



# KERALA STATE ELECTRICITY BOARD LIMITED

(Incorporated under Companies Act, 1956) CIN: U40100KL2011SGC027424

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## Abstract

Sabarigiri HEP- Report on vibration analysis of Unit#4 and request for shutdown of Unit#4 of Sabarigiri HEP, Moozhiyar- Sanctioned - Orders issued.

## Corporate Office (SBU-G/E)

B.O. (FTD) No. 449/2020 (DGE/ GI/ Sabarigiri Unit #4/2020-21) Thiruvananthapuram. Dated: 01-07 - 2020

- Read :- 1. Letter No. CEG/AE-2/SBG/Vibration Analysis U#4/2020-21/446 of the Chief Engineer (Generation & PED) dated 23.06.2020.
2. Note No.DGE/G1/ Sabarigiri Unit #4/2020-21 dated 24-06-2020 of the Director (GE&SCM) to the Full Time Directors ( Agenda item No.68 / 6 /20)

## ORDER

The Chief Engineer( Gen& PED) as per letter read as 1<sup>st</sup> above reported that Sabarigiri Hydro Electric Power Station was commissioned in 1967 by M/s. Allis Chalmers with a total capacity of 300MW (6x50MW). All the units were renovated and uprated by M/s. VA Tech Hydro in 2009 and the total capacity reached 335 MW (5\*55+1\*60). After the accident in the Unit #4 machine, the same was entrusted to rebuild by M/s. Puissance De L'eau Power Systems Pvt. Ltd (PDL), Bangalore. The firm had rebuilt the Unit #4 in collaboration with M/s. Kunming Electrical Machinery Company Limited, the OEM in 2013.

The Unit #4 was rebuilt with an entirely different system and worked as an islanded system with separate SCADA and PLC. So it was mandatory to keep an entire set of spares for the exclusive use of Unit #4, including a separate turbine. After rebuilding the Unit #4, lot of problems occurred after the defect liability period. Since the vibration increased drastically, the Assistant Executive Engineer, EMSD, Moolamattom was entrusted to look into the matter and after examining the Unit #4, he suggested that the runner jet defects, bearing looseness and unbalance and the vibration velocity is sufficient to cause damage to the machine and the condition is critical.

The expert opinion from the Executive Engineer, Protection and Monitoring Division, Kalamassery was sought and a meeting was arranged earlier on 05.05.2020 and discussed following

- The machine had a vibration below 250 at full load. But it had been reaching 270 when the machine was put in service and hitting of the shaft with the bearing pads
- The disturbance in the grid system would cause impact on the vibration which could not be seen at all the times. So the Unit may shut down at the earliest for maintenance.
- There were two accidents leading to casualties occurred in Unit #4 and the power house had been fully under shut down for months.
- The water storage at the reservoir had been reached 29% then and there were reports of heavy rain during the monsoon.

The vibration of the unit#4 varied drastically creating chaos on 13.06.2020, since the vibration monitoring system of the Unit#4 failed to operate. So it has been connected to the common vibration monitoring system (This system is common for all the five other units) as a temporary arrangement and it has only facility for monitoring.

The Chief Engineer( Gen&PED) requested to entrust M/s Central Power Research Institute (CPRI) or any other reputed agency in this field to find out the inherent problems of the Unit #4 machine and take measures to

rectify the same. A new common vibration system with alarm and trip facility may be installed for all the machines so that the vibration can be monitored from a single console and to avoid accidents and for ensuring safety, Unit #4 machine may be put under shut down till the inherent faults are rectified and to normalize vibration level. Further to that it is recommended to conduct a detailed Vigilance enquiry on the rebuilding work as well as the works done before and after the defect liability period.

The matter was placed before the Full Time Directors as per note read as 2<sup>nd</sup> above.

Having considered the matter in detail, the Full Time Directors in the meeting held on 25-06-2020, resolved to accord sanction for the following.

1. To entrust M/s Central Power Research Institute (CPRI) or any other reputed agency in this field to find out the inherent problems of the Unit #4 machine and take measures to rectify the same.
2. To install a new common vibration system with alarm and trip facility for all the machines so that the vibration can be monitored from a single console and to entrust Chief Engineer( Gen& PED) to procure and arrange the same.
3. To sanction Shutdown of Unit#4 in Sabarigiri HEP to avoid accidents and for ensuring safety, till the inherent faults are rectified and to normalize the vibration levels.
4. To conduct a detailed Enquiry by a Team consisting of Sri.James.M.David, Chief Engineer (Distribution – Central), Sri.Murali.P, Deputy Chief Engineer, Generation Circle, Moozhiyar and Brijesh.S, Executive Engineer, Generation Division, Moozhiyar to ascertain the reasons for the poor performance of the Unit #4 even after RMU and find out whether there is any serious lapse on the part of KSEBL Officials and the Contractor.

Orders are issued accordingly.

By Order of the Full Time Directors,

Sd/-

**Lekha G**

Company Secretary (In charge)

To

The Chief Engineer (Generation & PED), Moolamattom.  
The Chief Engineer ( T&SO), Kalamassery  
The Deputy Chief Engineer, Generation Circle, Moozhiyar.

Copy to:

Sri. James.M.David, Chief Engineer (Distribution – Central)  
Sri. Murali.P, Deputy Chief Engineer, Generation Circle, Moozhiyar  
Sri. Brijesh.S, Executive Engineer, Generation Division, Moozhiyar  
The Financial Advisor/The Chief Internal Auditor,  
The Dy.Chief Engineer (IT)/The RCAO/The RAO/ Company Secretary  
The TA to CMD/D(GE&SCM)/ D(T&SO)/ D(D IT& HRM)/D(GC)/ D (P&S)  
The Fair Copy Superintendent / Library / Stock File.

Forwarded / By Order

*Lekha G*  
Asst. Exe. Engineer

DESPATCHEL

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02.07.20