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No. NEPRA/DG(Tech)/LA-05

2334-38

February 12, 2025

Subject: Order of the Authority in the matter of 'Review Motion of KE on Decision of Authority on 3rd Party Heat Rate Test for 248 MW KCCPP of K-Electric (KE) on HSD Fuel'

Dear Sir,

Enclosed please find herewith the order of the Authority (total 08 Pages) in the matter of 'Review Motion of KE on Decision of Authority on 3rd Party Heat Rate Test for 248 MW KCCPP of K-Electric (KE) on HSD Fuel'

2. The Order is being intimated to the Federal Government for the purpose of notification in the official Gazette pursuant to Section 31(7) of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 within 30 days from the intimation of this Determination. In the event the Federal Government fails to notify the subject tariff Determination within the time period specified in Section 31(7), then the Authority shall notify the same in the official Gazette pursuant to Section 31(7) of NEPRA Act.

Enclosure: As above

Wasim Anwar Bhinder
(Wasim Anwar Bhinder)

Secretary,
Ministry of Energy (Power Division),
'A' Block, Pak Secretariat,
Islamabad

Copy to:

1. Secretary, Cabinet Division, Cabinet Secretariat, Islamabad
2. Secretary, Ministry of Finance, 'Q' Block, Pak Secretariat, Islamabad
3. Chief Executive Officer, Central Power Purchasing Agency Guarantee Limited (CPPA-G), Shaheen Plaza, 73-West, Fazl-e-Haq Road, Islamabad
4. Chief Executive Officer, K-Electric Limited (KEL) KE House, Punjab Chowrangi, 39-B, Sunset Boulevard, Phase-II Defence Housing Authority Karachi.

Subject: **Order of the Authority in the matter of 'Review Motion of KE on Decision of Authority on 3rd Party Heat Rate Test for 248 MW KCCPP OF K-Electric (KE) on HSD Fuel'**

Background:

Pursuant to the directions issued in K-Electric's (KE) Multi Year Tariff (MYT) for FY 2017-2023, a 3rd Party Heat Rate test for 248MW Korangi Combined Cycle Power Plant (KCCPP) of K-Electric was conducted on gas fuel by an Independent Engineer (the "IE") in June and July 2019. KE vide its letter dated September 23, 2019 submitted the test report to NEPRA for approval of the Authority*.

2. Subsequently, in light of the gas supply constraints, KE approached the Authority in April/May 2021, seeking permission to operate KCCP on High Speed diesel (HSD) fuel and conduct performance test accordingly. After due consideration, the Authority allowed KE to conduct performance test on HSD fuel, with NESPAK engaged as the IE.

Performance Test of KCCP at HSD fuel:

3. The Performance Test of KCCP plant was conducted on HSD fuel by NESPAK under the supervision of NEPRA representatives. KE later submitted the Heat Rate figures for both gas and HSD fuels, requesting that the Authority approve the Heat Rate for HSD fuel at 85% loading.

4. Following deliberation, the Authority approved a Heat Rate corresponding to 100% loading for HSD fuel, declining KE's request for part-load adjustment at 85%. This decision was communicated to the Federal Government and KE. The Authority emphasized that generation on costlier HSD fuel should be minimized unless justified.

5. The relevant part is reproduced hereunder:

Regarding selection of 85% loading number for KCCP on gas fuel, the Authority noted its earlier decision dated October 9, 2017, reproduced here for clarity.

* Order issued Jan. 2022





Order of the Authority on matter of Heat Rate Review of KCCP plant of KE

Various benchmarks recognizing the concept of a normative plant operation¹ have also been reviewed and for combined cycle power plants, a normative loading level of 85% is recommended. K-Electric also has requested for NPL of 85% for KCCPP. The Authority considers that the claimed value of 85% (of rated capacity) due to load variation seems reasonable and thus approved the same. In the absence of part load curves, the Authority considers the adjustments factors allowed to other IPPs, as mentioned above, as reasonable.... (para 8.2.16)

Further, the Authority also noted that it has already allowed a Heat Rate number corresponding to 85% loading (regardless of actual hourly loading position) to KCCP plant on Gas fuel².

However, the Authority has noted that HSD being relatively an expensive fuel the Authority has already directed to K-Electric that...in general power generation on costlier fuel needs to be avoided, therefore Power Generation through HSD, if any, shall be justified by KE.

Keeping above in view, the Authority believes that 85% loading for HSD should not be directly allowed to KE for KCCP Plant as allowed in case of Gas/RLNG fuel. Rather, the Authority in the instant matter allows Heat Rate number reflecting base load operation on HSD. It is further highlighted that KE is allowed part load adjustment of 85% on gas fuel³ however, the overall loading of KCCP plant would further improve as a result of diesel operations as seen through operational data of KE.

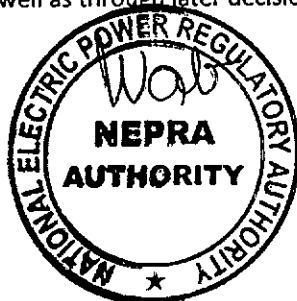
Review Motion Filed by K-Electric

6. KE filed a review motion challenging the Order of the Authority, specifically seeking reconsideration of the Heat Rate allowed for HSD at 100%, with a request to align it with 85% loading threshold approved for gas fuel under MYT 2017-2023. The prayer of KE is reproduced hereunder:

¹ Reasoning for taking a normative number for part load adjustment is given in MYT decisions of the Authority and Order on KCCP dated September 2020.

² Order of Authority on KCCP dated September 2020 and January 2022.

³ In MYT determination as well as through later decisions i.e. Sep 2020, Jan. 2022.



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Order of the Authority on matter of Heat Rate Review of KCCP plant of KE

Accordingly, Considering historic part load factor on HSD, part load factor allowed for Gas fuel, and part load factors for both fuels allowed to other IPPs, KE would like to request NEPRA to consider the part load adjustment factor at 85% as given in IE's Performance Report to allow recovery of prudent costs.

7. The comparison of KE's request and Authority decision is as under:

Authority Decision (under review)	KE's Request
Heat Rate at 100% loading for HSD	Heat Rate at 85% loading for HSD

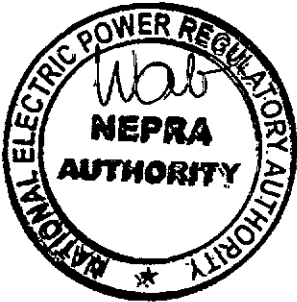
8. The review motion in question is confined exclusively to HSD fuel. As previously clarified, the Heat Rate for Gas/RLNG fuel at 85% loading was duly approved under the (MYT) determination. Consequently, this matter is beyond the purview of the present motion.

Proceedings:

9. In support of its review motion, prior to the hearing held on March 29, 2023, KE submitted hourly data regarding loading position of KCCP plant segregating 'Hourly Generation' and 'Plant Availability' on either of the fuel.^p KE further provided a consolidated overview of loading position of the plant. The analytical data showed that the plant remained at around 85% loading (Hourly Avg. May 2021 to Oct 2022).

10. It is important to note here that, in the above submissions, in order to evaluate loading position of the plant KE had considered fuel Availability for evaluating 'Available capacity' of the plant in line with industry practices). Further, KE adhered to this same methodology during the hearing, wherein it presented a request for part-load adjustment at the 85% loading position for HSD fuel.

^p vide email dated March 2, 2023





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11. As mentioned above, during the hearing, KE reiterated its request to be permitted to apply the Heat Rate Number at 85% loading for both Gas and HSD fuels, in line with the MYT decision for KCCP regarding Gas/RLNG. [¶]

12. However, during the hearing, in light of the variance between Authority's prescribed Heat Rate number and KE's request i.e. 'Heat rate at 100% loading' versus 'Heat Rate at 85% loading' as well as the operational data presented by KE, the ex-chairman NEPRA observed that, that in case of IPPs within the CPPA-G system, such matters were typically addressed in the respective PPAs – wherein normally Part Load curves and consequently Heat Rates, were allowed to the generation plants on hourly basis depending upon their hourly loading position ensuring transparency. In response, KE verbally supported for the implementation of Part load curves.

13. Subsequently, KE submitted additional data regarding the loading position of the plant as discussed during hearing. KE also provided the impact of cost variance in case of existing decision (85% gas and 100% HSD) vis-à-vis in case of allowing Part load curves⁺ as around 574 million Rs. Upon scrutiny of the data submitted by KE, which formed the basis for the aforementioned financial figures, it was observed that the loading position of the plant was approximately 54%.

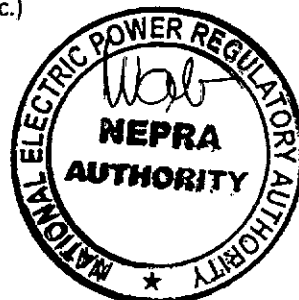
14. The submitted data was reviewed, and it was observed that KE, in its recent submissions had changed the evaluation methodology. In its previous submissions/data (referenced in para 9 & 10 above) the availability of fuel (gas) was considered for the evaluation of 'Available Capacity' of the plant (in line with industry practice). However, in the instant submissions KE adopted a revised approach considering the maximum available capacity of the plant (irrespective of fuel availability) [°]. The modified methodology resulted in around 54% loading position of the plant.

15. During the analysis certain queries were raised, and additional data was solicited from KE, including information on outages, etc.). The referred submission / data

[¶] In the decision, under review, KE has been allowed Heat Rate at 85% for Gas/Rlng and 100% at HSD)

⁺ KE submitted part load curves to NEPRA in July 2023. In earlier decision of MYT the heat rate number was allowed at 85% loading position irrespective of actual position therefore the curves were not required.

[°] The subject plant faces gas shortages (pressure and availability, etc.)



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Order of the Authority on matter of Heat Rate Review of KCCP plant of KE

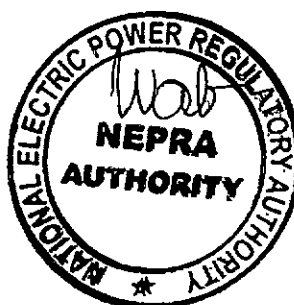
of KE indicated the impact of cost variance in case of existing decision (85% gas and 100% HSD) vis-à-vis Part load curves was around 751 million Rs. Further, as per KE's submission, the cost variance between the existing decision vis-à-vis incurred costs was around 1,030 million Rs. These queries were further addressed by KE through supplementary data submissions in November 2023.

Decision of the Authority:

16. The Authority is of the view that KE has principally changed its evaluation methodology by considering Net capacity of the plant instead of fuel (gas) based Available Capacity. Prior to the hearing (even during hearing), KE adhered to a methodology based on fuel-based "Available Capacity", which resulted in a calculated loading position of approximately 85% for the plant. However, in its subsequent submissions, KE adopted a modified methodology, i.e. by considering Net capacity as reference, for calculating the loading position of the plant, the plant loading comes as around 50%.

17. The Authority notes that this revised methodology deviates from the established industry standard / norms, lacks precedent and is without adequate justification. This resulting methodology shifts the impact of fuel management / inefficiency on fuel (gas) availability front – which in principle is KE's responsibility – onto end consumers. Further, if the submissions are accepted they not only add significant payables onto end-consumer but would also be non-prudent.

18. In addition to the issues arising from gas unavailability, it is important to record here that in the months of April and May 2023, the utilization / operational data for HSD and consequently the loading position of the plant is also not truly reflective of the actual scenario. In stated months, the KE despite having HSD available for plant dispatch/utilization – conserved the same. The conservation activity remained under Authority proceedings – nonetheless the loading position of the plant at such timeframe is suppressed and is not reflective of actual scenario.



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Order of the Authority on matter of Heat Rate Review of KCCP plant of KE

19. Regarding the scope of review, it is important to emphasize that KE's review motion, and the proceedings initiated thereunder, were solely to the extent of determination of Heat Rate number for HSD. Specifically, the review pertained to the comparison between Heat Rate at 100% loading versus Heat Rate at 85% loading position.

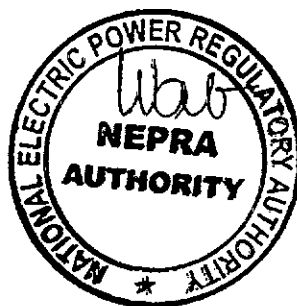
20. For the purpose of clarity, a comparative overview of the Heat rates allowed to KE at Gas and HSD vis-à-vis Heat Rates as requested by KE in review motion as below:

Authority Decision (under review)	KE's Request
Heat Rate at 100% loading for HSD	Heat Rate at 85% loading for HSD

21. Therefore, the matter under review was limited strictly to KE's request for Heat Rate allowance at loading position of 85% instead of 100% at HSD fuel. Further, that the submissions of KE during hearing, as well as those made prior to hearing maintained that the loading position of the plant was around 85%. The variance between KE's review and the Authority's decision was only to that extent (i.e. 85% at HSD versus 100% at HSD). Accordingly, for the sake of transparency and to avoid undue gains on any of the fuel (Gas & HSD), the application of part load curves was deliberated.

22. The Authority observes, however, that KE's subsequent submissions employing a modified methodology—based on a non-standard practice for evaluating the loading position—exceeds and contradicts the defined scope of the review. This approach also contravenes the determination and spirit of the Multi-Year Tariff (MYT) for the period 2017–2023.

23. The relevant extract from MYT decision (Oct.9, 2017) is attached hereunder:



8.2.15. In the absence of part load factors, one approach is to direct K-Electric to provide actual operational monthly loading data and then adjustment in heat rate be allowed as per part load factors approved for Orient, Halmore, Saif and Sapphire Power etc. Second approach could be to build the part load factor in the approved heat rates based on historical data of KCCPP.

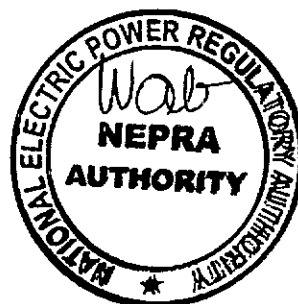
8.2.16. Various benchmarks recognizing the concept of a normative plant operation have also been reviewed and for combined cycle power plants, a normative loading level of 85% is recommended. K-Electric also has requested for NPL of 85% for KCCPP. The Authority considers that the claimed value of 85% (of rated capacity) due to load variation seems reasonable and thus approved the same. In the absence of part load curves, the Authority considers the adjustments factors allowed to other IPPs, as mentioned above, as reasonable. Accordingly, K-Electric is allowed a part load operation adjustment factor of 1.0268.

24. The MYT decision allowed KE with a flat adjustment for the Heat Rate at an 85% loading position to KE. It is important to highlight that in the stated time frame the KCCP plant was only commissioned on Gas/RLNG fuel. Subsequently, during the proceedings on HSD, the Authority, considering the improved loading position of the plant following the HSD commissioning, allowed Heat Rate only at 100% at HSD while maintaining the decision for Gas/RLNG as per MYT decision.

25. Nonetheless, upon analysing the initial data submitted by KE and the review request, it is evident that the data supports the loading position of plant at around 85% (for HSD and Gas). Furthermore, the adjustment of heat Rate at a loading position of 85%, is in line with MYT decision (referenced in para 23 above) already allowed to KE and adhere to the principle of prudence. In contrast, any adjustment for loading position below 85% (through curves as requested by KE in later part of proceedings) would not be consistent with these principles.

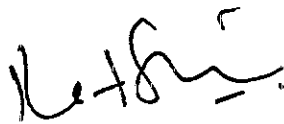
26. The Authority does not support allowing of part load curves and its impact as evaluated by KE's working/methodology since the same not only contradicts the scope of review but is also against the MYT decision^{*}. If accepted the same would result in undue burdening of end consumers.

^{*} as it requires adjustments below 85% loading for gas as well as HSD.

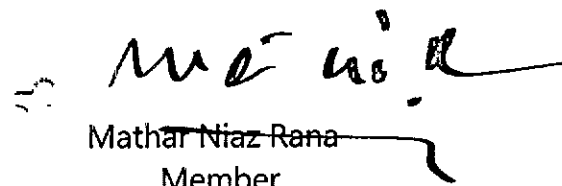


27. From legal standpoint it is imperative to state that the instant proceedings of review motion pertain to an independent decision of determination of Heat Rate number made pursuant to MYT 2017-23; the same is not a proceedings on modification of MYT 2017-23 decision (wherein loading position of the plant for Heat Rate number was decided). The Authority notes that the loading position of 85% was initially requested by KE and was acceded to by the Authority in last MYT, whereas, the adjustment for loading position of the plant below the loading position decided in MYT is outside/beyond the scope of current proceedings.

28. After detailed deliberations and in the exercise of its collective wisdom, the Authority decides that the adjustment of the Heat Rate at a loading position of 85% on HSD fuel is approved, in alignment with the Heat Rate approved for Gas fuel under the Multi-Year Tariff (MYT) 2017-2023 for the 248 MW KCCP of KE.



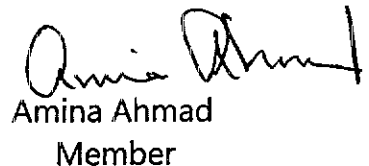
Rafique Ahmad Shaikh
Member



Mathar Niaz Rana
Member



Engr. Maqsood Anwar Khan
Member



Amina Ahmad
Member



Waseem Mukhtar
Chairman

