

KERALA STATE ELECTRICITY BOARD LIMITED

(Incorporated under Companies Act, 1956)

CIN: U40100KL2011SGC027424

Registered Office: Vydyuthi Bhavanam, Pattom, Thiruvananthapuram - 695004 Kerala, India.

Website: www.kseb.in Phone: (0) +91 471 2514283 E-mail: dgekseb@kseb.in

Abstract

Sabarigiri HEP – Rebuilding, Erection testing and commissioning of Generator Turbine shaft of Unit #2 machine at Sabarigiri HEP, Moozhiyar – Administrative Sanction - Sanctioned - Orders issued.

Corporate Office (SBU-G/E)

B.O.(FTD)No.960/2019(DGE/G1/ SHEP/Rebuilding Unit #2/2019-20) Thiruvananthapuram Dated:26-12-2019

- Read:-
1. Letter No. CEG/AE - 2/SBG/Repair of Unit#2/2019-20/ 1010 dtd 26.09.2019 of the Chief Engineer (Generation & PED)
 2. Letter No. CEG/AE - 2/SBG/Repair of Unit#2/2019-20/ 1477 dtd 12.12.2019 of the Chief Engineer (Generation & PED)
 3. Note No.DGE/G1/SHEP/Rebuilding Unit#2/2019-20 dated 18-12-2019 of the Director(GE&SCM) to the FTD (Agenda item No.66/12/19)

ORDER

The Chief Engineer (Generation & PED) as per letter read as 1st above has reported that, Power Station was commissioned during 1966-67 with an installed capacity of 300 MW with six generators of capacity 50 MW each. All the machineries for the project were supplied by M/s Allis Chalmers Manufacturing Co.USA. In the 2000s all the 6 Generating Units were renovated and the installed capacity up rated to 340MW (55 X 4 + 60 X 2). The renovation and up gradation work was carried out by Indian Subsidiary of M/s. Andritz Hydro with Head quarters in Austria. The capacity enhancement was achieved by changing the winding and improving the cooling technique. Also the Units were automated with SCADA system with renewal of all the associated accessories. But no modifications / renewals were made on the mechanical structure of the original machine including Generator and Turbine shafts. The units are in operation for more than 6000 hours each per year from the year of commissioning. The unit #4 was totally rebuilt and commissioned on may 2014, after the failure of original Unit in 2008.

It is also reported that Residual Life Assessment (RLA) study of the Generator and Turbine Shafts of Generator Units No.1,2,3,5&6 at Sabarigiri HEP were conducted during 2016-18. The RLA study is a method which helps to assess the present condition of the critical Turbines and Generator components and to find and locate the presence of defects and its growth pattern during its normal service. The test was conducted in two phases through M/s. Central Power Research Institute, Bangalore. The phase -1 included visual inspection of the turbine shaft and generator shaft, collection of vibration and design data and preparation of the scope of work for the phase- 2. The phase- 2 included detailed Non Destructive Testing (NDT) (Advanced UT, PT and MPI tests) , hardness and metallographic tests in critical location of shaft followed by the laboratory Finite Element Methods (FEM) analysis.

The overall summary of the investigation carried out on the RLA of the Turbine and Generation shaft is as follows.

- The predicted remaining life observed for the shaft of Unit # 2 is 3.78 Years.
- For the other units No.1,3,5 &6 the remaining life estimated with the assumed crack growth rate is above 25 years.
- However, the analysis of properties of the shaft material shows that it has high yield strength and low ductility. The impact toughness is observed to be very low. It

indicates that the shafts of all the units are not suitable for sudden impact loading conditions

In the background of the criticality of these results, M/s CPRI, Bangalore has strongly recommended to replace the Generator Turbine shafts of all the Units as early as possible with highest and urgent priority of Unit#2.

The Chief Engineer(Generation & PED) has requested Administrative Sanction for Rebuilding, Erection testing and commissioning of Generator Turbine shaft of Unit #2 machine at Sabarigiri HEP, Moozhiyar at an estimate amount of Rs.9,20,00,000/- (Rupees Nine Crore and Twenty Lakhs only)


Having considered the matter in detail, the FTD in the meeting held on 20-12-2019, resolved to accord Administrative Sanction for the manufacturing, erection, testing and commissioning of Generator Turbine shaft of Unit #2 machine at Sabarigiri HEP for an estimate amount of Rs.9,20,00,000/- (Rupees Nine Crore and twenty lakhs only).

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.

Copy to:
The Deputy Chief Engineer, Generation Circle, Moozhiyar
The Financial Advisor/The Chief Internal Auditor,
The Dy.Chief Engineer (IT)/The RAO/The RAO/ Company Secretary
The TA to CMD/D(CP,GE,SCM&S)/ D(T&SO)/ D(D&IT)/D(GC&HRM)
The Fair Copy Superintendent / Library / Stock File.

Forwarded / By Order

Asst. Exe. Engineer

DESPATCHED

No 302

Date 30/12/19