भारत सरकार केंद्रीय विद्युत प्राधिकरण दक्षिण क्षेत्रीय विद्युत समिति 29, रेसकोर्स क्रास रोड बेंगलूर- 560 009	सत्यमेव जयते	Government of India Central Electricity Authority **Southern Regional Power Committee** 29, Race Course Cross Road Bengaluru-560 009
Email:mssrpc-ka@nic.in	Web site: www.srpc.gov.in.	Phone:080-22282516

सं/No.	SRPC/SE(O)/16th MVAR/2026-27/	दिनांक / Date	**15th October 2026**

सेवा मे / To

संलग्न सूची के अनुसार/ As per the enclosed list

Subject: Minutes of the 16th Meeting of MVAR Performance Analysis -reg.

महोदय /महोदया / Sir/ Madam,

Enclosed, please find the Minutes of the 16th Meeting of MVAR performance analysis of **State Generating Stations on 06th July 2026 (Monday) & of ISTS connected Generators on 07th July 2026 (Tuesday)** through Video Conferencing (VC). The same is available on SRPC website www.srpc.gov.in.

It is requested that the all the generators may take action as recommended and also take necessary steps to optimize the MVAR performance in the interest of secured grid operation. The action taken report may be furnished accordingly.

धन्यवाद /Thanking you,

भवदीय /Yours faithfully,

अधीक्षकअभियंता/Superintending Engineer (O,P&C)

Mailing list for the Meeting of MVAR Performance Analysis

1. Chief Engineer (Gen), APGENCO, Vijayawada
2. Chief Engineer (HPC & Hydro Projects), APGENCO, Vijayawada
3. Chief Engineer (ED), KPCL, Bengaluru
4. Chief Engineer (Project & ED), KSEBL, Thiruvananthapuram
5. Chief Engineer (Mech. Thermal), TANGEDCO, Chennai
6. Chief Engineer (Hydro), TANGEDCO, Chennai
7. Chief Engineer (Gen.), TGGENCO, Hyderabad
8. Chief Engineer (Projects), TGGENCO, Hyderabad
9. Executive Director, Ramagundam STPS, NTPC, Ramagundam
10. Chief General Manager, Simhadri STPS, NTPC, Simhadri
11. General Manager, Talcher STPS, NTPC, Talcher
12. General Manager, Kudgi STPS, NTPC, Kudgi
13. General Manager, Telangana STPS, NTPC
14. General Manager, SRHQ, NTPC, Hyderabad
15. General Manager, CC, NTPC, New Delhi
16. General Manager, Vallur TPS, NTECL
17. General Manager, TS-II, NLCIL, Neyveli
18. General Manager, TS-I Expansion, NLCIL, Neyveli
19. General Manager, TS-II Expansion, NLCIL, Neyveli
20. General Manager, NNTPS, NLCIL, Neyveli
21. General Manager, NTPL, Tuticorin
22. OS, MAPS, Kalpakkam
23. OS, Kaiga G S Stage- I , Kaiga
24. OS, Kaiga G S Stage-II, Kaiga
25. OS, KKNPP, Kudankulam
26. Senior Vice President, JSWEL, Toranagallu
27. Head Operation, UPCL, Udupi
28. Chief Manager-Electrical, SEL, Nellore
29. Head Engineer-Electrical, MEPL, Nellore
30. AGM, SEIL P1, Nellore / Hyderabad
31. AGM, SEIL P2, Nellore / Hyderabad
32. O&M Head, IL & FS, Nagipatnam
33. Advisor-Electrical, Coastal Energen, Tuticorin
34. VP, O&M, HNPCL, Vishakapatnam
35. Associate Vice President, Adani Power Ltd., Ahmadabad
36. Sr. Deputy General Manager, CTUIL, Gurugram
37. Executive Director, SRLDC, Bengaluru

Copy to:

1) Chief Engineer (GO), APTRANSCO, Vijayawada
2) Chief Engineer (E), SLDC KPTCL, Bengaluru
3) Chief Engineer (TSO), KSEBL, Kalamassery
4) Chief Engineer (GO), TANTRANSCO, Chennai
5) Chief Engineer, SLDC,TGTRANSCO, Hyderabad

***

with a request to ensure MVAR analysis of the embedded generators in the meeting by the SLDC. Consolidated analysis may be presented by SLDC

SOUTHERN REGIONAL POWER COMMITTEE (SRPC)

Minutes of the Special Meeting on MVAR Performance (16th) Analysis of Generating Stations under SRLDC control area held on 07.07.2026

1. Introduction

(i) **16th Meeting for MVAR performance analysis of Generating Stations under the control area of SRLDC was held on 07.07.2026 through Video Conferencing (VC). The meeting was attended by representatives from SRPC, SRLDC, NTPC Generating Stations, SRHQ NTPC, NTPL, NLCIL, KKNPP and all respective central generating stations of SR. The list of participants is at *Annexure-1***

(ii) **SE (O, P & C), SPRC** cordially welcomed and invited all the participants to actively participate in the 16th MVAR Meeting. She then highlighted the importance of reactive power management and voltage control for regulatory compliance, grid security, and reliable power system operation. She emphasized that effective MVAR management is essential for maintaining voltage stability, minimizing transmission losses, optimizing transmission asset utilization, and ensuring overall grid security, particularly in view of the increasing integration of renewable energy and expansion of transmission networks.

She further highlighted that, although voltage issues are generally local in nature, effective reactive power management requires coordinated efforts from generating stations, transmission utilities, State Electricity Boards, and SRLDC. She referred to the relevant provisions of the IEGC and CEA Technical Standards regarding keeping AVRs in service, maintaining appropriate voltage settings, and effectively utilizing the reactive power capability of generating stations.

She stated that the meeting would review the prevailing pattern of MVAR injection and absorption, examine operational constraints, and identify practical measures to improve voltage control. She requested all generating stations to review their AVR performance, generator terminal voltage settings, and transformer tap positions, and to coordinate with SRLDC for suitable tap position changes, wherever required, to minimize unnecessary reactive power exchange with the ISTS network.

(iii) **ED, SRLDC** welcomed all the members representing the Southern Region constituents to the **16th Meeting on MVAR Performance Analysis of ISGS**. He noted that a meeting with the State generators and STU-connected generators had been held on the previous day, while the present meeting was focused on ISGS and ISTS-connected generators at the regional level. He thanked all the participants for attending the meeting and emphasized the need for mutual cooperation among SRLDC, State constituents and generating stations for ensuring secure grid operation.

While referring to the review of MVAR performance, he observed that there had been an improvement in the MVAR performance of generating stations compared to the previous year. However, certain generating stations were still not providing the expected reactive power support. He stated that SRLDC would present the performance analysis, highlighting the areas requiring improvement, and requested the concerned generators to examine the identified gaps and discuss any operational constraints so that suitable remedial measures could be taken to

ensure effective utilization of the reactive power capability available as per the respective generator capability curves.

He further highlighted that the increasing integration of renewable energy, particularly large-scale RE capacity being added within a short period, had enhanced the importance of adequate reactive power support for voltage management. He observed that the installation of reactive power compensation facilities had not kept pace with the growth in RE capacity and requested RE generators also to ensure adequate MVAR support. He emphasized that inadequate reactive power support could contribute to voltage-related tripping and consequent loss of generation, and that maintaining adequate reactive power capability would benefit both the generating stations and the grid.

He concluded by reiterating the need for collective efforts to further improve MVAR performance and stated that SRLDC would present the performance during the previous year and discuss measures for further improvement.

(iv) **Member Secretary SRPC** welcomed all the participants to the 16th MVAR Meeting and emphasized the importance of coordinated reactive power management for maintaining voltage stability and secure grid operation, particularly with increasing RE integration and transmission expansion. He highlighted the need for generating stations to ensure availability and effective utilization of their reactive power capability, including proper AVR and GT settings. He further stressed that the meeting should focus on identifying the gaps in MVAR performance and evolving practical measures, in coordination with SRLDC and generators, for further improvement.

SRPC sensitised the forum on key highlights on the need for proper MVAR support in a complex grid with high Renewable Energy (RE) integration:

1) Voltage Stability amidst RE fluctuations:

With RE sources like solar and wind contributing significant and variable power, voltage profiles across the grid have become more volatile. Consistent MVAR support from conventional generators is essential to maintain voltage stability under such dynamic conditions.

2) Reduced Inertia & Reactive Capability from RE

Unlike synchronous generators, most RE sources (especially solar PV) may lack inherent reactive power capability and system inertia. This increases the burden on thermal and hydro units to manage local and regional voltage through dynamic MVAR absorption/injection.

3) Avoidance of Over voltages and System Collapse

During low demand periods or no/low RE generation, especially in off-peak hours, lack of adequate MVAR absorption leads to sustained high voltages, risking insulation failures and system disturbances. Timely and effective MVAR support ensures safe and reliable grid operation.

4) Compliance with IEGC & System Security

Adequate MVAR response is not just operationally beneficial—it is a regulatory requirement under IEGC 2023. Non-compliance can lead to local voltage issues and grid-level violations affecting reliability and security margins.

5) Localized Reactive Support Minimizes Transmission Losses

When generators provide MVAR support close to load centers, it reduces the burden on transmission lines, lowers reactive power flows over long distances, and improves overall grid efficiency.

6) Facilitates Integration of Future RE Capacity

Strengthening the MVAR response ecosystem ensures the grid remains robust enough to absorb higher RE capacities planned under national targets, without compromising voltage performance or power quality.

7) Enables Dynamic Grid Operation & Contingency Handling

In contingency situations like sudden RE withdrawal or tripping of lines, fast and flexible reactive power support helps contain voltage swings and aids in smooth grid recovery.

8) Essential for Managing Grid Complexity in Renewable-Dominated Zones

Regions like Southern India already witness high RE penetration. In such areas, coordinated and responsive MVAR support from conventional stations becomes a backbone for operational resilience.

2. Summary points of MVAR analysis of generating units under SRLDC:

SRLDC informed that the MVAR performance of 58 ISTS-connected generating units was analysed for the period from June 2025 to May 2026. The performance was assessed on a month-wise basis, by comparing the performance against the previous month, and also for the entire period under review.

SRLDC explained that the generating units were classified based on the extent and direction of their reactive power response, as follows:

a) **Good:** At least 30% of the desired MVAR absorption/injection in the appropriate direction.
b) **Adequate** – Needs Improvement: Less than 30% of the desired MVAR absorption/injection in the appropriate direction.
c) **Poor/Opposite Response:** MVAR injection during high-voltage conditions and absorption during low-voltage conditions.
d) **Non-performers:** Generating units that did not provide the desired MVAR response.

SRLDC presented the consolidated summary of the ISGS generating units based on their month-wise MVAR performance during the period under review.

The detailed unit-wise MVAR performance analysis, as presented by SRLDC, is provided in ***Annexure-2***.

A. NTPC

ISGS Units	
No of Units Analysed	58

Performance Analysis	
Good	27
Adequate	19
Need to Improve	4
Not Performing	8

Station Name	Installed	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7	Unit 8
SEIL -I	2 x 660	Need to Improve	Need to Improve						
SEIL-II	2 x 660	Not Performing							
COASTAL	2 x 600	Need to Improve	Not Performing						
ILFS	2 x 600	Adequate	Adequate						
Greenko	6X 240 + 2X 120	Adequate	Adequate	Adequate	Adequate	Good	Adequate	Adequate	Good

Station Name	Installed	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7
Ramagundam	3 X 200 +3 X 500+ 1 X500	Good	Adequate	Good	Good	Good	Good	Good
Kudgi	3 X 800	Good	Good	Good				
Simhadri	4 X 500	Adequate	Good	Good	Good			
Talcher	3X150	Good	Good	Adequate				
Vallur	4 X 500	Good	Good	Good				
NTPL	2 X 500	Adequate	Adequate					
Telangana STPP	2 X 800	Good	Good					
NEYVELli II	4 X 210 + 3 X 210	Not performing	Need to Improve	Not performing	Good	Adequate	Good	Adequate
NLC 1 Exp	2 X 210	Adequate	Adequate					
NLC 2 Exp	2 X 210	Adequate	Adequate					
Kudankulam	2 X 1000	Good	Good					
Kaiga	2 X 220 + 2X 220	Not Performing	Not Performing	Not Performing	Not Performing			
NNTPP	2 X 500	Good	Good					

a) Kudgi STPS (3x800 MW)

a) SRLDC informed that the GT tap setting of all three units was maintained at 399/23.5 kV. The units were operated in AVR voltage control mode, with MVAR absorption/injection regulated based on grid voltage conditions. The set point would not be changed unless specific instructions were received from SRLDC.

Response was adequate for all Units.

Unit 1: Capability: Absorption/Injection: -320/+440 MVAR, Actual: -250/+200 MVAR

Unit 2: Capability: Absorption/Injection: -320/+440 MVAR, Actual: -225/+180 MVAR

Unit 3: Capability: Absorption/Injection: -320/+440 MVAR, Actual: -250/+250 MVAR.

Performance of NTPC Kudgi:

b) During normal operation, MVAR absorption was around −250 MVAR and injection was around +200 MVAR. The GT settings of all three units were identical, at approximately 399.5 kV, as presented during the performance review.

c) Improvement in MVAR injection performance was observed compared to the previous year. The previous periodic MVAR performance testing was conducted on 26th and 27th March 2025

d) As per the consolidated MVAR performance analysis presented by SRLDC, all three units were initially classified as having Good MVAR performance, notwithstanding the actual response values recorded against their respective capability limits

Conclusion: The Overall performance was found to be good for all the units.

b) **Ramagundam STPS (3x200 + 4x500) MW:**

a) SRLDC presented the MVAR performance analysis of all seven units of Ramagundam STPS. The capability limits and actual MVAR absorption/injection recorded for each unit were as follows:

Unit 1: Capability: Absorption/Injection: -70/+120 MVAR, Actual: -60/+50 MVAR
Unit 2: Capability: Absorption/Injection: -70/+120 MVAR, Actual: -55/+42 MVAR
Unit 3: Capability: Absorption/Injection: -70/+120 MVAR, Actual: -62/+44 MVAR
Unit 4: Capability: Absorption/Injection: -160/+300 MVAR, Actual: -180/+150 MVAR
Unit 5: Capability: Absorption/Injection: -150/+300 MVAR, Actual: -190/+195 MVAR
Unit 6: Capability: Absorption/Injection: -160/+300 MVAR, Actual: -160/+140 MVAR
Unit 7: Capability: Absorption/Injection: -160/+300 MVAR, Actual: -160/+180 MVAR

b) It was observed that the MVAR response/changeover generally occurred at higher voltages, in the range of 395–425 kV. NTPC informed that the units were around 40 years old. The GT tap position was maintained at 5, corresponding to 399 kV, for the 200 MW units of Stage I, and at 7 for the 500 MW units.

c) Instances of inadequate or no MVAR absorption at high voltages, particularly above 420 kV, were observed in the units. NTPC was advised to verify the AVR settings and check whether any limiters were restricting the MVAR response. NTPC informed that bus voltage set points varied at different times and that an SOP had been prepared and shared with the operating personnel in the control room.

d) The observed crossover voltage was around 410 kV, which was higher than the corresponding set voltage. NTPC was advised to verify the crossover voltage settings for the other units as well.

e) Unit 7 showed improvement compared to the previous year in MVAR absorption at voltages above 420 kV, although some instances of inadequate absorption persisted during certain months.

f) NTPC informed that MVAR testing of Stage I units was conducted in March 2026, while Stage II units were tested in November 2025 and January 2026. The previous MVAR testing of Unit 7 was conducted in July 2024.

Conclusion:

g) The overall MVAR performance of Ramagundam STPS was noted to be good. However, NTPC shall furnish the GT tap position settings of all units to SRLDC/SRPC for review.

h) NTPC shall verify the observed crossover voltage of around 410 kV against the corresponding tap settings and rectify any mismatch, wherever necessary.

i) NTPC shall review the AVR settings and any limiter restrictions to ensure adequate MVAR absorption during high-voltage conditions, particularly when the voltage exceeds 420 kV, and take corrective action wherever required.

c) **Simhadri STPS Stage I (2x500 MW):**

Unit 1: Capability: Absorption/Injection: -180/+280 MVAR, Actual: -150/+120 MVAR

Unit 2: Capability: Absorption/Injection: -180/+280 MVAR, Actual: -150/+150 MVAR

Performance Review:

a) The tap setting was maintained at 5, corresponding to 399 kV.
b) It was observed that Unit 1 was under outage up to 15.01.2026 and again from 31.01.2026 to 07.02.2026. SRLDC informed that SCADA data for Unit 1 had not been received since 15.01.2026.
c) Improvement in the VAR performance of Unit 2 was observed compared to the previous year, when the actual absorption/injection performance was −125/+80 MVAR

Conclusion: The overall VAR response was observed to be good

Action Point: NTPC Simhadri shall coordinate with SRLDC to address the non-receipt of SCADA data for Unit 1 and ensure reliable data availability for monitoring MVAR performance

d) **Simhadri STPS Stage II (2x500 MW):**

Unit 1: Capability: Absorption/Injection: -180/+280 MVAR, Actual: -150/+200 MVAR
Unit 2: Capability: Absorption/Injection: -180/+280 MVAR, Actual: -150/+180 MVAR

Performance Review:

a) The tap setting corresponded to 399 kV. MVAR injection during periods of higher voltage, particularly above 400 kV, was observed to require review.
b) For Unit 3, the VAR response was observed to be in the reverse direction, possibly due to a SCADA issue. It was opined that SRLDC and NTPC may jointly examine the issue and resolve the same.
c) For Unit 4, MVAR injection was observed on a few occasions at higher voltage levels. The need to avoid such injection under high-voltage conditions was highlighted.

Conclusion: The overall VAR response was observed to be good, with improvement in performance compared to the previous year.

Action Point: NTPC Simhadri, in coordination with SRLDC, shall examine the reverse-direction VAR response observed for Unit 3 and resolve the associated SCADA issue. NTPC shall also review the MVAR injection observed at higher voltage levels, particularly above 400 kV, and ensure appropriate reactive power response.

e) **Telangana STPP (2X800 MW):**

Unit 1: Capability: Absorption/Injection: -350/+500 MVAR, Actual: -225/+200 MVAR

a) The tap setting was maintained at 5, corresponding to 399 kV. However, the changeover was observed to occur at 405 kV, which requires verification. The suitability of the droop setting was also highlighted for review to improve MVAR

injection performance. The unit exhibited improved MVAR absorption performance compared to the 14th MVAR Meeting.

b) SRLDC observed that the unit provided good VAR support at higher loading levels, while scope existed for improving VAR performance at technical minimum. NTPC was advised to examine measures to improve MVAR injection support during operation at technical minimum, particularly under low grid voltage conditions.

Unit 2: Capability: Absorption/Injection: -350/+500 MVAR, Actual: -250/+190 MVAR

c) Improvement in the MVAR performance of Unit 2 was observed compared to the previous year. On a few occasions, limited MVAR absorption/injection was observed at higher voltage levels. Similar to Unit 1, the scope for improving MVAR injection support during operation at technical minimum was highlighted.

d) MVAR performance testing of Unit 2 was conducted in February 2025, while that of Unit 1 was conducted in May 2026.

Conclusion: The overall VAR response was found to be good

Action Point: NTPC Telangana shall verify the voltage changeover setting, review the suitability of the droop setting for improving MVAR injection performance, and examine measures to enhance VAR injection support during operation at technical minimum, particularly under low grid voltage conditions.

f) **NTPC Talcher St 2 (2x500 MW):**

Response is Adequate
Unit 3: Capability: Absorption/Injection: -180/+300MVAR, Actual: -60/150 MVAR
Unit 4: Capability: Absorption/Injection: -180/+300MVAR, Actual: -50/150 MVAR
Unit 5: Capability: Absorption/Injection: -180/+300MVAR, Actual: -50/100 MVAR

Performance Review:

a) SCADA-related issues were observed for Unit 3, similar to the previous year. NTPC clarified that the tap setting was maintained at 6, corresponding to 409.5 kV, with the GT voltage maintained at a slightly higher level to compensate for low voltages at the far-end auxiliary equipment. This was cited as one of the reasons for the observed MVAR injection behaviour.

b) The performance of Unit 4 was observed to be similar to that of Unit 3. NTPC requested SRLDC to share the presentation/study in advance of the MVAR Meeting, to which SRLDC agreed. SRLDC also suggested that NTPC-RHQ convene an internal quarterly review meeting involving all NTPC stations to review MVAR performance.

c) For Unit 5, MVAR absorption was not observed during certain months. The need to verify the relevant settings was highlighted.

d) For Unit 6, the data was reported to be satisfactory after January 2026; however, data-related issues were observed up to December 2025 and require verification

Conclusion: The overall VAR response was found to be adequate

Action Points:

1. NTPC Talcher shall examine the recurring SCADA issues associated with Unit 3 and verify the relevant settings for Unit 5, for which MVAR absorption was not observed during certain months.
2. SRLDC shall share the presentation/study on MVAR performance with NTPC in advance of subsequent MVAR Meetings.
3. NTPC-RHQ shall consider conducting internal quarterly review meetings involving all NTPC stations to review and improve MVAR performance.
4. NTPC Talcher shall verify the data-related issues reported for Unit 6.

g) NTECL Vallur TPS (3x500 MW):

Response is Good
Unit 1: Capability: Absorption/Injection: -180/+280 MVAR, Actual: -150/+250 MVAR
Unit 2: Capability: Absorption/Injection: -180/+280 MVAR, Actual: -160/+240 MVAR
Unit 3: Capability: Absorption/Injection: -180/+280 MVAR, Actual: -160/+180 MVAR

Performance Review:

a) It was noted that the tap setting was maintained at 7, corresponding to 399/21 kV. However, the changeover was observed to occur at around 405–410 kV for all three units. Instances of MVAR injection at voltages above 410 kV were also observed, which need to be avoided.
b) The units were generally operated at lower grid voltages of around 390 kV, under which conditions the MVAR injection response requires improvement.
c) It was noted that capability testing of all three units was conducted in March 2026. Following the tests, significant improvement was observed in MVAR injection performance and the changeover voltage, which was brought within the range of 400–405 kV.

Conclusion: The overall VAR response was found to be good

Action Point: NTECL Vallur shall review the changeover settings to ensure appropriate changeover voltage and avoid MVAR injection during high-voltage conditions, particularly above 410 kV. Further, the MVAR injection response during low grid voltage conditions of around 390 kV shall be examined for improvement.

B. NLCIL

h) **NNTPS (2x500 MW):**

Response is Good
Unit 1: Capability: Absorption/Injection: -180/+300 MVAR, Actual: -160/+280 MVAR
Unit 2: Capability: Absorption/Injection: -180/+300 MVAR, Actual: -100/+270 MVAR

Performance Review:

a) It was informed that the tap setting was maintained at the nominal position, corresponding to 400 kV. Both units were observed to provide reactive power support up to their respective operating limits, indicating good VAR performance.
b) The reactive power capability testing was last conducted in 2022. It was informed that the tendering process had been initiated and that testing would be carried out shortly after award of the contract.

Conclusion: The overall VAR response was found to be good.

Action Point: NNTPS shall ensure that reactive power capability testing is carried out shortly after award of the contract.

i) **NTPL (2x500 MW):**

Response is Adequate

Unit 1: Capability: Absorption/Injection: -180/+280 MVAR, Actual: -110/+150 MVAR
Unit 2: Capability: Absorption/Injection: -180/+280 MVAR, Actual: -110/+150 MVAR

Performance Review:

a) A reduction in VAR performance was observed compared to the previous year, when the absorption/injection performance was −130/+220 MVAR. NTPL informed that no changes had been made to the settings and suggested verifying the VAR support. The tap setting was maintained at 5, corresponding to 399 kV, whereas the crossover voltage was observed to be around 405 kV. Instances of MVAR injection or inadequate absorption at higher voltage levels were noted, which need to be avoided. Similar performance was observed for Unit 2.
b) It was informed that periodic MVAR performance testing was planned for the current year.

Conclusion: The overall VAR response was found to be adequate.

Action Point: NTPL shall verify the VAR support and associated settings of both units, particularly the crossover voltage and reactive power response under high-voltage conditions, and undertake the planned periodic MVAR performance testing Response is adequate.

j) **Neyveli TPS II (7x210 MW):**

Unit 1: Capability: Absorption/Injection: -130/+130 MVAR, Actual: -5/+125 MVAR
Unit 2: Capability: Absorption/Injection: -130/+130 MVAR, Actual: -25/+100 MVAR
Unit 3: Capability: Absorption/Injection: -130/+130 MVAR, Actual: -10/+90 MVAR
Unit 4: Capability: Absorption/Injection: -60/+130 MVAR, Actual: -50/+75 MVAR
Unit 5: Capability: Absorption/Injection: -60/+130 MVAR, Actual: -40/+100 MVAR
Unit 6: Capability: Absorption/Injection: -60/+130 MVAR, Actual: -50/+80 MVAR
Unit 7: Capability: Absorption/Injection: -60 /+130 MVAR, Actual: -40/+60 MVAR

Performance Review:

a) It was observed that all units predominantly operated in the MVAR injection mode under lower grid voltage conditions. It was informed that the tap settings of Units 1 and 3 had been changed from tap 11 (234 kV) to tap 12 (230 kV).

b) Very low or nil MVAR absorption was observed at voltages above 230 kV. Neyveli TPS-II was requested to share the correct tap settings of all units by email and submit an action plan to SRPC/SRLDC.
c) Periodic MVAR performance testing of all Stage-I units was required to be carried out.
d) For Stage-II units, the tap settings had been changed from tap 7 (410 kV) to tap 9 (400 kV). An improvement in VAR support, particularly in absorption, was observed following the change.

Conclusion: The VAR response of the Stage-I units was found to be poor. Periodic reactive power capability testing of all Stage-I units shall be carried out at the earliest.

Action Points:

1. Neyveli TPS-II /SRLDC shall verify the capability curves of the units
2. Neyveli TPS-II shall furnish the correct tap settings for all units and submit an action plan to SRPC/SRLDC for improving MVAR performance.
3. Neyveli TPS-II shall arrange for periodic reactive power capability testing of all Stage-I units at the earliest.

k) **Neyveli TPS I Expansion (2x210MW)**

Response is Adequate
Unit 1: Capability: Absorption/Injection: -75/+130 MVAR, Actual: -50/+40 MVAR
Unit 2: Capability: Absorption/Injection: -75/+130 MVAR, Actual: -50/+45 MVAR

Performance Review:

a) Instances of reactive power injection at higher grid voltages, above 400 kV, were observed and require verification. SRLDC was requested to examine the SCADA data, as gaps in the plots for certain months were observed. The need to improve the overall VAR support from both units was highlighted.
b) Neyveli TPS-I Expansion highlighted that low grid voltage conditions of around 380–385 kV had adversely affected several plant equipment. It was informed that the issue could be examined in detail during the OCC meeting upon receipt of an official communication from Neyveli TPS-I Expansion to SRPC/SRLDC.

Conclusion: The overall VAR response was found to be adequate.

Action Points:

a) SRLDC shall verify the instances of reactive power injection at grid voltages above 400 kV and examine the SCADA data gaps observed in the plots for certain months.
b) Neyveli TPS-I Expansion shall submit an official communication to SRPC/SRLDC regarding the adverse impact of low grid voltage conditions on plant equipment, for detailed examination for onward discussion in the OCC meeting.

l) **Neyveli TPS-II Expansion (2x250MW)**

Unit 1: Capability: Absorption/Injection: -60/+80MVAR, Actual: -55/+70MVAR
Unit 2: Capability: Absorption/Injection: -60/+80MVAR, Actual: -55/+70 MVAR

Performance Review:

a) It was observed that the overall VAR performance had improved compared to the 14th MVAR Meeting. However, instances of reactive power injection at grid voltages above 420 kV were noted, which need to be avoided. SRLDC was requested to verify the capability curves of both units.

b) The tap setting was maintained at 9, corresponding to 400 kV, whereas the crossover voltage was observed to be around 405 kV. The relevant settings require verification.

Conclusion: The overall VAR response was found to be adequate.

Action Points:

c) SRLDC shall verify the capability curves of both units.

d) Neyveli TPS-II Expansion shall verify the tap and crossover voltage settings and ensure that reactive power injection is avoided under high-voltage conditions, particularly above 420 kV.

C. NPCIL

m)KKNPP (2x1000 MW):

Unit 1: Capability: Absorption/Injection: -200/+484 MVAR, Actual: -200/+375 MVAR
Unit 2: Capability: Absorption/Injection: -200/+484 MVAR, Actual: -150/+400 MVAR

Performance Review:

a) In response to SRLDC's query regarding whether the limitation in MVAR absorption was attributable to the capability curve, KKNPP informed that the matter would be examined and the findings communicated to SRLDC.
b) The tap setting was maintained at 4, corresponding to 409.5 kV. However, the changeover was observed to occur at voltages above 409.5 kV, which requires verification.

Conclusion: The overall VAR response was found to be good.

Action Point: KKNPP shall verify whether the limitation in MVAR absorption is attributable to the capability curve and communicate the findings to SRLDC. The changeover voltage setting shall also be verified.

n) KGS Unit 1&2 (2x220 MW) - Unit 3&4(2X220 MW)

It was observed that Units 1 to 4 were not responding adequately to grid requirements. It was also noted that no representative from Kaiga was present during the meeting.

Conclusion/Action Point: KGS shall review the VAR response of Units 1 to 4 and ensure appropriate reactive power support in accordance with grid requirements.

D. IPP

a) SEIL P2 (1x600 MW):

Unit 1: Capability: Absorption/Injection: -240/+280 MVAR, Actual: -50/+150 MVAR

Performance Review: The actual MVAR absorption and injection were observed to be lower than the respective capability limits.

Conclusion: The overall VAR response was found to be adequate.

Action Point: SEIL to improve absorption capacity.

b) IL & FS(2x600) MW:

Unit 1: Capability: Absorption/Injection: -150/+360 MVAR, Actual: -125/+170 MVAR
Unit 2: Capability: Absorption/Injection: -150/+360 MVAR, Actual: -125/+140 MVAR

Performance Review:

- ✓ As per the performance graphs, MVAR absorption was observed to be limited to 150 MVAR. IL&FS clarified that this limitation was attributable to the VAR capability curve. Improvement in MVAR injection performance was observed compared to the previous year.
- ✓ The tap setting was maintained at 5, corresponding to 399 kV, whereas the crossover voltage was observed to be above 400 kV.
- ✓ It was noted that periodic MVAR performance testing was last conducted in 2024. IL&FS further informed that, as per the OEM's recommendation, MVAR absorption could be limited to 125 MVAR.

Conclusion: The overall VAR response was found to be adequate.

Action Point: IL&FS shall review the crossover voltage setting and confirm the applicable MVAR absorption limit in accordance with the capability curve and OEM recommendations.

c) MPGL (2x600) MW:

Unit 1: Capability: MVAR: Absorption/Injection: -180/+220 MVAR, Actual: -75/+220
Unit 2: Capability: MVAR: Absorption/Injection: -180/+200 MVAR, Actual: -60/+180

- ✓ The tap setting was reported to correspond to 410 kV. MPGL was advised to conduct a study and examine the feasibility of changing the tap setting to the nominal voltage of 400 kV

Conclusion: The overall VAR response was found to be poor. The tap setting needs to be reviewed and changed to the nominal voltage of 400 kV, based on the study.

Action Point: MPGL shall conduct the required study and take necessary action to revise the tap setting to the nominal voltage of 400 kV.

d) Greenko (6x240+2x120) MW:

Unit 1 (240 MW): Actual -100/+50 MVAR
Unit 2 (240 MW): Actual -80/+50 MVAR

Unit 3 (240 MW): Actual -90/+60 MVAR
Unit 4 (240 MW): Actual -90/+60 MVAR
Unit 5 (240 MW): Actual -80/+40 MVAR
Unit 6 (240 MW): Actual -100/+50 MVAR
Unit 7 (120 MW): Actual -45/+20 MVAR
Unit 8 (120 MW): Actual -45/+20 MVAR

Performance Review:

a) Greenko was required to confirm the limitations, if any, associated with the VAR capability curves and furnish the tap settings of the units. However, no representative from Greenko was present during the meeting to provide the requisite clarification.

b) It was observed that, during pumping mode, the grid voltage remained on the lower side and the units were injecting reactive power.

Conclusion: The VAR performance requires further review, subject to confirmation of the capability curve limitations and tap settings.

Action Point: Greenko shall confirm the VAR capability curve limitations and tap settings of all units and review the reactive power response during pumping mode, particularly under low grid voltage conditions.

3. Common Issues Observed:

(i) The MVAR performance of ISGS/ISTS-connected generating units in the Southern Region were reviewed with respect to their declared reactive power capability, actual absorption/injection, voltage changeover settings, GT tap positions, and SCADA data availability. The overall assessment indicated varying levels of performance across generating stations, with several units exhibiting good or adequate response, while deficiencies were observed in certain units.

(ii) Variations were observed in the actual MVAR absorption and injection performance of certain generating units vis-à-vis their declared capability. In particular, limited reactive power absorption, inadequate injection support, and inappropriate reactive power response under varying grid voltage conditions were noted in some units. The performance of such units requires continued attention to ensure adequate reactive power support for secure grid operation.

(iii) Improvement in MVAR performance compared to the previous year's assessment was observed in certain generating stations, indicating progress in reactive power management. However, persistent deficiencies in some units, including poor absorption capability and unsuitable response under high- and low-voltage conditions, remain areas of concern.

(iv) Instances of reactive power injection at higher grid voltages and limited absorption under high-voltage conditions were observed in certain generating units. These

observations highlight the importance of appropriate reactive power control and coordination with prevailing grid voltage conditions.

(v) SCADA data gaps, non-availability of performance data, and instances of reverse-direction VAR response were observed in certain units, affecting the assessment of their actual reactive power performance. The availability and accuracy of operational data are essential for effective monitoring and evaluation.

(vi) The review highlighted the importance of periodic assessment of reactive power capability and sustained monitoring of generating unit performance. Regular performance evaluation and coordination between generating stations and SRLDC are essential to ensure that generating units provide appropriate reactive power support under varying system operating conditions.

4. Follow up Action Points:

(i) **Generating Stations:** The concerned generating stations shall review the MVAR capability curves, GT tap settings, voltage changeover/crossover settings, and droop settings of units wherever deficiencies have been observed, and take corrective action as required.

(ii) **MVAR Capability Testing:** Generating stations whose units have exhibited poor or inadequate MVAR performance, or whose periodic testing is overdue, shall undertake MVAR capability testing at the earliest and share the results with SRLDC/SRPC, as applicable.

(iii) **SCADA Data and Response Verification:** The concerned generating stations, in coordination with SRLDC, shall investigate SCADA data gaps, incorrect indications, and reverse-direction VAR response, and ensure reliable data availability for performance monitoring.

(iv) **Reactive Power Support:** The concerned generating stations shall examine the scope for improving MVAR absorption and injection, particularly during operation at technical minimum and under low grid voltage conditions, while ensuring appropriate reactive power response during high grid voltage conditions.

(v) **Quarterly Performance Review:** SRLDC shall share quarterly MVAR performance data with the respective generating stations. All generating stations shall conduct internal quarterly reviews based on the data, identify deficiencies, and initiate suitable corrective measures.

(vi) **OCC Follow-up:** Issues requiring detailed deliberation on MVAR support, including persistent deficiencies in generating unit response and issues affecting grid voltage management, shall be brought before the OCC for further examination and follow-up.

Action Taken Report: The concerned generating stations shall communicate the status of corrective measures undertaken on identified deficiencies to SRLDC/SRPC, as applicable, to facilitate monitoring of outstanding issues.

5. Concluding Remarks:

SE (O, P & C), SRPC, while thanking all participants for their valuable contributions towards fruitful deliberations, requested all generating stations to review the observations and recommendations made during the meeting and initiate necessary corrective actions to improve MVAR response. The data availability issues observed in certain stations, particularly KGS, were highlighted for urgent resolution. The non-participation of KGS and Greenko in the meeting would be taken up separately.

All generating stations were requested to furnish MVAR testing details in the prescribed format and ensure strict compliance with the relevant provisions of the IEGC regarding periodic MVAR testing and timely submission of updates to SRPC/SRLDC. SE (O, P & C) further emphasized that performance analysis need not be deferred until the next meeting. Generating stations were advised to undertake monthly and quarterly reviews of their MVAR performance and implement appropriate corrective measures, as several of the identified issues could be addressed at the station level itself.