National Electric Power Regulatory Authority

Islamic Republic of Pakistan

Registrar

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No.NEPRA/R/TRF-55/AGL-2006/6572-74
September 4, 2006

Subject: **Intimation of Determination of Tariff of Attock Gen Limited (AGL) for sale of electricity to the Central Power Purchasing Agency within NTDC (Case No. NEPRA/TRF-55/AGL-2006) pursuant to Section 31(4) of the Regulation of Generation, Transmission and Distribution of Electric Power Act (XL of 1997)**

Dear Sir,

Please find enclosed the subject determination of the Authority along with Annex-I & II (43 pages) in Case No. NEPRA/TRF-55/AGL-2006.

2. The determination is being intimated to the Federal Government for the purpose of notification of the approved tariff in the official gazette pursuant to Section 31(4) of the Regulation of Generation, Transmission and Distribution of Electric Power Act (XL of 1997) and Rule 16(11) of the National Electric Power Regulatory Authority Tariff (Standards and Procedure) Rules, 1998.

3. Please note that only Order of the Authority at para 87 of the determination relating to the Reference Tariff and allowed adjustments & indexation along with Annex-I & II needs to be notified in the official gazette. The Order is reproduced for the purpose of clarity and is attached herewith.

DA/As above.

4.09.06.

(Mahjoob Ahmad Mirza)

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Secretary
Cabinet Division,
Government of Pakistan
Cabinet Secretariat
Islamabad

CC:

1. Secretary, Ministry of Water & Power, Islamabad.
2. Secretary, Ministry of Finance, Islamabad.

ORDER OF THE AUTHORITY
IN CASE NO. NEPRA/TRF-55/AGL-2006
TO BE NOTIFIED IN THE OFFICIAL GAZETTE

Pursuant to Rule 6 of the NEPRA Licensing (Generation) Rules 2000, Attock Gen Limited (AGL) is allowed to charge, subject to adjustment of Capacity Purchase Price on account of net dependable capacity as determined by test jointly carried out by Central Power Purchasing Agency (CPPA) and the petitioner, the following tariff for delivery of electricity to CPPA of NTDC for procurement on behalf of EX-WAPDA Distribution Companies.

Reference Tariff

Tariff Components	Year 1 to 10	Year 11 to 25
Capacity Charge (PKR/kW/Hour)		
Fixed O&M	0.1517	0.1517
Insurance	0.0494	0.0494
Working Capital	0.0441	0.0441
Debt Service	0.8858	-
Return on Equity	0.1986	0.1986
ROE during Construction	0.0379	0.0379
Total Capacity Charge	1.3675	0.4817
Energy Charge Rs./kWh		
Fuel Cost Component	4.3624	4.3624
Variable O&M – Foreign	0.3348	0.3348
Variable O&M – Local	0.0971	0.0971

Note: i) Capacity Charge Rs./kW/hour is applicable to dependable capacity at the delivery Point.
ii) Dispatch criterion will be the Energy Charge.
iii) The above tariff is applicable for a period of 25 years commencing from the date of the Commercial Operation.
iv) Component wise tariff is indicated at Annex-I and Debt Service Schedule at Annex-II

The following indexations shall be applicable to reference tariff.

I) **One Time Adjustment**

a) Adjustment due to variation in net capacity

The reference tariff has been determined on the basis of minimum net capacity of 156.138 MW at delivery point at mean site conditions. All the tariff components except fuel cost component shall be adjusted at the time of COD based upon the IDC tests to be carried out for determination of contracted capacity. If the IDC is established than 156.138 MW, the adjustments shall be made according to the following formula:

i) Revised Fixed O&M = 0.1517/tested IDC x 156.138 MW
ii) Insurance = 0.0494/tested IDC x 156.138 MW

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iii)	Debt Service	=	0.8858/tested IDC x 156.138 MW
iv)	Return on Equity	=	0.1986/tested IDC x 156.138 MW
v)	ROE during Construction	=	0.0379/tested IDC x 156.138 MW
vi)	Variable O&M - Foreign	=	0.3348/tested IDC x 156.138 MW
vii)	Variable O&M – Local	=	0.0971/tested IDC x 156.138 MW

b) Adjustment in Insurance Component

Insurance component of reference tariff shall be adjusted as per actual on yearly basis upon production of authentic documentary evidence by AGL according to the following formula:

Insurance (Revised) = AIC/$ 1.125 million x AP

Where;

AIC	=	Adjusted Insurance Component as per IDC Test
AP	=	Actual Premium

c) Adjustment due to custom duties and Interest during Construction

Debt Service, Return on Equity and ROE during construction shall be made on account of actual variation in customs duties and Interest During Construction with reference to the estimated figures of USD 6.510 million and USD 7.3961 million respectively.

II) Pass-Through Items

No provision for income tax has been accounted for in the tariff. If AGL is obligated to pay any tax on its income, the exact amount paid by the company may be reimbursed by NTDC to AGL on production of original receipts. This payment may be considered as pass-through (as Rs./kW/Hour) monthly payment spread over a 12 months period in addition to the capacity purchase price proposed in the Reference Tariff. Furthermore, in such a scenario, AGL may also submit to NTDC details of any tax shield savings and NTDC may deduct the amount of these savings from its payment to AGL on account of taxation.

Withholding Tax is also pass through item just like other taxes as indicated in the government guidelines for determination of tariff for new IPPs. Withholding tax shall be allowed @7.5% of the return on equity. CPPA (NTDC) shall make payment on account of withholding tax at the time of actual payment of dividend subject to maximum of 7.5% of 15% equity according to the following formula:

Withholding Tax Payable + [15% * ($E_{(REF)}$) + $ROEDC_{(Ref)}$] * 7.5%

Where:

$E_{(REF)}$	=	Reference Equity (US$ 29.72 million x 60)
$ROEDC_{(REF)}$	=	Reference Return on Equity During Construction

Note: In case of foreign equity withholding tax calculated according to the above formula shall be adjusted for variation in currency (US$ to rupee). The adjustment on account of variation in exchange rate (US$/PKR) shall also be applicable on the Foreign component of the equity.

In case Company does not declare a dividend in a particular year or only declares a partial dividend, then the difference in the withholding tax amount (between what is paid in that year and the total entitlement as per the Net Return on Equity) would be carried forward and accumulated so that the Company is able to recover the same as a pass through from the Power Purchaser in future on the basis of the total dividend pay out.

III Indexations

The following indexations shall be applicable to reference tariff.

a) Indexation applicable to O&M

In future the 50% of Fixed O&M part of Capacity Charge will be adjusted on account of local Inflation (WPI) and 50% on account of variation in US CPI and dollar/Rupee exchange rate. Quarterly adjustment for local inflation, foreign inflation and exchange rate variation will be made on 1st July, 1st October, 1st January and 1st April based on the latest available information with respect to WPI notified by the Federal Bureau of Statistics (FBS), US CPI issued by US Bureau of Labor Statistics and revised TT & OD selling rate of US Dollar notified by the National Bank of Pakistan. The mode of indexation will be as under:

b) Fixed O&M

$F\ O\&M_{(LREV)}$ = Rs. 0.1517 per kW per Hour*50% * $WPI_{(REV)}$ / 117.80

$F\ O\&M_{(FREV)}$ = Rs. 0.1517 per kW per hour *50% * US $CPI_{(REV)}$/199.8 * $ER_{(REV)}$ / 60

Where:

$F\ O\&M_{(LREV)}$ = The revised applicable Fixed O&M Local Component of the Capacity Charge indexed with WPI

$F\ O\&M_{(FREV)}$ = The revised applicable Fixed O&M Foreign Component of the Capacity Charge indexed with US CPI and Exchange rate variations.

$WPI_{(REV)}$ = The revised wholesale Price Index (manufacturers)

$WPI_{(REF)}$ = 117.80 wholesale price index (manufacturers) of April 2006 notified by Federal Bureau of Statistics

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US CPI $_{(REV)}$ = The revised US CPI (All Urban Consumers)
US CPI $_{(REF)}$ = 199.8 US CPI (All Urban Consumers) for the month of March 2006 as notified by the US Bureau of Labor Statistics
$ER_{(REV)}$ = The revised TT & OD selling rate of US dollar as notified by the National Bank of Pakistan

Note: The reference numbers indicated above shall be replaced by the revised numbers after incorporating the required adjustments at COD.

c) Variable O&M

The formula of indexation for variable O & M component will be as under:

V O&M $_{(FREV)}$ = Rs. 0.3348 per kWh * US $CPI_{(REV)}$/199.8 * $ER_{(FREV)}$ / 60

V O&M $_{(LREV)}$ = Rs. 0.0971 per kWh * $WPI_{(REV)}$ /117.80

Where:

V O&M $_{(FREV)}$ = The revised applicable Variable O&M Component of the Energy Charge indexed with US CPI and Exchange rate variations

$US\ CPI_{(REV)}$ = The revised US CPI (All Urban Consumers)

US CPI $_{(REF)}$ = 199.8 US CPI (All Urban Consumers) for the month of March 2006 as notified by the US Bureau of Labor Statistics

$ER_{(REV)}$ = The revised TT & OD selling rate of US dollar as notified by the National Bank of Pakistan.

Note: The reference VO&M indicated above shall be replaced with the revised number at COD after incorporating the required adjustment based upon the IDC Test.

d) Adjustment for KIBOR variation

The interest part of fixed charge component will remain unchanged throughout the term except for the quarterly adjustment due to variations in interest rate as a result of variation in 6-monthly KIBOR according to the following formula:

$\Delta I = P_{(REV)} * (KIBOR_{(REV)} - 8.54\%) /4$

Where:

ΔI = The variation in interest charges applicable corresponding to variation in KIBOR. ΔI can be positive or negative depending upon whether KIBOR REV is > or

< 8.54%. The interest payment obligation will be enhanced or reduced to the extent of Δ I for each quarter under adjustment on quarterly basis.

$P_{(REV)}$ = is the outstanding principal (as indicated in the attached debt service schedule to this order) on a quarterly basis on the relevant quarterly calculations date. Period 1 shall commence on the date on which the 1st installment is due after availing the grace period.

e) Fuel Price Variation

The Variable Charge Part of the tariff relating to fuel cost shall be adjusted on account of the fuel price variations as and when notified by the relevant authority, which in the instant case is the Attock Petroleum Ltd. In this regard, the variation in AGL's allowed rate relating to fuel cost shall be revised according to the following formula:

$FC_{(Rev)}$ = Rs.4.3624 per kWh * $FP_{(Rev)}$ / Rs. 22140.07 per Ton

Where:

$FC_{(Rev)}$ = Revised fuel cost component of Variable Charge on RFO.

$FP_{(Rev)}$ = The new price of RFO as determined per price mechanism given at para 69 of this determination, duly verified by OGRA.

Adjustment on account of local inflation, foreign inflation, foreign exchange rate variation, KIBOR variation and fuel price variation will be approved and announced by the Authority for immediate application within seven working days after receipt of AGL's request for adjustment in accordance with the requisite indexation mechanism stipulated herein.

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Attock Gen Limited
Specified Tariff

Year	Variable Charge (PKR/kWh)			Capacity Charge (PKR/kW/Hour)									Total	
	Fuel	Variable O&M	Total	Fixed O&M	Insurance	Financing Cost on Working Capital	Return on Equity	Return on Equity for Construction Period	Withholding Tax @7.5%	Loan Repayment	Interest Charges	Total	Fixed Cost at 60% Plant Factor Rs./kWh	Cents/kWh
1	4.3624	0.4319	4.7943	0.1517	0.0494	0.0441	0.1986	0.0379	0.0177	0.2965	0.5893	1.3851	2.3085	11.8379
2	4.3624	0.4319	4.7943	0.1517	0.0494	0.0441	0.1986	0.0379	0.0177	0.3322	0.5536	1.3851	2.3085	11.8379
3	4.3624	0.4319	4.7943	0.1517	0.0494	0.0441	0.1986	0.0379	0.0177	0.3722	0.5135	1.3851	2.3085	11.8379
4	4.3624	0.4319	4.7943	0.1517	0.0494	0.0441	0.1986	0.0379	0.0177	0.4171	0.4687	1.3851	2.3085	11.8379
5	4.3624	0.4319	4.7943	0.1517	0.0494	0.0441	0.1986	0.0379	0.0177	0.4673	0.4184	1.3851	2.3085	11.8379
6	4.3624	0.4319	4.7943	0.1517	0.0494	0.0441	0.1986	0.0379	0.0177	0.5236	0.3621	1.3851	2.3085	11.8379
7	4.3624	0.4319	4.7943	0.1517	0.0494	0.0441	0.1986	0.0379	0.0177	0.5867	0.2990	1.3851	2.3085	11.8379
8	4.3624	0.4319	4.7943	0.1517	0.0494	0.0441	0.1986	0.0379	0.0177	0.6574	0.2283	1.3851	2.3085	11.8379
9	4.3624	0.4319	4.7943	0.1517	0.0494	0.0441	0.1986	0.0379	0.0177	0.7366	0.1491	1.3851	2.3085	11.8379
10	4.3624	0.4319	4.7943	0.1517	0.0494	0.0441	0.1986	0.0379	0.0177	0.8254	0.0604	1.3851	2.3085	11.8379
11	4.3624	0.4319	4.7943	0.1517	0.0494	0.0441	0.1986	0.0379	0.0177			0.4993	0.8322	9.3775
12	4.3624	0.4319	4.7943	0.1517	0.0494	0.0441	0.1986	0.0379	0.0177			0.4993	0.8322	9.3775
13	4.3624	0.4319	4.7943	0.1517	0.0494	0.0441	0.1986	0.0379	0.0177			0.4993	0.8322	9.3775
14	4.3624	0.4319	4.7943	0.1517	0.0494	0.0441	0.1986	0.0379	0.0177			0.4993	0.8322	9.3775
15	4.3624	0.4319	4.7943	0.1517	0.0494	0.0441	0.1986	0.0379	0.0177			0.4993	0.8322	9.3775
16	4.3624	0.4319	4.7943	0.1517	0.0494	0.0441	0.1986	0.0379	0.0177			0.4993	0.8322	9.3775
17	4.3624	0.4319	4.7943	0.1517	0.0494	0.0441	0.1986	0.0379	0.0177			0.4993	0.8322	9.3775
18	4.3624	0.4319	4.7943	0.1517	0.0494	0.0441	0.1986	0.0379	0.0177			0.4993	0.8322	9.3775
19	4.3624	0.4319	4.7943	0.1517	0.0494	0.0441	0.1986	0.0379	0.0177			0.4993	0.8322	9.3775
20	4.3624	0.4319	4.7943	0.1517	0.0494	0.0441	0.1986	0.0379	0.0177			0.4993	0.8322	9.3775
21	4.3624	0.4319	4.7943	0.1517	0.0494	0.0441	0.1986	0.0379	0.0177			0.4993	0.8322	9.3775
22	4.3624	0.4319	4.7943	0.1517	0.0494	0.0441	0.1986	0.0379	0.0177			0.4993	0.8322	9.3775
23	4.3624	0.4319	4.7943	0.1517	0.0494	0.0441	0.1986	0.0379	0.0177			0.4993	0.8322	9.3775
24	4.3624	0.4319	4.7943	0.1517	0.0494	0.0441	0.1986	0.0379	0.0177			0.4993	0.8322	9.3775
25	4.3624	0.4319	4.7943	0.1517	0.0494	0.0441	0.1986	0.0379	0.0177			0.4993	0.8322	9.3775
Levelized Tariff (1-25 Years)			**4.7943**	**0.1517**	**0.0494**	**0.0441**	**0.1986**	**0.0379**	**0.0177**	**0.3231**	**0.2765**	**1.0989**	**1.8316**	**11.0430**

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Orient Power Company Ltd.

Debt Servicing Schedule

KIBOR 8.54%
Premium 3.00%

Period	Principle Repayment Million $	Mark-Up Million $	Balance Million $	Debt Service Millin $	Annual Principle Repayment $ Million	Annual Interest $ Million	Annual Principle Repayment Rs. Million	Annual Interest Rs. Million	Principal Repayment Rs./kW/ Month	Interest Rs./kW/ Month
1	118.88	1.62	3.43	117.26	5.0479					
2	117.26	1.66	3.38	115.60	5.0479					
3	115.60	1.71	3.33	113.88	5.0479				-	-
4	113.88	1.76	3.29	112.12	5.0479	6.76	13.43	405.49	806.00	216.42	430.17
5	112.12	1.81	3.23	110.31	5.0479					
6	110.31	1.87	3.18	108.44	5.0479					
7	108.44	1.92	3.13	106.52	5.0479				-	-
8	106.52	1.97	3.07	104.55	5.0479	7.57	12.62	454.35	757.14	242.50	404.10
9	104.55	2.03	3.02	102.52	5.0479					
10	102.52	2.09	2.96	100.43	5.0479					
11	100.43	2.15	2.90	98.28	5.0479				-	-
12	98.28	2.21	2.84	96.06	5.0479	8.48	11.71	509.10	702.39	271.71	374.88
13	96.06	2.28	2.77	93.79	5.0479					
14	93.79	2.34	2.71	91.45	5.0479					
15	91.45	2.41	2.64	89.04	5.0479				-	-
16	89.04	2.48	2.57	86.56	5.0479	9.51	10.68	570.44	641.05	304.45	342.14
17	86.56	2.55	2.50	84.01	5.0479					
18	84.01	2.62	2.42	81.38	5.0479					
19	81.38	2.70	2.35	78.68	5.0479				-	-
20	78.68	2.78	2.27	75.90	5.0479	10.65	9.54	639.17	572.32	341.14	305.46
21	75.90	2.86	2.19	73.05	5.0479					
22	73.05	2.94	2.11	70.11	5.0479					
23	70.11	3.03	2.02	67.08	5.0479				-	-
24	67.08	3.11	1.94	63.97	5.0479	11.94	8.26	716.19	495.30	382.24	264.35
25	63.97	3.20	1.85	60.77	5.0479					
26	60.77	3.29	1.75	57.47	5.0479					
27	57.47	3.39	1.66	54.08	5.0479				-	-
28	54.08	3.49	1.56	50.59	5.0479	13.37	6.82	802.48	409.01	428.30	218.29
29	50.59	3.59	1.46	47.01	5.0479					
30	47.01	3.69	1.36	43.31	5.0479					
31	43.31	3.80	1.25	39.51	5.0479				-	-
32	39.51	3.91	1.14	35.61	5.0479	14.99	5.21	899.17	312.32	479.90	166.69
33	35.61	4.02	1.03	31.59	5.0479					
34	31.59	4.14	0.91	27.45	5.0479					
35	27.45	4.26	0.79	23.19	5.0479				-	
36	23.19	4.38	0.67	18.82	5.0479	16.79	3.40	1,007.51	203.98	537.73	108.87
37	18.82	4.51	0.54	14.31	5.0479					
38	14.31	4.64	0.41	9.68	5.0479					
39	9.68	4.77	0.28	4.91	5.0479				-	
40	4.91	4.91	0.14	0.00	5.0479	18.82	1.38	1,128.91	82.58	602.52	44.07

BACKGROUND

Attock Gen Limited is a public limited company established for setting up a combined Cycle Power Plant based on single fuel (RFO) indigenously produced by Attock Refinery Limited, a sister concern under the umbrella of Attock Group. Attock Gen Limited (AGL) filed a tariff petition for determination of generation tariff for 165 MW at ISO Gross conditions and net capacity of 156.138 MW combined cycle power plant to be set up at Morgah, Rawalpindi.

2. The petition was admitted on 23rd June 2006, for consideration by the Authority. Notice for admission of petition was published in the daily newspapers on 26.06.2006 for intimation and participation in the proceedings of the case. Simultaneously notices to the interested persons/parties, stakeholders, the concerned ministries and other organizations were sent through letters soliciting their comments and/or as interveners to assist the Authority in arriving at just and informed decision of the case. A public hearing of the case was held on 15.07.2006 at the NEPRA main office where representatives of the petitioner, power purchaser (CPPA/NTDC) representatives of the ministries and other stakeholders participated.

Submissions of AGL

3. AGL submitted that the proposed power plant is based on combined cycle technology with an installed capacity of approximately 165.285 MW at ISO conditions. The plant configuration consists of 9 reciprocating engines 9 Heat Recovery Steam Generators and one steam turbine using Wartsila 18V46CC 4-stroke Diesel engines. The selected reciprocating engines are designed for firing single fuel i.e. RFO.

4. The proposed site for location of AGL power plant is in the present Attock Refinery Limited property at Morgah, Rawalpindi where Attock Refinery and ARL head office are both located. The site is on the east of the existing 7.5 MW captive Power Plant already set up for self use of ARL.

5. AGL has requested for two-part tariff comprising Energy and Capacity charges. This tariff will be incorporated into the Power Purchase Agreement between AGL and the power purchaser (CPPA/NTDC) and shall be based on the format of the Standardized PPA proposed by PPIB.

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6. AGL has submitted the following cost estimates for the power plant.

Capital Expenses		**In USD (Thousands)**
1.	EPC Contract	126,600
2.	Taxes and Duties	6,510
3.	Emergency Stock	1,890
4.	Land and Infrastructure	0
5.	Development Cost	2,050
6.	Legal and Consultants Cost	750
7.	Pre-Op Cost and O&M Mobilization	910
8.	Working Capital	0
9.	Financing Charges and Fees	2,833
10.	Interest During Construction	8,491
TOTAL CAPITAL COST		**150,034**
11.	Project Contingency	0
12.	Debt-Service Reserve	0
TOTAL PROJECT COST		**150,034**

The investment cost estimate of the plant is presented in USD. The EPC price is fixed in Euros 105.5 million (638 €/kW) and, with an exchange rate of 1.2 USD/EUR, the price will be USD 126.6 million (766 USD/kW).

7. The following additional information has been provided by the petitioner.

- The "EPC Contract" covers the Gensets together with all the necessary auxiliary machinery, equipment and systems including the erection and commissioning of the equipment and construction of buildings. The EPC price of the power plant is based on a firm turn-key proposal.
- Development Costs include sponsors' development costs and insurance.
- Legal Costs, Lenders' and Consultants', include the costs of sponsors' and lenders' outside legal and technical advisors' fees.
- "Pre-Operation Costs and O & M Mobilization" include the expenses of AGL and O&M personnel (training, salaries, admin, etc) incurred prior to COD (Commercial Operations Date).
- Working capital is assumed to be financed by a separate working capital loan. Therefore the working capital is not included in the Project cost.
- "Financing Charges and Fees" include the up-front cost of financing the plant.
- "Interest During Construction" is calculated on the basis of anticipated interest rates, equity injections, and the construction payment schedule.
- The financial calculations for the AGL power plant are based on the:-

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(a) Investment cost estimate, including a firm EPC price.

(b) Power plant operating costs (including long-term O & M contract and life-time heat rate).

(c) Financing, taxation, depreciation and other obligations and terms regulated by the law or lending institutions.

(d) Proposed 30-year tariff, based on real life-time costs.

(e) Assumption that the AGL Project will qualify for tax incentives as per the GOP Power Policy of 2002, including exemption from corporate income taxes as well as turnover and withholding tax on imports.

Capital Structure

8. The proposed capital structure of the Project is as follows:

In USD '000	
Equity	30.007
Total debt	120.027
Total Project Cost	150.034
Debt to Equity	4:1

Other Considerations

9. The Feasibility Study indicates that, during normal economic growth, the electricity demand on a national level will double in the next ten years. This means that by 2015 some 15,000 MW new capacity will be needed. Additionally, some of the old thermal generation plants need to be replaced. In such, the need for new capacity will be in the rage of 2,000 MW per year.

10. The proposed plant would offer significant relief locally in the transmission system of Islamabad, as it would bypass long transmission lines and potential step-down transformer bottlenecks. There is currently no significant power generation inside this area. The plant generation would be consumed very close to generation, thus also reducing substantial transmission losses. This Project could be finalized and commissioned on a fast-track basis within 15 months as combined cycle.

11. A wide range of different technologies were reviewed to utilize RFO: conventional steam plant, gas turbines and diesel engines, either in simple cycle or combined cycle modes, as well as 4-stroke or 2-stroke engine configurations. Four-stroke diesel

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engines were selected, as the main objective of the plant is to convert the available indigenous RFO into electrical energy. Engines are well proven to use this type of fuel. Gas turbine based concepts were rejected, as the main gas turbine manufacturers expressed their concerns that use of RFO in gas turbines would mean considerable de-rating both in power generating capacity as well as in efficiency from the nameplate capacities due to extensive fouling.

12. After thoroughly examining the available technologies and engine concepts, it became apparent that the following plant configuration would offer the best and most economical performance for AGL. The proposed plant concept is based on a 165.285 MW (ISO) power plant with RFO-fired diesel engines combined cycle. The main components of the plant are nine proven engines (W18V46 by Wärtsilä) generator sets, nine heat recovery steam generators (HRSG) to provide steam for one condensing steam turbine and for in-house use. When all the engines and the steam turbine run in parallel, the plant will generate a net output of 156.138 MW.

13. ARL will have indigenously produced RFO, and therefore the proposed plant will be based on RFO fuel. AGL will enter into long term FSA (Fuel Supply Agreement) with APL, an OMC operating in Pakistan and a company within the umbrella of Attock Group. At present, ARL is producing close to 480,000 tons per annum RFO which is expected to increase to 600,000 tons per annum in future due to recent discoveries of oil in Pakistan. The proposed power plant would consume a portion of that production, if running at its full power. The maximum daily consumption is 750 ton/day. The Attock Oil Refinery has more than 30,000 tons storage capacity. ARL would provide the necessary storage capacity to APL, for its supply to AGL's fuel requirements. RFO will be pumped from the storage tanks to the power plant through a dedicated pipeline. APL will also supply AGL with LFO for start-ups/shutdowns or emergencies.

14. The strategic location of AGL provides a unique opportunity for interconnection for power dispersal, since detailed power flow studies have been conducted by NTDC, and a 3 km long double line to the 132 kV existing transmission line between New Rewat and Rawalpindi Cantonment substations is required. No right of way issues are expected, i.e., the line can be built within the same time schedule as the plant itself.

15. Based on a thorough analysis of the national electricity generation structure and the proposed Project, and NTDC's load flow study conclusions, we are confident in stating that the AGL plant will be one of the most competitive electricity producers using RFO.

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TARIFF SUMMARY

16. The proposed tariff figures appended here below are the result of a detailed financial analysis together with the Feasibility Study conducted by M/s Electrowatt-Ekono on AGL's 165.285 MW (Gross at ISO) capacity plant. Technical, economical, financial, legal and fiscal aspects have been considered in the evaluation of AGL's financial performance. The financial analysis is based on a notional 60 % load factor as per PPIB's instructions, and a 30-year Power Purchase Agreement (PPA).

17. Based on the RFO price of 14,300 PKR/ton (RFO Price on LOI date), output of 156.138 MW (net at site conditions) and detailed financial analysis, the following tariff has been proposed.

	Capacity Charge US Cents/kWh	Energy Charge US Cents/kWh	Total tariff US Cents/kWh	Total tariff PKR/kWh
Levelized tariff	**3.1426**	**5.4895**	**8.6321**	**5.1793**
Average tariff	**2.3161**	**5.4895**	**7.8056**	**4.6834**

Average (1-10 years) : US cents 9.3573 /kWh (or Rs 5.6144 /kWh)
Average (11-30 years) : US cents 7.0297/kWh (or Rs 4.2178 / kWh)
Average (1-30 years) : US cents 7.8056/kWh (or Rs 4.6834 / kWh)
Levelized : US cents 8.6321/kWh (or Rs. 5.1793 / kWh)

ENERGY CHARGES

18. The tariff has a typical two-part structure with an energy charge for the energy actually dispatched and a capacity charge based on the dependable capacity. The energy charge is based on the actual kWh off-take, and consists of the fuel component and the variable O&M component.

19. The Gensets being proposed for this Project are advanced technology machines providing high thermal efficiencies. After factoring the impact of fuel cleaning, average plant aging, and a notional 60% plant load factor, this translates to approximately 44.3% net site efficiency, running on RFO.

20. A summary of the energy price is provided in the table as below:

	Energy Purchase Price (EPP) Rs./KWh			
Period	Fuel	Variable O&M (Foreign)	Variable O&M (Local)	Total
Years 1-30	2.8618	0.3348	0.0971	3.2937

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Fuel Component

21. This component represents the fuel consumption at a guaranteed efficiency level for the plant based on a notional 60% capacity factor. Consequently, this tariff subsumes the efficiency risk being borne by AGL. The main assumptions used to derive this price are:

(a)	RFO Price:	Rs 14,300 per ton delivered at site RFO price as on 21st December 2004 (date of the LOI)
(b)	Thermal Efficiency:	44.3 % (life-cycle net at site conditions)
(c)	Output:	156.138 MW (net at site conditions)
(d)	Heat Rate:	7701.4 BTU/kWh (LHV)
(e)	Partial Loading:	Heat Rate Curves from Genset manufacturers to be used for partial load heat rate calculation and payment in case the plant load falls below 40 %.

Local Variable O&M

22. This component includes the cost of lube oil consumption, which is directly related to the electricity actually generated. The rate will be indexed to the prevailing Pakistan Consumer Price Index by IMF

Foreign Variable O&M

23. This component primarily includes imported spare parts and chemicals, as well as technical services to be procured from abroad during maintenance. The gensets and associated equipment have manufacturer-recommended overhauling schedules that are based on actual running hours. The actual timing of the Major Inspection depends on the actual dispatch provided to the plant. The variable O&M foreign component will be indexed to the European CPI. This tariff component will also be adjusted by variations in the PKR/EUR exchange rate.

CAPACITY CHARGES

24. The capacity charge for the Project is payable on the basis of the dependable capacity as tested at COD, and periodically thereafter. This payment is calculated on Rs/kW/Month basis of capacity and, in order to calculate a unit rate in Rs/kWh, a notional 60% capacity factor has been utilized.

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i) The key assumptions factored in the capacity charge are the total capital cost of the Project, the debt-equity ratio, the cost of funding and currency thereof, together with the exchange rate. The following are the assumptions used on the reference dates:

(a)	Total Capital Cost:	USD 150 Million (fixed EPC price of 105.5 Million Euros)
(b)	Debt-Equity Ratio:	80:20
(c)	Exchange Rates:	1 USD = 60 Rupees; 1 EUR = 1.2 USD
(d)	Funding:	Debt: Local funding 100% Equity: Local and Foreign
(e)	Taxes:	- Customs Duty at 5% on imported equipment as per 2002 Private Power Policy - Dividend Withholding Tax of 7.5% - Withholding Tax at 6% on the local part of the EPC Contract - Customs Duty at 10% on imported spare parts - 0% Corporate Tax Rate - 0% Minimum Turnover Tax Rate

ii) At the time of Financial Closing, the tariff figures shall be updated for the various base figures (e.g. fuel price, EPC, O&M and Insurance prices, adjusted by actual exchange rates compared to the Reference Exchange Rates (PKR/USD = 60.00, PKR/EUR = 72.00, and USD/EUR = 1.20), and Interest During Construction adjusted by prevailing KIBOR), to arrive at the reference tariff table to be used in the PPA.

iii) At the COD, the tariff figures will be updated on the basis of actual interest incurred during construction and variations in the Reference Exchange Rates during construction

iv) Any modifications or additions required by the off-taker that are not considered in the project shall be treated as pass-through.

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25. The capacity charge is further broken down into two components:

Escalable Capacity Payment

i) This component represents all the fixed costs of the plant and the return on equity. Since there is no recovery of the original equity capital invested, the plant remains the property of the sponsors after the 30 year contract period and may operate as a merchant plant. A summary of the charges is provided in the following table:

	Escalable Component (Rs./KW – MO)			
Period	Fixed O&M	Insurance	ROE	Total
Years 1-30	120.3602	36.0258	248.400	404.786

ii) The Fixed O&M component of the Escalable Capacity payment represents the fixed costs of all the staff for O&M and plant administration, staff for administration of AGL, security, transportation, AGL overheads, office costs, professional fees such as audit, tax and legal, as well as some minor fixed operational costs such as environmental monitoring, that do not change with dispatch levels. This component also includes the land and tank farm lease cost.

iii) The Insurance component consists of all-risk insurance/re-insurance for the Project, as well as business-interruption insurance (which is a lenders-stipulated requirement).

iv) The ROE component includes a return on invested equity giving an IRR of 15.5%, net of with-holding tax. Additionally, this component also includes the cost impact of a working capital loan. The ROE component is based on the following parameters:

a) Equity Amount: 30 Million USD (20% of total project cost)

b) Internal Rate of Return: 15.5 % after dividend withholding tax of 7.5%

c) Repayment of Capital: None

d) Currency of Funding: Pak Rupees and USD

e) Working Capital Loan: A working capital loan facility is assumed in order to finance the net accounts receivables and working capital impact of 15% sales tax

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f) Cost of Working Capital Loan: 6 months KIBOR (8.54%) + 3% premium + 1% commitment fee and L/C charge

g) Corporate Tax Rate: 0%

(h) Minimum Turnover Tax: 0%

v) Indexation:

Fixed O&M shall be indexed to the following:

A. PKR/EUR exchange rate (57% of component)
B. European CPI (57% of component)
C. Pakistani CPI (43% of component)

Insurance shall be indexed to the following:

A. PKR/USD exchange rate
B. U.S. inflation

ROE shall be indexed to the following:

A. PKR/USD exchange rate
B. U.S. inflation/ Pakistani inflation

Reference date for indexation shall be 21.12.2004 (date of LOI).

(a)	Amount of Debt:	120 Million USD (80% of total project cost)
(b)	Term of Loan:	15 months construction + 10 years of quarterly equal principal repayment after COD
(c)	Interest Rate:	Local: 6 months KIBOR (8.54%) + 3%premium
(d)	Up-front fees:	2.0%
(e)	Commitment fee:	0.5%
(f)	Currency:	PKR
(g)	Indexation	Funding in PKR: interest component would be indexed to the 6 month KIBOR rate

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If 100% local financing cannot be obtained, and foreign loans would be required, the Interest During Construction as well as the Non-Escalable Charges shall be adjusted according to the prevailing relevant interest rate (+ spread) and foreign currency exchange rate.

ESCALATIONS AND INDEXATIONS

26. After COD, the tariff tables provided will be indexed to factors, as described above, with the Reference Date being 21.12.2004 (date of LOI) and the Reference Exchange Rates being 72.00 PKR/EUR, 60.00 PKR/USD and 1.20 USD/EUR. On the Financial Closing date, the Reference Tariff table will be updated by the then-prevailing indices, exchange rates and base numbers. The details are provided here below.

Inflation Factors

The following components are subject to inflation factors:

Variable O&M – Local:	Pakistan Consumer Price Index (by IMF)
Variable O&M –Foreign:	European Consumer Price Index (by IMF)

Escalable Capacity Payment

Fixed O&M	57% European Consumer Price Index and 43% Pakistan Consumer Price Index (by IMF)
Insurance	U.S. Consumer Price Index (by IMF)
ROE	U.S. Consumer Price Index (by IMF) for the foreign component, and Pakistan Consumer Price Index (by IMF) for the local component

Currency Indexation

27. The following components are subject to exchange rate indexation. The Reference Exchange Rates are 72.00 PKR/EUR, 60.00 PKR/USD and 1.20 USD/EUR:

Variable O&M – Foreign:	PKR/EUR exchange rate

Escalable Capacity Payment

Fixed O&M	57% PKR/EUR exchange rate

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Insurance	PKR/USD exchange rate
ROE	PKR/USD exchange rate

Non-Escalable Capacity Payment – Foreign Loan

In case 100% local financing cannot be obtained, and foreign loans would be required, the Interest During Construction as well as the Non-Escalable Charges shall be adjusted according to the prevailing relevant interest rate (+ spread) and foreign currency exchange rate.

Interest Rate Indexation

The following components are subject to interest rate indexation:

Non-Escalable Capacity Payment – Local Loan

Interest Charge	6-months KIBOR

Base Changes

Changes in the base price of fuel, i.e., RFO, shall be treated as a pass-through cost based on the guaranteed heat rate.

Pass-Through Items

Any taxes and levies etc. not factored in the tariff calculation, shall be treated as pass-through items in the Power Purchase Agreement.

Adjustments at Commercial Operations Date

28. The Escalable ROE Component and the Non-Escalable Components will be adjusted by the Inflation Factors and Reference Exchange Rates as follows:

- The Non-Escalable Component shall also be adjusted by the then prevailing 6-month KIBOR
- The Working Capital component, which is included in the ROE component, shall also be updated with prevailing fuel price at COD.
- Hedging cost during construction on EPC payment will be made part of the Project cost, as required by the Lenders. Otherwise, subject to the Lenders' consent, the final local amount at COD would be based on actual Exchange Rates used by the Banks to make payment to the EPC contractor. Actual hedging cost will be used based on forward rates received from lead banks immediately after Financial Close.

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- Since no contingency has been included in the Project costs, any cost over-run beyond the reasonable control of AGL, will be a pass-through.

ASSUMPTIONS

29. The following have been assumed while calculating the tariff. Changes in any of these assumptions will result in changes in the tariff.

- Anticipated average site conditions that have been used in calculation of the net output and heat rate, are an altitude of 520 m above sea level, ambient temperature of 30°C, charge air coolant temperature of 40°C and 60% relative humidity.

- Internal consumption (including air-cooled condenser) has been assumed to be approximately 3.7 MW.

- Annual unscheduled Outages (MWh) up to 500 hours x Dependable Capacity (MW) shall be without any liquidated damages. Liquidated damages for Unscheduled Outages in excess thereof, and their computation, shall be in accordance with the 1994 standard PPA.

- Scheduled Outage periods shall be 30 Days per Unit in any Year, except in any Year in which a Major Inspection is required, in which case Scheduled Outage periods shall be 60 Days per Unit.

- Complex minimum continuous loading is assumed at 40% of the Dependable Capacity, below which part load adjustments shall apply.

- The maximum number of starts/stops of the Complex are assumed at 220 per annum.

- Debt: Equity ratio is assumed to be 80 : 20.
- Interest rate for senior loans is assumed at 11.54% (KIBOR+3%).
- 100% of senior loans have been assumed to be local.
- Debt tenure is assumed to be 15 months (construction) + 10 years quarterly repayment.

- Customs duties on imported plant equipment are assumed to be 5% in accordance with the 2002 Private Power Policy of the Government of Pakistan.

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- With-holding tax has been assumed at 6% on the local component of the EPC contract.
- No corporate income tax and no minimum turnover tax have been assumed.
- With-holding tax of 7.5% on dividends has been assumed.
- A constant ROE is assumed, which results in an IRR of 15.5% over 30 years.
- No hedging cost has been assumed for exchange rate fluctuations during construction.
- NTDC is assumed to be responsible for financing and constructing the interconnection to the grid.
- In the absence of a draft PPA or FSA under the 2002 Private Power Policy of the Government of Pakistan, all invoicing and payment terms are assumed to be in accordance with the 1994 standard PPA and FSA.
- The tariff is calculated on the basis of a notional 60% plant load factor.
- Assumed LHV of the RFO is 40.6 MJ/kg (17,455 Btu/lb).
- Tolerance of +/- 3% in Dispatch is assumed.
- The price of RFO is assumed to be 14,300 PKR/ton (as of the date of the LOI).
- The costs of industrial land and RFO/LFO storage tanks have not been included in the capital cost, but have been factored as annual leased cost payment spread over the life of the Project.
- The tariff table shall be updated at financial closing as well as COD of the Project, in order to correct the tariff according to the prevailing KIBOR and exchange rates (PKR/USD and PKR/EUR).
- The exchange rate has been assumed to be 60.00:1 for PKR/USD; 72.00:1 for PKR/EUR; and USD/EUR 1.20:1.
- Fuel during plant testing is assumed to be paid for by the power purchaser.
- The cost of the initial fill of RFO/LFO has not been charged upfront.
- The cost of the existing infrastructure has not been charged upfront.
- Working capital has been financed by a separate working capital loan, and is not included in the Project cost.

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- Project contingency/debt service/maintenance reserves are not included in tariff calculations. If required by Lenders, these will be adjusted accordingly in the tariff.

- The cost of the L/C in favour of the power purchaser is not included in tariff.

- All other assumptions not expressly stated herein are based upon the 1994 Standard PPA. Consequently, any change in any such assumption may lead to change in the tariff.

Comments of Central Power Purchasing Agency

30. **Background**

Pursuant to Power Policy 2002, PPIB issued a Letter of Interest (LOI) vide No. 1(102) PPIB-1012/04/PRJ dated 21-12-2004 to Attock Generation Ltd for conducting the feasibility study within six months. The sponsors completed the feasibility study and got it approved on 6-11-2005 by the PPIB nominated Panel of Experts (POE)

31. **Project Configuration**

The consultant considered four alternatives for the combined cycle power plant operated on LSFIO and recommended an option comprising nine proven engines – (W18V46 by Wartsila) each 16.5 MW with 11.1 MW Steam Turbine having gross capacity of 159.6 MW (156.138 MW net output at Mean Site Condition). The consultants assured net efficiency of the plant as 44.3% on LSFO firing. The project cost was taken as US$ 150 million and the levelized tariff of US Cents 8.6321/kWh for 30 years on BOO basis.

32. **Capital Cost**

The capital cost for this project has been taken as US$ 150 million, which is on higher side and should be rationalized.

33. **Fuel Cost Component**

The Company has calculated the Fuel Cost Component by taking the fuel price of Rs. 14300/ton (fuel price of LOI date 21-12-2005) whereas the present price of fuel is about Rs. 26500/ton which has significant effect on the tariff, it is therefore requested that for Determination of Tariff, present fuel price may be considered.

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34. **Indexations**

Power Policy 2002 does not cover the Company's requested indexation of European CPI/US CPI or Pakistan CPI (by IMF) therefore wholesale Price Index (WPI) for manufacturing as notified by the GOP's Federal Bureau of Statistics (FBS) may be allowed as per Power Policy 2002.

35. **Interest Rate**

Three (3)-months KIBOR may be considered instead of six (6) – months KIBOR.

36. **Hedging Cost**

Exchange rate difference has already been provided, therefore, hedging cost may not be allowed.

37. **Over – run Cost**

Since all the tariffs components will be adjusted at COD therefore any over-run Cost of the project will not be considered as pass through.

38. **Efficiency**

In tariff petition the Company has mentioned the plant efficiency as 44.3% whereas in feasibility Study it has been mentioned as 45.5%, therefore reduction in efficiency will have the significant effect on the tariff by which fuel cost component will be increased by US Cents 0.233/kWh. Whereas certain sponsors have intimated that efficiency of similar plants on single fuel is 47%.

COMMENTS ON ASSUMPTIONS

a) **Plant availability**

The Company has taken the plant availability as 86% for tariff calculation whereas NTDC requires plant availability more than 90% as per standard Power Purchase Agreement under Power Policy 2002.

b) **Starts Ups**

All Start Ups should be free of Cost.

c) **ROE**

The Company has considered an IRR of 15.5% with annual ROE of 17.8% over the 30 years, it should be rationalized with other projects keeping in view the BOO and BOOT arrangements. Regarding ROE during construction and

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financing cost of working capital it is stated that the previous practice of Tariff Determination should be followed.

d) **Exchange Rate Variations**

Power Policy 2002 allows adjustment only for variations in the exchange rate between the Pakistan Rupee and US Dollar, between the reference date and the date of payment, therefore exchange rates of PKR/EUR may not be allowed.

e) **Working Capital**

In the petition the Company has mentioned that Working Capital has been financed by separate Working Capital loan but its quantum and mechanism has not been provided.

f) **Fuel Pricing**

As the Company is using its own products (LSFO) therefore the LSFO price should be considered equal to HSFO. It is further added that price fixation mechanism may be specified by NEPRA.

g) **Infrastructure Facilities**

Attock Generation Ltd is sharing the certain existing infrastructure facilities with Attock Refinery Ltd; where as all infrastructural boundaries of Attock Generation Ltd should be separate in all respects.

39 **NTDC Power Expansion Program**

As per NTDC load forecast there will be power shortage in the country from the year 2005-06 onward and same is expected to increase to 5500 MW in the year 2010. Mainly this shortfall will occur in the area of LESCO, FESCO and GEPCO, which is expected to be about 5250 MW in the year 2007. This shortage in IESCO is not expected however, the said plant can supply the power to most sensitive and VVIP areas of IESCO to meet any emergency/shortfall of power. During low water months when most of power is transmitted from south this plant will improve the voltage profile of the area.

40 **Power Acquisition Permission**

In compliance to NEPRA's Interim Power Procurement (Procedures and Standards) Regulations 2005, CPPA has requested NEPRA for grant of permission to procure power from the proposed plant and consequently NEPRA has granted permission to

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CPPA for the power acquisition from the said plant vides their letter No. NEPRA/R/PAER-06/CPPA-2006/3169-70 dated 10-03-2006.

41. **Power Dispersal Arrangement**

The power of the proposed 150 MW CCPP at Morgah Rawalpindi can reliably be dispersed to the system with the following interconnection option at 132 kV voltage level:

> "In/Out of the existing 132 kV Rawalpindi Cantt – Rewat New (Bahria Town) Single circuit transmission at proposed 50 MW AGL Power Plant. The total length of 132 kV double circuit transmission line for making IN & Out is 3 km on Greeley conductor".

42. **Power Purchase Agreement**

The standardized PPA under Power Policy 2002 is available therefore any reference of 1994 power policy is irrelevant.

AGL's REPLY TO COMMENTS MADE BY CPPA.

43. **CAPITAL COST**

The equipment selected by AGL for the power plant has a project cost of approximately 150 Million USD as stated in AGL's Tariff Petition. This was the most economical offer available to AGL, with respect to selected technology. This amounts to less than USD 1 Million per MW of net capacity. Compared with the existing comparable technology IPPs installed under the 1994 Power Policy in Pakistan, far from being "on the high side", AGL's project cost is appreciably low, even without applying indexation which, from 1995 to date, has escalated the prices by at least 35%. If this escalation were to be applied to the project costs of comparable technology IPPs under the 1994 Power Policy, the net capacity cost would exceed USD 1.45 Million per MW.

Consequently, a project cost of USD 150 Million is most competitive and economical, especially for a fast-track project as equipment delivery lead times are much more these days than they were 5 or 6 years ago. Moreover, there has been appreciable price escalation of power plant equipment over the last 10 to 12 years.

44. **FUEL COST COMPONENT**

For its tariff calculation, AGL has used the PPIB recommended fuel price of Rs. 14300 per tonne (price on the date of LOI). Based on fuel price of Rs. 22140.07 per tonne (RFO price, excluding GST, for the period 01~15 July 2006), levelized total tariff comes to Rs. 6.7838/kWh or US cents 11.3063/kWh as against Rs. 5.1793/kWh or US cents

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8.6321/kWh stated in AGL's Tariff Petition. An updated reference tariff table is appended herewith.

45. **INDEXATIONS**

The power Policy of 2002 does not fully cater for inflation indexation to tariff components subject to inflation/escalation. AGL has requested for reasonable inflation indexation for each component to its respective currency. Therefore, AGL has requested EUR CPI for O&M since the O&M will be contacted to a European company, and US CPI for insurance which is anticipated to be contracted to a US based company. Local CPI has been assumed for the local components. Since AGL will have a 30 years agreement, it is very important to keep the plant well in order. Without application of proper inflation indexation, AGL will suffer losses thus reducing ROE of shareholders. Similarly, ROE in USD should be indexed to US CPI, and ROE in PKR should be indexed to local CPI.

46. **INTEREST RATE**

AGL has assumed KIBOR rate offered for six months as it is expected to be asked by the lenders for such long-term facility. However, KIBOR rate is subject to revision upon finalization of loan arrangement as per Financing Documents.

47. **HEDGING COST**

Variation in project cost during construction due to variations in exchange rates should be allowed. This is assumed to replace the hedging arrangement and its cost. However, the project cost and the final reference tariff should be adjusted at COD pertaining to both ROE and non-escalable components. Additionally, since the contractor is based in Europe, the EPC price is in Euro. Therefore, variation in Euro/PKR is also requested.

48. **OVER-RUN COST**

AGL appreciates the submission of CPPA with regard to adjustment in tariff table at COD. However, considering the present national and international political situation, it is only equitable that any cost overruns beyond reasonable control of owner should be treated as pass-through.

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49. **EFFICIENCY**

The plant net lifecycle efficiency of 44.3%, specified in AGL's Tariff Petition, is based on the best offer by Wartsila (the equipment supplier) after detailed engineering/technical discussions/study. Notional 60% plant factor, ageing, sludge, etc have been comprehensively taken into account, whereas this was not done in the 45.5% efficiency citied in the Feasibility Study. To date, the highest efficiency offered by any comparable technology, IPP in Pakistan is less than 42.75% (the average being less than 41.5%), and AGL's efficiency figure of 44.3% is an appreciable improvement. As a result of the high efficiency posted by AGL, its fuel component, EPP and total levelized tariff are the lowest among all the comparable technology IPPs in Pakistan!. AGL is not aware of any other supplier/sponsor who claims to provide 47% net lifecycle efficiency for a reciprocating-engine single-fuel plant in Pakistan.

The net lifecycle efficiency of 44.3% is the highest and the best that has been offered by AGL.

a) **Plant Availability**

AGL's actual, functional plant availability factor is not 86%. However, for tariff calculations, AGL has used the figure of 86% in order to provide a "comfort zone" for its lenders, since neither AGL's supplier (Wartsila), nor any other, provides an absolute guarantee against all breakdowns in normal plant operations. Lenders are most sensitive to the fact that any unscheduled outage will affect the return on their investment in terms of Capacity Payments, being all too familiar with the IPP experience under the 1994 Power Policy.

Prudent projection for AGL's power plant, comprised of 162 cylinders of reciprocating engines together with other auxiliary equipment, requires factoring in scheduled outages of 720 hours per Unit per Year, and 500 hours x Declared Capacity (MW) of annual unscheduled outages. Although it is not expected that all these unscheduled outages will occur, it is the prudent factoring in of these outages that translates AGL's expected availability to the more conservative working figure of 86% for reliability.

AGL's underlying premise – 720 hours of scheduled outages per Unit per Year and 500 hours x Dependable Capacity (MW) of annual unscheduled outages – which provides the basis of the 86% plant availability factor, is more reasonable

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b) **Start Ups**

The maximum start-ups, per year, assumed in AGL's tariff petition are 220. It is implied that these 220 Start-ups per Year shall be free of cost. All Start-ups, after 220 free Start-ups, shall be charged at Rupees Fifty Thousand (Rs. 50000) per Start-up, and this charge shall be indexed to RFO price variation with the base price being the RFO price at the date of LOI (i.e. Rs. 14300 per tonne). Moreover, simple cycle operation of the Complex corresponding to full Complex output without the STG, shall be at 41.5% efficiency, provided, the STG is available for operation.

c) **ROE**

i. 15.5% IRR is considered reasonable.

ii. ROE during construction is based on the assumption that equity is drawn before senior loans are disbursed. Considering current practices, this is assumed to be required by lenders. The total amount is annualized over 30 years in the tariff.

iii ROE during operation is calculated taking realistic timing of dividend payments into account in order to achieve 15.5 IRR. Equity is drawn upfront and dividends are assumed to be paid after the end of the relevant financial year.

d) **Tolerance in Dispatch Level**

A tolerance of ±3% assumed in AGL s Tariff Petition is for fluctuations in the dispatch level which are directly attributable to fluctuations in the Grid System. These fluctuations in the Grid System are beyond AGL's control and any consequently penalty, direct or indirect, in this regard is not justified. Technically, this tolerance is to cater for fluctuations in the Grid System and operation of all existing IPPs in Pakistan, with ± 3% tolerance in dispatch level, is evidence in favour of AGL's assumption, Moreover, this tolerance is already in lenders' exposure and "comfort zone" as it is linked with the return on their investment in terms of Capacity Payments. For the power purchaser's advantage when there is power shortage at the Grid, additional power, at times, is available at no additional Capacity Payment.

The tolerance of +/- 3% in dispatch level, assumed in AGL's Tariff Petition, is imperative.

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e) **Exchange Rate variation**

Since the power plant equipment and EPC/O&M contractors are of European origin, therefore, they have quoted prices in Euro. The recent trend of appreciation of Euro against USD provides enough justification for Euro/USD exchange rate adjustment which will be based on actual variation. If this adjustment is not provided, EPC/O&M contractors would have to hedge their risk in terms of exchange rate variation, which will be loaded on cost.

f) **Working capital**

Working capital has been evaluated based on assumption of payment mechanism as per PPA/FSA signed under 1994 power policy. The working is based on actual number of days net accounts receivable outstanding in normal course of operating cycle. Therefore, AGL requires working capital provision of USD 7.75 Million on reference assumptions to finance its net accounts receivable/mandatory advance payments. The interest rate has been applied to calculate cost of working capital loan.

g) **Fuel Pricing**

AGL shall enter into Fuel Supply Agreement (FAS) with fuel supplier wherein fuel price mechanism shall be fixed based on average price of the fortnight as quoted in the Arab Gulf Platts Oilgram report plus fixed refinery costs; to determine ex-refinery price, and oil marketing company margin; to determine market price.

Fuel supplier will supply fuel to AGL which is produced from indigenous crude oil, price of which is quoted equal to HSFO.

h) **Infrastructure Facilities**

AGL shall lease land and fuel storage tanks from Attock Refinery Limited, boundaries of which shall be clearly defined.

50 **POWER PURCHASE AGREEMENT**

It is submitted that AGL received the Draft PPA/IA on 17 July 2006, whereas the Tariff Petition was admitted on 20 June 2006. Since the draft PPA/IA are unsolicited documents, and require due diligence prior to their acceptance, therefore, 1994 PPA and IA terms have been assumed for determination purposes. However, AGL is willing

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to negotiate the terms of proposed PPA/IA to make them bankable documents for all stake holders.

51 Issues arising out of the proceedings

The following main issues have emerged during the course of proceedings, submissions of the petitioner and comments of the parties/stakeholders.:

a. Net Contracted Capacity
b. Tariff Control Period
c. Availability of Fuel
d. Project Cost
e. Cost of Capital
f. Insurance Cost
g. Working Capital
h. Fuel Cost
i. Variable O & M cost
j. Fixed O & M cost

The Authority's determination is set out in the following paragraphs:

a. NET CONTRACTED CAPACITY

52. AGL has stated that its gross capacity would be about 165.285 MW and net on site capacity would be 156.138. AGL has based its capacity charge calculation on the same. As per information provided in the feasibility study of the proposed power plant and other data available, it has been indicated that net capacity of the plant in case of reciprocating engines remains same throughout the life of the plant with the proper maintenance at regular intervals of operation. The Authority considers that the capacity payments would made on the basis of contracted capacity, which would be determined after IDC test at site. The Authority has therefore, decided that for the purpose of capacity charge calculations the figure 156.138 MW net at site capacity may be adopted with the condition that capacity charge shall be adjusted based upon the net contracted capacity established subsequent to the IDC test at site.

b. TARIFF CONTROL PERIOD

53. AGL has proposed tariff for 30 years. The petitioner has asserted that it can maintain its plant for 30 years in view of actual dispatch considerations over the life of the project. However, consistent with earlier assessment in the case of upfront tariff a 25 years life of plant is considered reasonable.

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c. **AVAILABILITY OF FUEL**

54. The indigenously produced RFO (low sulphur furnace oil) is to be used for the entire life of the project. According to the petitioner the fuel inventory is to be maintained by the Attock Refinery Ltd. The petitioner has stated that existing annual production of RFO by the Attock Refinery Ltd. is 480,000 tons which is expected to increase to 600,000 tons per annum in future due to recent discoveries of Oil in Pakistan. AGL has stated that storage capacity of 30000 ton is available with ARL, while AGL's maximum daily requirement is 750 ton or approximately 22500 ton per month, which can comfortably be met with the available stock of Oil. AGL has stated that it shall not build its own storage tanks for fuel inventory, rather utilize the existing storage facility with Attock Refinery and pay annual lease rentals. AGL has further stated that it shall enter in to long term Fuel Supply Agreement (FSA) with Attock Petroleum Ltd. (APL), an oil marketing company operating in Pakistan within the Umbrella of Attock Group. The arrangement for supply of fuel and adequate provision of inventory as proposed by Sponsor seems reasonable hence accepted.

d. **PROJECT COST**

55. AGL has proposed total project cost of US$ 150.034 million (US$ 908/kW) comprising US$ 126.6 million (US$ 766/kW) as EPC cost excluding duties and taxes, US$ 2.050 million as project development costs and other costs amounting to US$ 21.384 million. Duties and Taxes have been estimated as US$ 6.510 million. Interest during construction has been estimated as US$ 8.491 million.

56. The EPC cost of US$ 126.6 million (Euro 105.5 million) translates in to US$ 766 per kW which is slightly on the higher side. Keeping in view the rising trend of plant & equipment prices in the international market and especially in Pakistan due to recent surge in the demand for power plants, the EPC cost of US$ 126.6 is accepted as such.

57. AGL has submitted that US$ 126.6 million is based on Euros 105.5 million and converted at exchange rate of 1.2 USD/EUR. AGL has further submitted that the equipment supplier is based in Europe and the company would make payment to the supplier in Euros therefore, the EPC cost should be linked to Euro/USD parity and the factor of 1.2 used for converting Euros to USD be adjusted accordingly to ascertain the actual EPC cost at COD.

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58. The argument given by the petitioner is reasonable and therefore, accepted. The fixed EPC Cost of Euros 105.5 million shall be adjusted according to the actual EURO-PKR exchange rate prevailing at the time of making payments to the supplier. AGL's final reference table shall be revised on COD to incorporate all the permissible adjustment during construction period.

59. AGL has proposed 2% as Upfront fee and 0.5% commitment fee on un-disbursed loans. The request is in accordance with the trend in the financial market of the corporate sector, therefore, accepted. Based on Capex of US$ 138.710 million, the interest during construction (IDC) has been assessed as US$ 7.3961 million and financing charges & Fees as US$ 2.4944 million.

60. Based on the above cost estimates and after taking in to account the estimated amount of IDC and Financing charges and fees the total project cost of the plant works out as US$ 148.6005 million. The component wise breakup is hereunder:

Project Cost	**US$ Million**
EPC Cost	126.600
Project Development Cost	2.050
Legal & Consultant Cost	0.750
Emergency Stock	1.890
Pre-Operating O&M Cost	0.910
Taxes and Duties	6.510
Financing Charges & Fees	2.494
Interest During Construction	7.396
Total	148.601
Price per kW (US$)	899.1

e. **COST OF CAPITAL**

61. AGL has proposed that 80% of the total project cost shall be financed through loans and 20% through Equity. The petitioner has proposed 100% debt financing through local loans. The debt payments have been based on quarterly equal principal repayment after grace period of 15 months. Interest rate of 8.54% (6 months KIBOR) plus spread of 3% has been proposed. AGL has stated that if 100% local financing can not be obtained, then foreign loans would be required. Indexation for local loans shall be on the basis of 6 months KIBOR.

62. AGL's request for mark-up on the basis of 6 months KIBOR plus 300 basis points with variations in KIBOR to be pass through is in line with other decisions of the Authority in similar cases, therefore, accepted. However, if foreign debt is assumed by AGL it shall be linked to LIBOR plus 250 basis points. The variations in LIBOR shall also be pass through on 6 monthly basis. Based on KIBOR at 8.54% and premium of 3%, the tariff

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for the non-escalable part of the capacity purchase price (Principal + Interest) works out Rs. 0.8858/kW/hour or Rs.646.59/kW/month.

63. AGL has proposed 15.5% as return on equity based on Internal Rate of Return (IRR) for the whole life of the project net of the withholding tax of 7.5%. Additionally Rs. 31.1276/kW/month has been included in the ROE component as cost of working Capital. The total ROE component as Rs. 248.4/kW/month has been requested by the petitioner.

64. The ROE as 15.5% demanded by the petitioner is on the higher side. The Authority has allowed 15% (IRR) in the cases of other IPPs and finds no justification to allow higher return in the instant case. The Authority, therefore, decides to allow 15% IRR to AGL. AGL has worked out Return on equity during the construction period on the basis of 100% equity injection at the start of the construction period. The ROE during construction thus works out Rs. 0.0379/kW/hour. This will be adjusted as per actual draw downs during the construction period at the time of COD.

f. **INSURANCE**

65. AGL has requested Rs. 36.0258/kW/month as Insurance charges. The annual estimates for the Insurance cost have not been provided in the petition. However, the annual cost of Insurance claimed translates in to US$ 1.125 million, which is approximately 0.88% of the EPC cost. The Insurance Cost of US$ 1.125 million as proposed by AGL being reasonable is, accepted as such.

g. **WORKING CAPITAL**

66. AGL has requested working capital cost as Rs. 31.1276/kW/month. The company has maintained that it shall require funds to place orders to the fuel supplier for the fuel well in advance of the actual operation of power plant. It has been further stated by petitioner that the company shall also pay the fuel supplier (ARL) for the fuel inventory specifically reserved for AGL for which it requires sufficient funds. The request is in line with Authority's decision in other cases. The Authority has therefore, assessed cost of working capital as Rs. 0.0441/kW/Hour.

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h. **FUEL COST**

67. The petitioner has worked out fuel cost component of Rs. 2.8618 per kWh. The fuel cost component has been worked out at the following basic parameters;

Fuel Price	Rs. 14300 per ton
Thermal Efficiency.	44.3% (Life-cycle net at site conditions)
Heat Rate	7701.4 BTU/kWh (LHV)

68. AGL has proposed net thermal efficiency of 44.3% for the life of the project while taking in to account the impact of fuel cleaning, average plant aging and a notional 60% plant factor. In the feasibility report the same is indicated as 45% and gross at 47%. The net efficiency taken in the Upfront Tariff for the IPPs is 45.5%. According to information gathered from various sources, the net thermal efficiency in case of reciprocating engines with this type of technology is not less than 45%. However, the petitioner has proposed 44.3% net efficiency at notional 60% plant factor, while the net efficiency at base load (100% plant factor) would be considerably higher. The efficiency level for determining fuel cost component of applicable tariff is considered at a full load i.e. base load at 100% plant factor and not the notional 60% plant factor as proposed by the petitioner. The Authority therefore, considers 45% net thermal efficiency is a reasonable level for calculating fuel cost component.

69. The reference fuel price taken by AGL for calculating fuel cost component is of December 2004. The price for RFO for the fortnight 1-15 July 2006 provided by the petitioner was Rs. 22140.07 per ton. AGL has stated that fuel price for Attock Petroleum Ltd pursuant to deregulation, is fixed according to the pricing mechanism followed by other oil marketing companies in Pakistan. AGL was asked to provide the price mechanism for future adjustments in fuel cost component. AGL has provided the pricing mechanism which shall be used for fixing RFO price in future. It has been stated by AGL that the price for RFO shall be equal to imported HSFO price based on Platts Oilgram Report while the premium, incidental charges and margin of the oil marketing company shall be further added to arrive at the market price for RFO. The following mechanism has been provided by AGL:

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Description	US$/Ton	Rs./Ton
HSFO Arab Gulf Average Price for applicable Fortnight (From Platts Oilgram Report)	309.50	19679.96
Black Premium (From OGRA)	19.20	1158.82
C & F Price – A	328.70	19838.78
Crude Handling and Incidental charges (7.282% of C&F Price)*		1444.63
Sub-Total – B		1444.63
EX Refinery Price – (C=A+B)		21283.41
GST (15% of EX Refinery Price		3192.51
ARL Selling Price – D		24475.92
OMC Margin (3.5% of ARL Selling Price)		856.66
GST (15% on OMC Margin)		128.50
Sub Total – E		985.16
Market Price – (F=D+E)		25461.08
Cost of RFO excluding GST		22140.07

US$ Pak Rupee Exchange Rate-NBP Selling TT/OD = 60.38
* This charge shall vary with market supply/demand position but shall not exceed 8% of C&F price, to be uniformly charged to all customers including AGL.

70. Taking in to account the price for RFO as Rs. 22140 07/ton and net efficiency of 45% (Heat rate of 7582.2 Btu/kWh) the fuel cost component works out as Rs. 4.3624 per kWh. The fuel cost component will be adjusted after the commercial operation date, according to revision in RFO price on fortnightly basis as per above mechanism duly verified by OGRA.

i. **VARIABLE O & M COST**

71. AGL has requested Variable O&M cost of Rs. 0.4319/kWh, of which Rs. 0.3348/kWh is foreign component and Rs. 0.0971/kWh as local component. It has been stated by the petitioner that foreign O&M cost component should be adjusted with EURO/PKR exchange rate and indexed with the European CPI, as the company has to make payment to its O&M contractor in Euros. The petitioner did not provide the basis and rational for this cost component in the petition. However, upon information sought through our information direction the petitioner has provided the details of annual cost estimates for the Variable O&M as per the following breakup:

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Landed cost of spare parts for routine maintenance and major overhauling based on operating hours for the 30 years:	US$ 136.923 .Million
Labour charges	1.663
Total estimated cost for 30 years	US$ 138.586 Million
Per annum cost	US$ 4.6195 Mln
Variable charge	Rs. 0.3348/kWh
Lube Oil cost per kWh	Rs. 0.0971/kWh.
Total Variable O&M	Rs. 0.4319/kWh

72. Based on the above figures for the annual cost estimates and adjusting it for the available operating hours (90%) the tariff for variable O&M cost works out Rs.0.3225 per kWh. The petitioner however, informed that the above estimates for the spare parts have been worked out by their consultants at 60% plant factor, and if the plant is operated at loads higher than 60% the estimated cost for the spare parts shall increase correspondingly.

73. AGL has further stated there are more moving parts in the reciprocating engines power plants compared to gas turbine power plants, which require frequent replacement of parts based on hours of operation, therefore, O&M cost for reciprocating engine technology is comparatively high. It has been revealed through the available literature that O&M cost in case of plants operated on RFO is 2-3 times higher than combined cycle plants operated on gas. Considering the above stated factors, the request of the petitioner for Variable O&M cost of paisa 43.19 per kWh is accepted.

74. The adjustment of VO&M on foreign cost component based on EURO/PKR exchange rate and indexation on European CPI as proposed by AGL is not in line with GOP's 2002 Power policy for power generation projects and therefore, can not considered. However, US$/PKR exchange rate variation and indexation based on US CPI for foreign O&M component will be admissible as per following decision of ECC intimated to to NEPRA vide PPIB communication No. 1(102)PPIB-IPP.EXP/06/FIN dated August 19, 2006.

"the foreign component of O&M Cost (variable and fixed) be allowed indexation with US CPI effective from the month of application by IPP for tariff determination, if it is demonstrated by the IPP to NEPRA that the inflation indexation is not already covered in the O&M contract."

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j. **FIXED O & M COST**

75. AGL has requested Rs. 120.3602/kW/month as Fixed O&M cost. The annual breakup of cost estimates for FO&M cost component has been provided by the petitioner upon our request through information direction as given below:

Description	US$
Fixed O & M Fee	2,159,000
Land & Tank Leases	300,000
General & Administration Cost	1,300,000
Total	3,759,000

76. According to AGL the Fixed O&M cost estimates include the cost of O&M staff and plant administration, security, transportation Overheads, office expenses, professional fees such as audit, tax and legal etc. AGL has stated that 57% of the total Fixed O&M cost would be in foreign currency and 43% in local currency. The foreign component would be indexed on European CPI and local component on Pakistani CPI.

77. AGL in the above cost estimate has proposed US$ 2159000 as Fixed O&M Fee per annum payable to O&M Contractor for the maintenance of power plant. The amount of US$ 2,159,000 proposed as annual O&M fee is on the higher side and can not be accepted. The same cost allowed by the Authority in other similar cases was not more than US$1.0 million.

78. The Fixed O&M cost per annum allowed in the case of Saif Power Ltd was US$ 3.4 million. Since fixed O&M cost is a period cost and does not vary much with the size of the plant and technology. The matter was discussed with the petitioner who has informed that the O&M contractors have raised their annual fees in view of rising fixed O&M costs due to demand and general inflation in the country. However, as a result of discussions the petitioner has agreed to reduce its annual Fixed O&M cost by US$ 300,000/- per annum. Accordingly the annual fixed O&M cost now comes to US$ 3,459,000 which is nearly the same as allowed to other IPPs. Fixed O&M for AGL therefore, works out Rs. 110.7674 per kW per month or Paisa 15.1736 per kW/hour. The 50% of the total Fixed O&M cost would be adjusted with US$-Pak Rupee exchange rate and US CPI while 50% of this would be indexed with Local WPI

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Reference Tariff

79. After reviewing the evidence submitted during the proceedings and from information gained through other sources, the Authority has determined the reference tariff for AGL as indicated in the following table:

Reference Tariff

Tariff Components	Year 1 to 10	Year 11 to 25
Capacity Charge (PKR/kW/Hour)		
Fixed O&M	0.1517	0.1517
Insurance	0.0494	0.0494
Working Capital	0.0441	0.0441
Debt Service	0.8858	-
Return on Equity	0.1986	0.1986
ROE during Construction	0.0379	0.0379
Total Capacity Charge	1.3675	0.4817
Energy Charge Rs./kWh		
Fuel Cost Component	4.3624	4.3624
Variable O&M – Foreign	0.3348	0.3348
Variable O&M – Local	0.0971	0.0971

Note:

i) Capacity Charge Rs./kW/hour is applicable to dependable capacity at the delivery point.

ii) Dispatch criterion will be the Energy Charge.

iii) The above tariff is applicable for a period of 25 years commencing from the date of the Commercial Operation.

iv) Component wise tariff is indicated at Annex-I and Debt Service Schedule at Annex-II

One Time Adjustment

Adjustment due to variation in net capacity

80. The reference tariff has been determined on the basis of minimum net capacity of 156.138 MW at delivery point at mean site conditions. All the tariff components except fuel cost component shall be adjusted at the time of COD based upon the IDC tests to be carried out for determination of contracted capacity. If the IDC is established higher than 156.138 MW, the adjustments shall be made according to the following formula:

i) Revised Fixed O&M = 0.1517/tested IDC x 156.138 MW

ii) Insurance = 0.0494/tested IDC x 156.138 MW

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iii)	Debt Service	=	0.8858/tested IDC x 156.138 MW
iv)	Return on Equity	=	0.1986/tested IDC x 156.138 MW
v)	ROE during Construction	=	0.0379/tested IDC x 156.138 MW
vi)	Variable O&M - Foreign	=	0.3348/tested IDC x 156.138 MW
vii)	Variable O&M – Local	=	0.0971/tested IDC x 156.138 MW

Adjustment in Insurance Component

81. Insurance component of reference tariff shall be adjusted as per actual on yearly basis upon production of authentic documentary evidence by AGL according to the following formula:

Insurance (Revised) = AIC/$ 1.125 million x AP

Where;
AIC = Adjusted Insurance Component as per IDC Test
AP = Actual Premium

Adjustment due to custom duties and Interest during Construction

82. Debt Service, Return on Equity and ROE during construction shall be made on account of actual variation in customs duties and Interest During Construction with reference to the estimated figures of USD 6.510 million and USD 7.3961 million respectively.

II) Pass-Through Items

No provision for income tax has been accounted for in the tariff. If AGL is obligated to pay any tax on its income, the exact amount paid by the company may be reimbursed by NTDC to AGL on production of original receipts. This payment may be considered as pass-through (as Rs./kW/Hour) monthly payment spread over a 12 months period in addition to the capacity purchase price proposed in the Reference Tariff. Furthermore, in such a scenario, AGL may also submit to NTDC details of any tax shield savings and NTDC may deduct the amount of these savings from its payment to AGL on account of taxation.

Withholding Tax is also pass through item just like other taxes as indicated in the government guidelines for determination of tariff for new IPPs. Withholding tax shall be allowed @7.5% of the return on equity. CPPA (NTDC) shall make payment on account of withholding tax at the time of actual payment of dividend subject to maximum of 7.5% of 15% equity according to the following formula:

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Withholding Tax Payable = [15% * ($E_{(REF)}$) + $ROEDC_{(Ref)}$] * 7.5%

Where:

$E_{(REF)}$ = Reference Equity (US$ 29.72 million x 60)

$ROEDC_{(REF)}$ = Reference Return on Equity During Construction

Note: In case of foreign equity withholding tax calculated according to the above formula shall be adjusted for variation in currency (US$ to rupee). The adjustment on account of exchange rate variation (US$/PKR) shall also be applicable to the Foreign component of the equity.

In case Company does not declare a dividend in a particular year or only declares a partial dividend, then the difference in the withholding tax amount (between what is paid in that year and the total entitlement as per the Net Return on Equity) would be carried forward and accumulated so that the Company is able to recover the same as a pass through from the Power Purchaser in future on the basis of the total dividend pay out.

Indexations

The following indexations shall be applicable to reference tariff.

Indexation applicable to O&M

83. In future the 50% of Fixed O&M part of Capacity Charge will be adjusted on account of local Inflation (WPI) and 50% on account of variation in US CPI and dollar/Rupee exchange rate. Quarterly adjustment for local inflation, foreign inflation and exchange rate variation will be made on 1st July, 1st October, 1st January and 1st April based on the latest available information with respect to WPI notified by the Federal Bureau of Statistics (FBS), US CPI issued by US Bureau of Labor Statistics and revised TT & OD selling rate of US Dollar notified by the National Bank of Pakistan. The mode of indexation will be as under:

a) Fixed O&M

$F\ O\&M_{(LREV)}$ = Rs. 0.1517 / kW / Hour*50% * $WPI_{(REV)}$ / 117.80

$F\ O\&M_{(FREV)}$ = Rs. 0.1517 / kW / hour *50% * US $CPI_{(REV)}$ /199.8* $ER_{(REV)}$ / 60

Where:

$F\ O\&M_{(LREV)}$ = The revised applicable Fixed O&M Local Component of the Capacity Charge indexed with WPI

$F\ O\&M_{(FREV)}$ = The revised applicable Fixed O&M Foreign Component of the Capacity Charge indexed with US CPI and Exchange rate variations.

$WPI_{(REV)}$ = The revised wholesale Price Index (manufacturers)

$WPI_{(REF)}$ = 117.80 wholesale price index (manufacturers) of April 2006 notified by Federal Bureau of Statistics

$US\ CPI_{(REV)}$ = The revised US CPI (All Urban Consumers)

$US\ CPI_{(REF)}$ = 199.8 US CPI (All Urban Consumers) for the month of March 2006 as notified by the US Bureau of Labor Statistics

$ER_{(REV)}$ = The revised TT & OD selling rate of US dollar as notified by the National Bank of Pakistan

Note: The reference numbers indicated above shall be replaced by the revised numbers after incorporating the required adjustments at COD.

b) Variable O&M

The formula of indexation for variable O & M component will be as under:

$V\ O\&M_{(FREV)}$ = Rs. 0.3348 per kWh * $US\ CPI_{(REV)}$/199.8 * $ER_{(FREV)}$ / 60

$V\ O\&M_{(LREV)}$ = Rs. 0.0971 per kWh * $WPI_{(REV)}$/117.80

Where:

$V\ O\&M_{(FREV)}$ = The revised applicable Variable O&M Component of the Energy Charge indexed with US CPI and Exchange rate variations

$US\ CPI_{(REV)}$ = The revised US CPI (All Urban Consumers)

$US\ CPI_{(REF)}$ = 199.8 US CPI (All Urban Consumers) for the month of March 2006 as notified by the US Bureau of Labor Statistics

$ER_{(REV)}$ = The revised TT & OD selling rate of US dollar as notified by the National Bank of Pakistan.

Note: The reference VO&M indicated above shall be replaced with the revised number at COD after incorporating the required adjustment based upon the IDC Test.

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c) Adjustment for KIBOR variation

84. The interest part of fixed charge component will remain unchanged throughout the term except for the quarterly adjustment due to variations in interest rate as a result of variation in 6-monthly KIBOR according to the following formula:

$$\Delta I = P_{(REV)} * (KIBOR_{(REV)} - 8.54\%) /4$$

Where:

ΔI = The variation in interest charges applicable corresponding to variation in KIBOR. ΔI can be positive or negative depending upon whether KIBOR REV is > or < 8.54%. The interest payment obligation will be enhanced or reduced to the extent of ΔI for each quarter under adjustment on quarterly basis.

$P_{(REV)}$ = is the outstanding principal (as indicated in the attached debt service schedule to this order) on a quarterly basis on the relevant quarterly calculations date. Period 1 shall commence on the date on which the 1st installment is due after availing the grace period.

d) Fuel Price Variation

85. The Variable Charge Part of the tariff relating to fuel cost shall be adjusted on account of the fuel price variations as and when notified by the relevant authority, which in the instant case is the Attock Petroleum Ltd. In this regard, the variation in AGL's allowed rate relating to fuel cost shall be revised according to the following formula:

$$FC_{(Rev)} = \text{Rs.4.3624 per kWh} * FP_{(Rev)} / \text{Rs. 22140.07 per Ton}$$

Where:

$FC_{(Rev)}$ = Revised fuel cost component of Variable Charge on RFO.

$FP_{(Rev)}$ = The new price of RFO as determined per price mechanism given at para 69 of this determination, duly verified by OGRA.

86. Adjustment on account of local inflation, foreign inflation, foreign exchange rate variation, KIBOR variation and fuel price variation will be approved and announced by the Authority for immediate application within seven working days after receipt of AGL's request for adjustment in accordance with the requisite indexation mechanism stipulated herein.

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ORDER

87. Pursuant to Rule 6 of the NEPRA Licensing (Generation) Rules 2000, Attock Gen Limited (AGL) is allowed to charge, subject to adjustment of Capacity Purchase Price on account of net dependable capacity as determined by test jointly carried out by Central Power Purchasing Agency (CPPA) and the petitioner, the following tariff for delivery of electricity to CPPA of NTDC for procurement on behalf of EX-WAPDA Distribution Companies.

Reference Tariff

Tariff Components	Year 1 to 10	Year 11 to 25
Capacity Charge (PKR/kW/Hour)		
Fixed O&M	0.1517	0.1517
Insurance	0.0494	0.0494
Working Capital	0.0441	0.0441
Debt Service	0.8858	-
Return on Equity	0.1986	0.1986
ROE during Construction	0.0379	0.0379
Total Capacity Charge	1.3675	0.4817
Energy Charge Rs./kWh		
Fuel Cost Component	4.3624	4.3624
Variable O&M – Foreign	0.3348	0.3348
Variable O&M – Local	0.0971	0.0971

Note:

i) Capacity Charge Rs./kW/hour is applicable to dependable capacity at the delivery point.

ii) Dispatch criterion will be the Energy Charge.

iii) The above tariff is applicable for a period of 25 years commencing from the date of the Commercial Operation.

iv) Component wise tariff is indicated at Annex-I and Debt Service Schedule at Annex-II

One Time Adjustment

Adjustment due to variation in net capacity

88. The reference tariff has been determined on the basis of minimum net capacity of 156.138 MW at delivery point at mean site conditions. All the tariff components except fuel cost component shall be adjusted at the time of COD based upon the IDC tests to be carried out for determination of contracted capacity. If the IDC is established higher than 156.138 MW, the adjustments shall be made according to the following formula:

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i)	Revised Fixed O&M	=	0.1517/tested IDC x 156.138 MW
ii)	Insurance	=	0.0494/tested IDC x 156.138 MW
iii)	Debt Service	=	0.8858/tested IDC x 156.138 MW
iv)	Return on Equity	=	0.1986/tested IDC x 156.138 MW
v)	ROE during Construction	=	0.0379/tested IDC x 156.138 MW
vi)	Variable O&M - Foreign	=	0.3348/tested IDC x 156.138 MW
vii)	Variable O&M – Local	=	0.0971/tested IDC x 156.138 MW

Adjustment in Insurance Component

89. Insurance component of reference tariff shall be adjusted as per actual on yearly basis upon production of authentic documentary evidence by AGL according to the following formula:

Insurance (Revised) = AIC/$ 1.125 million x AP

Where;
AIC = Adjusted Insurance Component as per IDC Test
AP = Actual Premium

Adjustment due to custom duties and Interest during Construction

90. Debt Service, Return on Equity and ROE during construction shall be made on account of actual variation in customs duties and Interest During Construction with reference to the estimated figures of USD 6.510 million and USD 7.3961 million respectively.

II) Pass-Through Items

. No provision for income tax has been accounted for in the tariff. If AGL is obligated to pay any tax on its income, the exact amount paid by the company may be reimbursed by NTDC to AGL on production of original receipts. This payment may be considered as pass-through (as Rs./kW/Hour) monthly payment spread over a 12 months period in addition to the capacity purchase price proposed in the Reference Tariff. Furthermore, in such a scenario, AGL may also submit to NTDC details of any tax shield savings and NTDC may deduct the amount of these savings from its payment to AGL on account of taxation.

Withholding Tax is also pass through item just like other taxes as indicated in the government guidelines for determination of tariff for new IPPs. Withholding tax shall be

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allowed @7.5% of the return on equity. CPPA (NTDC) shall make payment on account of withholding tax at the time of actual payment of dividend subject to maximum of 7.5% of 15% equity according to the following formula:

Withholding Tax Payable + [15% * ($E_{(REF)}$) + $ROEDC_{(Ref)}$] * 7.5%
Where:

$E_{(REF)}$	=	Reference Equity (US$ 29.72 million x 60)
$ROEDC_{(REF)}$	=	Reference Return on Equity During Construction

Note: In case of foreign equity withholding tax calculated according to the above formula shall be adjusted for variation in currency (US$ to rupee). The adjustment on account of variation in exchange rate (US$/PKR) shall also be applicable on the Foreign component of the equity.

In case Company does not declare a dividend in a particular year or only declares a partial dividend, then the difference in the withholding tax amount (between what is paid in that year and the total entitlement as per the Net Return on Equity) would be carried forward and accumulated so that the Company is able to recover the same as a pass through from the Power Purchaser in future on the basis of the total dividend pay out.

Indexations

The following indexations shall be applicable to reference tariff.

Indexation applicable to O&M

91. In future the 50% of Fixed O&M part of Capacity Charge will be adjusted on account of local Inflation (WPI) and 50% on account of variation in US CPI and dollar/Rupee exchange rate. Quarterly adjustment for local inflation, foreign inflation and exchange rate variation will be made on 1st July, 1st October, 1st January and 1st April based on the latest available information with respect to WPI notified by the Federal Bureau of Statistics (FBS), US CPI issued by US Bureau of Labor Statistics and revised TT & OD selling rate of US Dollar notified by the National Bank of Pakistan. The mode of indexation will be as under:

a) Fixed O&M

$F\ O\&M_{(LREV)}$ = Rs. 0.1517 per kW per Hour*50% * $WPI_{(REV)}$ / 117.80

$F\ O\&M_{(FREV)}$ = Rs. 0.1517 per kW per hour *50% * US $CPI_{(REV)}$/199.8 * $ER_{(REV)}$ / 60

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Where:

$F\ O\&M_{(LREV)}$ = The revised applicable Fixed O&M Local Component of the Capacity Charge indexed with WPI

$F\ O\&M_{(FREV)}$ = The revised applicable Fixed O&M Foreign Component of the Capacity Charge indexed with US CPI and Exchange rate variations.

$WPI_{(REV)}$ = The revised wholesale Price Index (manufacturers)

$WPI_{(REF)}$ = 117.80 wholesale price index (manufacturers) of April 2006 notified by Federal Bureau of Statistics

$US\ CPI_{(REV)}$ = The revised US CPI (All Urban Consumers)

$US\ CPI_{(REF)}$ = 199.8 US CPI (All Urban Consumers) for the month of March 2006 as notified by the US Bureau of Labor Statistics

$ER_{(REV)}$ = The revised TT & OD selling rate of US dollar as notified by the National Bank of Pakistan

Note: The reference numbers indicated above shall be replaced by the revised numbers after incorporating the required adjustments at COD.

b) Variable O&M

The formula of indexation for variable O & M component will be as under:

$V\ O\&M_{(FREV)} = Rs.\ 0.3348\ per\ kWh * US\ CPI_{(REV)} / 199.8 * ER_{(FREV)} / 60$

$V\ O\&M_{(LREV)} = Rs.\ 0.0971\ per\ kWh * WPI_{(REV)} / 117.80$

Where:

$V\ O\&M_{(FREV)}$ = The revised applicable Variable O&M Component of the Energy Charge indexed with US CPI and Exchange rate variations

$US\ CPI_{(REV)}$ = The revised US CPI (All Urban Consumers)

$US\ CPI_{(REF)}$ = 199.8 US CPI (All Urban Consumers) for the month of March 2006 as notified by the US Bureau of Labor Statistics

$ER_{(REV)}$ = The revised TT & OD selling rate of US dollar as notified by the National Bank of Pakistan.

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Note: The reference VO&M indicated above shall be replaced with the revised number at COD after incorporating the required adjustment based upon the IDC Test.

c) Adjustment for KIBOR variation

92. The interest part of fixed charge component will remain unchanged throughout the term except for the quarterly adjustment due to variations in interest rate as a result of variation in 6-monthly KIBOR according to the following formula:

$$\Delta I = P_{(REV)} * (KIBOR_{(REV)} - 8.54\%) /4$$

Where:

ΔI = The variation in interest charges applicable corresponding to variation in KIBOR. ΔI can be positive or negative depending upon whether KIBOR REV is > or < 8.54%. The interest payment obligation will be enhanced or reduced to the extent of ΔI for each quarter under adjustment on quarterly basis.

$P_{(REV)}$ = is the outstanding principal (as indicated in the attached debt service schedule to this order) on a quarterly basis on the relevant quarterly calculations date. Period 1 shall commence on the date on which the 1st installment is due after availing the grace period.

d) Fuel Price Variation

93. The Variable Charge Part of the tariff relating to fuel cost shall be adjusted on account of the fuel price variations as and when notified by the relevant authority, which in the instant case is the Attock Petroleum Ltd. In this regard, the variation in AGL's allowed rate relating to fuel cost shall be revised according to the following formula:

$$FC_{(Rev)} = \text{Rs.4.3624 per kWh} * FP_{(Rev)} / \text{Rs. 22140.07 per Ton}$$

Where:

$FC_{(Rev)}$ = Revised fuel cost component of Variable Charge on RFO.

$FP_{(Rev)}$ = The new price of RFO as determined per price mechanism given at para 69 of this determination, duly verified by OGRA.

94. Adjustment on account of local inflation, foreign inflation, foreign exchange rate variation, KIBOR variation and fuel price variation will be approved and announced by

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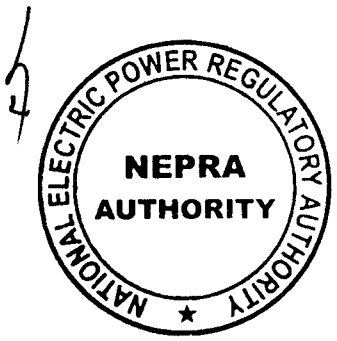
the Authority for immediate application within seven working days after receipt of AGL's request for adjustment in accordance with the requisite indexation mechanism stipulated herein.



Attock Gen Limited
Specified Tariff

Year	Variable Charge (PKR/kWh)			Capacity Charge (PKR/kW/Hour)									Total	
	Fuel	Variable O&M	Total	Fixed O&M	Insurance	Financing Cost on Working Capital	Return on Equity	Return on Equity for Construction Period	Withholding Tax @7.5%	Loan Repayment	Interest Charges	Total	Fixed Cost at 60% Plant Factor Rs./kWh	Cents/kWh
1	4.3624	0.4319	4.7943	0.1517	0.0494	0.0441	0.1986	0.0379	0.0177	0.2965	0.5893	1.3851	2.3085	11.8379
2	4.3624	0.4319	4.7943	0.1517	0.0494	0.0441	0.1986	0.0379	0.0177	0.3322	0.5536	1.3851	2.3085	11.8379
3	4.3624	0.4319	4.7943	0.1517	0.0494	0.0441	0.1986	0.0379	0.0177	0.3722	0.5135	1.3851	2.3085	11.8379
4	4.3624	0.4319	4.7943	0.1517	0.0494	0.0441	0.1986	0.0379	0.0177	0.4171	0.4687	1.3851	2.3085	11.8379
5	4.3624	0.4319	4.7943	0.1517	0.0494	0.0441	0.1986	0.0379	0.0177	0.4673	0.4184	1.3851	2.3085	11.8379
6	4.3624	0.4319	4.7943	0.1517	0.0494	0.0441	0.1986	0.0379	0.0177	0.5236	0.3621	1.3851	2.3085	11.8379
7	4.3624	0.4319	4.7943	0.1517	0.0494	0.0441	0.1986	0.0379	0.0177	0.5867	0.2990	1.3851	2.3085	11.8379
8	4.3624	0.4319	4.7943	0.1517	0.0494	0.0441	0.1986	0.0379	0.0177	0.6574	0.2283	1.3851	2.3085	11.8379
9	4.3624	0.4319	4.7943	0.1517	0.0494	0.0441	0.1986	0.0379	0.0177	0.7366	0.1491	1.3851	2.3085	11.8379
10	4.3624	0.4319	4.7943	0.1517	0.0494	0.0441	0.1986	0.0379	0.0177	0.8254	0.0604	1.3851	2.3085	11.8379
11	4.3624	0.4319	4.7943	0.1517	0.0494	0.0441	0.1986	0.0379	0.0177			0.4993	0.8322	9.3775
12	4.3624	0.4319	4.7943	0.1517	0.0494	0.0441	0.1986	0.0379	0.0177			0.4993	0.8322	9.3775
13	4.3624	0.4319	4.7943	0.1517	0.0494	0.0441	0.1986	0.0379	0.0177			0.4993	0.8322	9.3775
14	4.3624	0.4319	4.7943	0.1517	0.0494	0.0441	0.1986	0.0379	0.0177			0.4993	0.8322	9.3775
15	4.3624	0.4319	4.7943	0.1517	0.0494	0.0441	0.1986	0.0379	0.0177			0.4993	0.8322	9.3775
16	4.3624	0.4319	4.7943	0.1517	0.0494	0.0441	0.1986	0.0379	0.0177			0.4993	0.8322	9.3775
17	4.3624	0.4319	4.7943	0.1517	0.0494	0.0441	0.1986	0.0379	0.0177			0.4993	0.8322	9.3775
18	4.3624	0.4319	4.7943	0.1517	0.0494	0.0441	0.1986	0.0379	0.0177			0.4993	0.8322	9.3775
19	4.3624	0.4319	4.7943	0.1517	0.0494	0.0441	0.1986	0.0379	0.0177			0.4993	0.8322	9.3775
20	4.3624	0.4319	4.7943	0.1517	0.0494	0.0441	0.1986	0.0379	0.0177			0.4993	0.8322	9.3775
21	4.3624	0.4319	4.7943	0.1517	0.0494	0.0441	0.1986	0.0379	0.0177			0.4993	0.8322	9.3775
22	4.3624	0.4319	4.7943	0.1517	0.0494	0.0441	0.1986	0.0379	0.0177			0.4993	0.8322	9.3775
23	4.3624	0.4319	4.7943	0.1517	0.0494	0.0441	0.1986	0.0379	0.0177			0.4993	0.8322	9.3775
24	4.3624	0.4319	4.7943	0.1517	0.0494	0.0441	0.1986	0.0379	0.0177			0.4993	0.8322	9.3775
25	4.3624	0.4319	4.7943	0.1517	0.0494	0.0441	0.1986	0.0379	0.0177			0.4993	0.8322	9.3775
Levelized Tariff (1-25 Years)			**4.7943**	**0.1517**	**0.0494**	**0.0441**	**0.1986**	**0.0379**	**0.0177**	**0.3231**	**0.2765**	**1.0989**	**1.8316**	**11.0430**

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Orient Power Company Ltd.
Debt Servicing Schedule

KIBOR 8.54%
Premium 3.00%

Period	Principle Repayment Million $	Mark-Up Million $	Balance Million $	Debt Service Millin $	Annual Principle Repayment $ Million	Annual Interest $ Million	Annual Principle Repayment Rs. Million	Annual Interest Rs. Million	Principal Repayment Rs./kW/ Month	Interest Rs./kW/ Month
1	118.88	1.62	3.43	117.26	5.0479					
2	117.26	1.66	3.38	115.60	5.0479					
3	115.60	1.71	3.33	113.88	5.0479				-	-
4	113.88	1.76	3.29	112.12	5.0479	6.76	13.43	405.49	806.00	216.42	430.17
5	112.12	1.81	3.23	110.31	5.0479					
6	110.31	1.87	3.18	108.44	5.0479					
7	108.44	1.92	3.13	106.52	5.0479				-	-
8	106.52	1.97	3.07	104.55	5.0479	7.57	12.62	454.35	757.14	242.50	404.10
9	104.55	2.03	3.02	102.52	5.0479					
10	102.52	2.09	2.96	100.43	5.0479					
11	100.43	2.15	2.90	98.28	5.0479				-	-
12	98.28	2.21	2.84	96.06	5.0479	8.48	11.71	509.10	702.39	271.71	374.88
13	96.06	2.28	2.77	93.79	5.0479					
14	93.79	2.34	2.71	91.45	5.0479					
15	91.45	2.41	2.64	89.04	5.0479				-	-
16	89.04	2.48	2.57	86.56	5.0479	9.51	10.68	570.44	641.05	304.45	342.14
17	86.56	2.55	2.50	84.01	5.0479					
18	84.01	2.62	2.42	81.38	5.0479					
19	81.38	2.70	2.35	78.68	5.0479				-	-
20	78.68	2.78	2.27	75.90	5.0479	10.65	9.54	639.17	572.32	341.14	305.46
21	75.90	2.86	2.19	73.05	5.0479					
22	73.05	2.94	2.11	70.11	5.0479					
23	70.11	3.03	2.02	67.08	5.0479				-	-
24	67.08	3.11	1.94	63.97	5.0479	11.94	8.26	716.19	495.30	382.24	264.35
25	63.97	3.20	1.85	60.77	5.0479					
26	60.77	3.29	1.75	57.47	5.0479					
27	57.47	3.39	1.66	54.08	5.0479				-	-
28	54.08	3.49	1.56	50.59	5.0479	13.37	6.82	802.48	409.01	428.30	218.29
29	50.59	3.59	1.46	47.01	5.0479					
30	47.01	3.69	1.36	43.31	5.0479					
31	43.31	3.80	1.25	39.51	5.0479				-	-
32	39.51	3.91	1.14	35.61	5.0479	14.99	5.21	899.17	312.32	479.90	166.69
33	35.61	4.02	1.03	31.59	5.0479					
34	31.59	4.14	0.91	27.45	5.0479					
35	27.45	4.26	0.79	23.19	5.0479				-	
36	23.19	4.38	0.67	18.82	5.0479	16.79	3.40	1,007.51	203.98	537.73	108.87
37	18.82	4.51	0.54	14.31	5.0479					
38	14.31	4.64	0.41	9.68	5.0479					
39	9.68	4.77	0.28	4.91	5.0479				-	
40	4.91	4.91	0.14	0.00	5.0479	18.82	1.38	1,128.91	82.58	602.52	44.07

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