh)	2400
Auxiliary Energy Consumption (%)	7.5
Specific Fuel Oil Consumption (ml/kWh)	2.0

13. All statutory and non-statutory clearances have been obtained by the petitioner from the concerned State Govts. and other authorities.

14. Out of 650 acres land required for setting up the generating station, 500 acres of land has been acquired already.

15. For average coal requirement of 3 million tons per annum, the petitioner floated International Competitive Bid for procurement of coal and has tied up supply of Australian coal with three suppliers. The cost of imported coal would be FOB rate of

A$ 49.05/MT plus US$ 10.33/MT for freight and insurance charges. The guaranteed GCV of the coal is 6200 kCal/kg with ash content of 8% to 16% and sulphur content between 0.3% to 0.8%. FOB price of coal shall be firm for first 5 years from 1.8.2008 and then adjusted for further 5 years based on mutually agreeable international index. Freight and insurance charges are indexed to Singapore Bunker Price Adjustment Index. CEA has issued “No Objection” for import of coal.

16. The coal will be imported at New Manglore Port, which is 30 kms from the site selected for setting up of the generating station. After unloading at port, the coal will be transported to the site by Southern Railways. MOU with Southern Railways has been signed for transportation of 3 million tons of coal per annum.

17. The petitioner has received offers from NTPC and STEAG, Germany for O&M of the generating station for a period of 12 years. The contract is proposed to be finalised before financial closure. However, for the purpose of calculating O&M charges for tariff purposes, the normative O&M expenses/MW as specified in the 2004 regulations has been used.

18. For evacuation of power within the State of Karnataka a double circuit 400 kV line is to be built by KPTCL. However, necessary arrangement for transmission of electricity to Kerala State need to be finalised.

STAKEHOLDERS’ COMMENTS AND OBJECTIONS

19. The petitioner published the public notices of its tariff proposals in the newspapers, inviting objections/comments from the public. The

individuals/organisations who have filed their objections/comments in response to the public notices are as under:

(a) Consumers' Forum, Sagar (Karnataka)
(b) Ganesh Hegde, Kodekodi, Sirshi, Karnataka
(c) Basara Shettigar, Balmane, Post Amasebail, Kanda pur Taluka, Udupi Distt.
(d) Sathyanaraya Udupa, Ashirwad, Sapthi post, Kundapura Taluka, Udipi Distt.
(e) M.Rama, P.O.Village Pangala, Distt Udupi
(f) B.T.Warayaur Bhat, Perage, Bautwal Taluka
(g) Irrigation Pumpset Consmers Association Post Bhairumbe, Sirsi, N.K.Distt.
(h) Balakedasara Hitarakshaka Sangha, Consumers Protection Council, C.P.Bazar, Sirsi, Karnatka
(i) K.Nagesh Sharma, Kunthoor Village, Parabe Post Puthur Taluk, D.Karnataka
(j) S.Sudhur Tholpady. Shanthigodu Village & Post Puthur Taluk, D.K.
(k) P.Ravindranath Kalluraya, Aryapur Post, Puthur Taluk, Karnataka
(l) Consumer Rights Education and Awarness Trust (CREAT), Vijayanagar, Baangalore
(m) Janajagrathi Samiti, Nandikur, Udipi, Distt. Karnataka

20. The objections/comments in all cases are of similar nature. The objections/comments of Janajagrathi Samiti also raised certain environmental issues. However, since the petitioner has already obtained the clearances from the competent environmental authorities for setting up of the generating station and the Commission is concerned with regulation of tariff, we do not propose to go into details of the objections. The notices for hearing of the petition were issued to the objectors. However, none appeared before the Commission. The objections/comments are discussed in the succeeding paras

Whether the project is a Mega Power Project?

21. It has been pointed out that the generating station cannot be construed as the Mega Power Project as it is not in conformity with the Ministry of Power guidelines on Mega Power Projects dated 10.11.1995.

22. The generating station has been granted "in principle" Mega Power Project status by Ministry of Power vide letter dated 27.4.2004. The Mega Power policy is a policy measure announced by the Government of India with the specific objective of encouraging capacity addition through economies of scale. The Mega Power status enables a project, to avail of certain concessions having impact on project cost and resultant tariff. The decision as to whether a specific project is a Mega Power Project or not, therefore, rests with the Central Government. The Commission is not sitting in appeal over the decision of the Central Government regarding grant of Mega Power Project status. We feel that the fact that the Central Government has granted 'in principle' Mega Power Project status for the generating station is sufficient to enable us to proceed with the present petition for the purpose of 'in principle' approval of the project cost. Whether or not the generating station is a Mega Power Project would be relevant at the time of the final determination of tariff after commissioning, when the claims would be verified against the actual concessions received for setting up of the generating station.

Rationale of Capacity Addition

23. It has been stated that there is no necessity of capacity addition in the State of Karnataka based on the Financial Restructuring Plan (FRP) dated 30.3.2001

published by the State Government. In this regard, the petitioner has clarified that as per National Electricity Plan issued by Ministry of Power as well as Reports of Central Electricity Authority, there is shortage in both Energy and Peaking Power in Karnataka State and it is expected to continue beyond Tenth Five-Year Plan and during Eleventh Five Year Plan. The petitioner is setting up the generating station project in consultation with the State Government of Karnataka, which is also examining PPA to be signed with KPTCL, and is in final stage. On consideration of the facts on record, we are fully satisfied that there is sufficient indication that the State of Karnataka will need the power to be generated from the generating station.

Tariff of the Project cannot be determined by the Commission

24. It has been contended under section 79 (1) (a) & (b) of the Electricity Act, 2003 that the Commission can only 'regulate' tariff by specifying a broad framework of rules and regulations for tariff determination and that the Commission cannot 'determine' the tariff. Further, the present application before the Commission is for determination of tariff for supply of electricity to KPTCL, and KPTCL being a transmission licensee and not a distribution licensee, the Commission cannot determine the tariff under section 62 of the Electricity Act, 2003. On this, the petitioner has clarified that PPA is being entered with KPTCL with provision to assign it at an appropriate date to the concerned Discom as per Govt. policy.

25. The objection regarding the Commission's jurisdiction to determine tariff has no merit. It is not disputed that clause (b) of sub-section (1) of Section 79 of the Electricity Act, 2003 enables the Commission to "regulated' tariff of a generating company other than that owned or controlled by the Central Government, if such a

generating company has composite scheme of generation and sale of electricity in more than one state. The Hon'ble Supreme Court, through a string of judgments has held that the term regulate" is of broad import and very comprehensive in scope. In K. Ramanathan Vs State of Tamil Nadu (AIR 1985 SC 660), the Hon'ble Supreme Court held that "the power to regulate carries with it full power over the thing subject to regulation and in absence of restrictive words, the power must be read over the entire subject. It implies power to rule, direct and control and involves the adoption of a rule or guiding principle to be followed or making of rule with respect to the subject matter to be regulated." In Harishankar Vs UP State Electricity Board (AIR 1973 All 74), while dealing with the term "tariff", Allahabad High Court held that the term tariff includes within its ambit not only the fixation of rates but also rules and regulations relating to it. It would thus imply that the Commission has full control while regulating tariff of the generating companies falling within clauses (a) and (b) of sub-section (1) of Section 79 of the Electricity Act. The legislative history bears ample testimony to the fact that expression "regulations of tariff" also includes determination of tariff within its meaning. Electricity Regulatory Commissions Act, 1998 (the 1998 Act) is the forerunner of the Electricity Act, 2003. The functions similar to those assigned under clauses (a) and (b) of sub-section (1) of Section 79 of the Electricity Act were entrusted to the Commission under clauses (a) and (b) of Section 13 of the 1998 Act. The provisions corresponding to Section 61 and 62 of the Electricity Act were contained in Sections 28 and 29 of the 1998 Act. Section 28 of the 1998 Act enabled the Commission to determine by regulations the terms and conditions for "fixation of tariff", inter alia, under clauses (a) and (b) of Section 13 thereof. It would thus imply that "determination of tariff" or "fixation of tariff" by the Central Commission is relatable to its functions of "regulation of tariff" of the generating companies. The harmonious reading of sections 61, 62 and 79 also leads to the same result. It is to be noted that the title heading of section 61 is "Tariff regulations" but this provision empowers the Appropriate Commission to specify the terms and conditions for 'determination' of tariff. Further, section 62 which is the substantive provision for determination of tariff, empowers the Appropriate Commission to 'determine' tariff. According to the petition filed before us, PPAs for sale of power are being negotiated with Karnataka and Kerala. Clearly, the generating station has the scheme of sale to more than one State. The Central Government has accorded the Mega Power status on being satisfied that it will involve supply of power to more than one State. Hence the jurisdiction of the Commission in respect of the project is indisputable.

<u>Need for Application before State Commission</u>

26. It has been contended that there is no firm commitment from KSEB for purchase of power. Therefore, assumption of sale of power to more than one State so as to regulate tariff by the Commission is not correct. KPTCL is to buy 90% of power and hence the application should have been filed before the Karnataka State Electricity Regulatory Commission (KERC). In an affidavit filed before the Commission, KSEB has confirmed that it is ready to buy 10% of power. Hence, exclusive jurisdiction of the Central Commission becomes explicit.

<u>Environmental Clearance</u>

27. Janajagrathi Samithi and others have objected, against setting up of the project on environment considerations challenging the validity of the environment clearance granted by the Ministry of Environment & Forest (MOE&F) and its subsequent extension. The project was granted Environment clearance by MOE&F vide letter dated 20.3.1997 which was valid for five years. MOE&F extended the Environment

clearance by two years vide letter dated 16.4.2002. MOE&F vide its letter dated 31.1.2005 has confirmed that environment clearance granted in March 1997 continues to be valid. The objection does not pertain to the cost of the generating station or a matter incidental to determination of tariff. As such, it does not have any merit as far as the present petition is concerned.

Transparency in inviting bids

28. It has been contended that the Commission should examine whether the transparent procedure has been followed in inviting bids, its evaluation and award of works to ensure that the least cost principle has been adopted. In this context, the petitioner has submitted that it has gone for International Competitive Bidding for the award of Engineering, Procurement & Construction (EPC) contract and on the basis of bid evaluation, recommendation/advice of TCE Consulting Engineers Ltd., execution of project was decided to be taken up through following three separate contracts viz., EPC Contract, Civil works Contract and External Coal Handling System Contracts. We are accordingly satisfied that the petitioner has brought sufficient transparency in the matter of award of contracts for the generating station.

Other Objections

29. There are some other objections, which are relevant to tariff determination, for instance, the issues relating to sharing of efficiency gains with consumers, impact of foreign currency variations, O & M expenses etc. These issues can be addressed during determination of tariff.

ANALYSIS OF CAPITAL COST

30. As stated in para 5 above, the petition has been reserved for consideration of the reasonableness of the capital cost projected by the petitioner. This aspect has been analysed in the succeeding paragraphs.

31. While in para 10 of this order, we have discovered/discussed the project cost at 4299.82 Crore (equivalent Indian Rs.), we find that the petitioner has agreed with KPTCL for a capital investment of US$ 40.0 million + Euro 66.0 million + Rs. 3745.86 Crore, totaling to Rs.4299.12 Crore, including IDC and financing charges of Rs.350.14 Crore, which is less by Rs.70 lakh as compared to 4299.82 Crore. The capital cost is based on firmed up prices for the main plant contract, Civil Works contract and contract for the external coal handling system and Jetty at the New Manglore Port. The foreign exchange rate considered for the purpose is Rs.43.72/US$ and Rs.57.33/Euro. The reasonableness of the capital cost agreed to between the petitioner and his main customer is to be looked into before according “in principle” approval.

32. The break-up of the capital cost is indicated below:

Sl. No.	**Break Down**	**NCPL**
(1)	**(2)**	**(3)**
1.0	**Cost of Land & Site Development**	
1.1	Land	21.8
1.2	Preliminary Investigation & Site development	1.2
1.3	Rehabilitation & resettlement	9.8
	Total Land & Site Development(1.0)	**32.8**
2.0	**Plant & Equipment**	
2.1	**Steam Generator Island** (including FGD)	789.64
2.2	**Turbine Generator Island**	592.36
2.3	**BOP Mechanical**	
2.3.1	External water supply system	46.5
2.3.2	CW system	245.6
2.3.3	DM water Plant	30
2.3.4	Clarification plant	Incl in 2.3.2

2.3.5	Chlorination Plant	Incl in 2.3.2
2.3.6	Fuel Handling & Storage system	Incl in 2.3.2
2.3.7	Ash Handling System	Incl in 2.3.2
2.3.8	Coal Handling Plant	100.1
2.3.9	Rolling Stock and Locomotives	Not Incl
2.3.10	MGR /External coal Transportation System	83
2.3.11	Air Compressor System	Incl in 2.3.2
2.3.12	Air Condition & Ventilation System	Incl in 2.3.2
2.3.13	Fire fighting System	Incl in 2.3.2
	Total BOP Mechanical	**505.2**
2.4	**BOP Electrical**	
2.4.1	Switch Yard Package	74
2.4.2	Transformers Package	72.6
2.4.3	Switch gear Package	25
2.4.4	Cables , Cable facilities & grounding	130.21
2.4.5	Lighting	Incl in 2.4.4
2.4.6	Emergency D.G. set	Incl in 2.4.4
	Total BOP Electrical	**301.81**
2.5	**C & I Package**	**65.39**
	Total Plant & Equipment excluding taxes & Duties	2254.4
2.60	**Taxes and Duties**	
2.6.1	Custom Duty	0
2.6.2	Other Taxes & Duties	108
	Total Taxes & Duties	**108**
	Total Plant & Equipment	**2362.4**
3.0	**Initial spares**	**74.3**
4.0	**Civil Works**	
4.1	Main plant/Adm. Building(Incl Chimney & FGD works)	490
4.2	CW system (Incl. Sea water intake system)	75
4.3	Cooling Towers	106
4.4	DM water Plant	18
4.5	Clarification plant	Incl in 4.2
4.6	chlorination plant	Incl in 4.2
4.7	Fuel Handling & Storage system	7
4.8	Coal Handling Plant (Incl external coal handling plant)	162.6
4.9	MGR & Marshalling Yard(Incl Railway system in port)	34.8
4.10	Ash Handling System	25
4.11	Ash disposal area development	16
4.12	Fire fighting System	4
4.13	**Township & Colony**	0
4.14	Temp. construction & enabling works	14
4.15	Road & Drainage	13
	Total Civil works	**965.4**
5.0	**Construction & Pre- Commissioning Expenses**	
5.1	Erection Testing and commissioning	287.55
5.2	Site supervision	12.5

5.3	Operator's Training	2.5
5.4	Construction Insurance	94.2
5.5	Tools & Plant	Under 5.1
5.6	Start up fuel	16.5
	Total Construction & Pre- Commissioning Expenses	**413.25**
6.0	**Overheads**	
6.1	Establishment	61.1
6.2	Design & Engineering	14.42
6.3	Rehabilitation & Resettlement (R&R)	
6.4	Audit & Accounts	19.7
6.5	Contingency	6.31
	Total Overheads	**101.53**
7.0	**Project cost excluding IDC & FC (Hard Cost)**	**3949.68**
7.1	Interest During Construction (IDC)	317.03
7.2	Financing Charges (FC)	33.11
8.0	**Project cost including IDC & FC**	**4299.82**

33. The generating station has special features like FGD plant, external coal handling system at port and jetty, desalination plant and high density poly ethylene (HDPE) film in coal and ash handling areas. There is no custom duty component in the cost as the generating station has been granted Mega Power Project status by the Central Government. The hard cost (total Capital Cost excluding IDC and FC) for the generating station at Rs. 3949.68 Crore, is based on firm price contracts.

Comparison of the project cost with costs of similar projects

34. The total capital cost in the tabulation at para 32 is at slight variance with the capital cost agreed with KPTCL in PPA. For the purpose of present analysis, we are ignoring this difference. For evaluating the reasonableness of the capital cost, we compare the project cost of the generating station with the cost of other generating stations commissioned recently/due for commissioning in near future.

Comparison with Simhadri STPS (1000 MW) of NTPC

35. The capital cost of the generating station is firstly compared with completion cost of Simhadri STPS (1000 MW) of NTPC commissioned in March, 2003. The comparison with Simhadri STPS is considered important as Simhadri is also a coastal power station using sea water for cooling. The position that emerges is summarised below:

(Rs.in crore)

			NCPL Project	Simhadri STPS
1.	Cost of Land Site Development and R&R		32.80	131.22
2.	Plant & Equipment excluding Taxes & Duties			
	I	Steam Generator Island	789.64	619.34
	ii	Turbine Generator Island	592.36	484.13
	iii	Initial Spares	74.30	Included in 2 (ii) above
	iv	BOP (Mechanical)	505.20	583.08
	V	BOP (Electrical)	301.81	292.33
	vi	C&I	65.39	82.67
	vii	Civil Works	965.40	917.81
3.	Taxes & Duties		108.00	346.74 (Estimated)
4.	Construction & Pre-commissioning expenses		413.25	Embedded in above costs
5.	Overheads		101.53	Embedded in above costs
6.	Hard Cost		3949.68	3457.32
7.	IDC & FC		350.14	129.32

8.	Total Capital Cost	4299.82	3586.64

(Source: NTPC figures from petition No.2/2002)

36. Steam Generator Island cost of the generating station includes the cost of FGD of Rs.140 Crore, (excluding civil works). Simhadri STPS does not have FGD plant and De-salination plant.

37. The cost of additional specific features in the NCPL Project, leading to increase in the cost of the generating station is as under:

(Rs.in Crore)

(i)	FGD Plant (including civil works)	150.00
(ii)	External Coal Handling System & Jetty	220.95
(iii)	De-salination Plant	50.00
(iv)	Impervious layer in Ash pond & coal stockyard (HDPE Layer)	24.00
	Total	**444.95**

38. The township/colony is proposed to be developed through private developers and as such cost of township is not included in the cost estimates of the generating station. On the other hand, there would be cost reduction in internal coal handling system, ash handling system, mills, ESP etc on account of low ash and High GCV of imported coal. On all these considerations, the completion hard cost (excluding IDC and Financing charges) of Rs.3949.68 Crore compares favourably with the completion cost of Simhadri STPS.

Comparison with Talcher Stage – II (1000 MW), Vindhyachal Stage-II (1000 MW) and Rihand Stage-II (500 MW) of NTPC

39. The cost of two major packages, Steam Generator Island and Turbine Generator Island of the generating station are also compared with cost of these

packages in following three extension projects of NTPC- Talcher Stage-II, Rihand Stage-II and Vindhyachal Stage-II. The comparison of cost is as follows:

	NPCL Project	**Talcher Stage-II (Pet. No. 179/2004)**	**Vindhyachal Stage-II (Pet. No. 77/2002)**	**Rihand Stage-II (Pet. No. 83/2005)**
Capacity	2 x 507.5	2 x 500	2 x 500	1 x 500
Commercial Operation Date	Jan 2009	March,2004	October,2000	January,2005
Steam Generator Island Cost (Rs. Cr)	789.64#	951.02	795.58*	424.19
Turbine Generator Island Cost (Rs. Cr)	592.36	580.07	775.86*	286.55
Initial Spares (Rs. Cr)	74.30	Included in above costs	Included in above costs	Included in above costs
FGD Plant	Provided	Not provided	Not provided	Not provided
Erection, Testing & Commissioning (Rs. Cr)	139.62	Included in above costs	Included in above costs	Included in above costs

* Includes Incidental Expenditure During Construction (IEDC)
# Includes cost of FGD of Rs.140 Crore excluding civil works of FGD.

40. Higher cost of Steam Generator Island in case of NTPC generating stations is on account of use of indigenous coal having lower GCV and high ash content as compared to imported coal proposed to be used by the petitioner. The Turbine Generator Island Cost is comparable to that of Talcher Stage-II and Rihand Stage-II even though the generating station is expected to be commissioned during 2008-09. Two additional units of Talcher Stage-II and one additional unit of Rihand Stage-II are yet to be commissioned. In comparison to these generating stations of NTPC, the cost of Steam Island and Turbine Island of the generating station also appears to be reasonable.

<u>Comparison with Sipat Stage-I (3x660 MW) and Sipat Stage-II (2x500 MW) projects of NTPC under construction</u>

41. The cost of major packages of Steam Generator Island and Turbine Generator Island have also been compared with the contracts awarded by NTPC for Sipat Stage-I (3x 660 MW) and Sipat Stage-II (2 x 500 MW) in the following table:

	NPCL Project	**Sipat Stage-I**	**Sipat Stage-II**
Capacity (MW)	2 x 507.5	3 x 660	2 x 500
Scheduled Commercial Operation Date	Jan 2009	March 2007	June 2007
Whether Firm prices	Yes	No	No
Steam Generator Island Cost (Rs. Cr)	789.64#	1792.00	928.00
Turbine Generator Island Cost(Rs. Cr)	592.36	1100.00	573.00

Includes cost of FGD of Rs.140 Crore excluding civil works of FGD.

On this comparison also the cost of these packages appears to be reasonable in comparison to cost of the corresponding packages in the above NTPC proposed projects.

Comparison with TEC cost of Barh STPS (3x660 MW), Sipat STPS I (3 x 660 MW), Kahalgaon STPS Stage-II (2 x 500 MW) and Vindhyachal Stage-III (2 x 500 MW), all belonging to NTPC

42. The capital cost of the generating station has also been compared with the following new non-coastal projects of NTPC, namely, Barh STPS (3x660 MW), Sipat STPS Stage-I (3 x 660 MW), Kahalgaon STPS Stage-II (2 x 500 MW) and Vindhyachal Stage-III (2 x 500 MW). The cost of the generating station and CEA approved costs of these proposed projects of NTPC are as follows:

	NPCL	**NTPC Stations**			
	Proposed Project	**Sipat STPS Stage-I**	**Barh STPS**	**Kahalgaon STPS Stage-II**	**Vindhyachal STPS Stage-III**
Capacity	2 x 507.5 MW	3 x 660 MW	3 x 660 MW	2 x 500 MW	2 x 500 MW
No. & Date of CEA's TEC		2/NTPC/51/99-PAC/8431-53 dtd. 17.1.2000	2/NTPC/49/99-PAC/8801-23 dtd. 1.10.2001	2/NTPC/46/98-PAC/678-701 dtd. 13.06.2003	2/NTPC/50/99-PAC/8354-76 dtd. 27.08.2002
Commercial Operation Date	January, 2009	March 2007	Oct 2006	March, 2008	March, 2007
Price Level	Firm Cost	Completed Cost	Completed Cost	IV Qtr 2002	IV Qtr 2001

Hard cost excluding IDC & Financing charges					
FE Rate	Rs.44/US$ & Rs.58/Euro	Rs.42.5/US$	Rs.46.5/US$	Rs.48.5/US$	Rs.47.5/US$
Foreign Component	US$ 55.13 M + Euro 66 M	US$ 826.962 M	US$ 904.839 M	US$ 328.278 M	US$ 404.877 M
Domestic Component in Rs Crore	3323.71	3780.01	3079.32	1882.65	1642.45
Total Hard Cost in Rs Crore	3949.68	7294.60	7286.82	3474.80	3565.61
Hard Cost in Rs. Crore/ MW	3.89	3.68	3.68	3.47	3.56
Interest During Construction (IDC) & Financing Charges (FC)					
Foreign Component	0.00	US$ 164.959 M	US$ 165.548 M	US$ 45.27 M	US$ 60.623 M
Domestic Component in Rs Crore	350.14	1017.16	1036.31	235.93	271.42
Total IDC & FC in Rs Crore	350.14	1718.23	1806.11	455.49	559.38
IDC & FC in Rs. Crore/ MW	0.34	0.87	0.91	0.46	0.56
Capital Cost including IDC & FC					
Foreign Component	US$ 55.13 M + Euro 66 M	US$ 991.921 M	US$ 1070.387 M	US$ 373.548 M	US$ 465.500 M
Domestic Component in Rs Crore	3673.85	4797.17	4115.63	2118.58	1913.87
Total Capital Cost in Rs Crore	4299.82	9012.83	9092.93	3930.285	4124.99
Total Capital Cost in Rs. Crore/ MW	4.23	4.55	4.59	3.93	4.12

43. The cost of Kahalgaon STPS Stage-II and Barh STPS do not have any custom duty component. Further, cost of Kahalgaon STPS Stage-II and Vindhyachal Stage-III are present day costs and are amenable to escalation. It can be seen that IDC and financing cost are the lowest for the generating station. The capital cost of the generating station appears to be reasonable on overall basis after considering additional features specific to the coastal location.

<u>Other Issues</u>

44. IDC and financing charges of Rs. 350.14 Crore consist of IDC of Rs. 317.03 Crore and financing charges of Rs. 33.11 Crore. These are based on the interest on loan of 7.25% and guarantee charges for the loan from PFC for the borrower category falling in Grade-I to Grade IV bracket applicable to the petitioner. The financial closure for the generating station is in final stages.

45. With regard to interest rate being charged by PFC, the petitioner has submitted as follows:

> *" The interest rate charged by PFC is dependent upon grade of the borrowing entity. According to the entity appraisal carried out by PFC, Nagarjuna Power Corporation Ltd. (NPCL) falls under Grade-I to Grade IV bracket, which is the most creditworthy bracket, and hence, is charged the least interest rate. PFC has already sanctioned the loan assistance to NPCL based on its comprehensive entity appraisal, which is applicable for the entire loan repayment period. The interest applicable to NPCL shall be the rate applicable to the corresponding grade at the time of the disbursement. This is evident as per the PFC sanction letter enclosed as per Pages135-146 of the Tariff Petition."*

46. The petitioner has further submitted that IDC and financing charges may vary depending upon the rate of interest and financing charges by the other member banks of the consortium. But these are not likely to increase because the total composite rate including interest rate and financing charges to be charged by other banks is not likely to exceed the present composite rate (including financing charges) being charged by PFC.

47. The phasing of expenditure furnished by the petitioner appears to be in order. IDC and financing charges of Rs. 350.14 Crore as per the financing plan of PFC also appear to be in order based on the given phasing of expenditure.

48. On the issue of tariff revision on account of additional capitalization during the useful life of the generating station and relaxation on the operational and performance norms specified or to be specified by the Commission from time to time as part of the terms and conditions for determination of tariff, the petitioner has submitted as follows:

"The Clause 4.1(c) of the proposed PPA with KPTCL (enclosed at Annexure VI/ page 192 of tariff petition) states that "Any additional capital expenditure not included in (a) above, shall be incurred by the Seller (NPCL) only with the prior consent of the Principal Buyer (KPTCL) in writing. The Seller shall provide the justification and the benefit in incurring that capital expenditure and may also propose improvement to the operating parameters used for calculating tariff under this Agreement and the Agreement shall be changed to reflect this improvement. This is subjected to the approval of the Commission (COMMISSION)."

49. In the application, the Gross Station Heat rate has been considered as 2400 kCal/kWh (after stabilization period) and Auxiliary Consumption has been taken as 7.5%. KPTCL has submitted that they have negotiated a net station heat rate of 2400 kCal/kWh inclusive of auxiliary energy consumption. However, this has been contested by the petitioner. They have submitted that a net heat rate of 2400 kCal/kWh is not possible. The gross station heat rate norm of 2400 kCal/kWh is better than heat rate norm of 2450 kCal/kWh specified under the 2004 regulations, Auxiliary Energy Consumption of 7.5% is also in line with these regulations. Besides these two factors, other operational and performance norms, such as Target Availability, Transit Losses for Coal and Secondary Fuel Oil Consumption etc. have to conform to the 2004 regulations as amended from time to time. As such, the application is in conformity with the 2004 regulations. The parties are free to negotiate and agree to better norms through mutual consent and the same can be adopted at the time of final determination of tariff. However, any additional capital expenditure during the rated life of the generating station shall not be admissible for maintaining operational parameters in conformity with above referred norms during the rated life of the generating station.

50. On the issue of treatment of capital expenditure after expiry of PPA, the petitioner has submitted as follows:

"The Term *of proposed PPA with KPTCL is 25 years. Afterwards, extension of the PPA will be on mutually agreed terms and conditions with the due approval of the Commission or any other authority as required by law (see clause 2.1(b) of PPA {enclosed at Annexure VI/ page 183 of tariff petition}). NCPL believe that approval of the Commission after expiry of the PPA provides enough comfort in terms of the protection of the consumer interest"*

51. On the issue of impact of the exchange rate on the capital cost and other components of tariff, the petitioner has submitted as follows:

(a) Foreign component is involved to the extent of USD 40 Million and Euro 66 Million in the EPC contract, which will be catered to by the foreign equity of almost equivalent amount. We will strive to phase the foreign equity in tandem with the requirement of EPC contracts. Hence, we confirm that there will not be any impact on the project capital cost on account of exchange rate variation.

(b) 50% of the equity will be brought in foreign currency and the same is protected in tariff against foreign exchange variation. Hence return on equity, which has been considered in the tariff calculations as per COMMISSION norms, will have impact on the fixed component of the tariff on account of exchange rate variation, if any.

(c) The Coal supply and shipping costs will be in foreign currency. Hence exchange rate variation, if any, on account of this will have impact on variable cost component of the tariff.

CONCLUSION

52. Having regard to the foregoing discussions, it is evident that the generating station is at the stage of take off. The petitioner is in advanced stage of finalising PPA. All the contract packages for the execution are in place and the capital cost of project has been significantly reduced from Rs. 5496 Crore as approved by CEA to Rs. 4299.12 Crore. The reduced capital cost is based on firmed up prices of the contract packages and appears to be reasonable given the special features of the project. In

terms of the 2004 regulations, where PPA between the generating company and the beneficiaries provide a ceiling of actual expenditure, the capital expenditure shall not exceed such ceiling for determination of tariff.

53. We feel that any delay could delay the project and increase its cost, which would not be in the interest of the consumer. Further, the Commission also has a responsibility to promote investment in the power sector in the given scenario of power shortages. The Commission would like the generating station to achieve financial closure, so that it can supply electricity at reasonable rate.

54. We therefore, accord “in principle” approval to the capital cost of US$ 40.0 million + Euro 66.0 million + Rs. 3745.86 Crore, including IDC and financing charges of Rs.350.14 Crore. This totals to Rs.4299.12 Crore at the exchange rates of Rs.43.72/US$ and Rs.57.33/Euro .

55. The "in principle" approval of the above capital cost is subject to the following conditions:

(a) For the purpose of tariff, the completed capital cost shall not exceed the amount indicated in para 54.

(b) The petitioner shall achieve the financial closure within 120 days from the date of this order.

(c) The norms specified in the 2004 regulations are the ceiling norms and parties may agree to improved norms and where the improved norms are agreed to, such norms shall be the basis for determination of tariff.

(d) No additional capital expenditure incurred on maintaining operational and performance parameters shall be admissible for tariff enhancement during the rated life of the generating station.

56. This order disposes of the present petition.

(A H JUNG)
MEMBER

(BHANU BHUSHAN)
MEMBER

New Delhi, dated the 25th October, 2005