KSEB

KERALA STATE ELECTRICITY BOARD LIMITED

(Incorporated under Companies Act, 1956) **CIN: U40100KL2011SGC027424**
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Abstract

KHEP- Good Service Entry to the employees participated in the rectification of MIV (Main Inlet Valve) of Unit#4–Sanctioned –Orders issued

Corporate Office (SBU-G/E)

B.O. (FTD) No. 904 /2019 (DGE/G3/KHEP/GSE/2019-20)Thiruvananthapuram dated: 05 -12-2019

Read:- 1. Letter No.CEG/AEE-IV/KKM/Gnl/2019-20/1196 dated 28-10-2019 of the Chief Engineer(Generation & PED), Moolamattom
2. Note DGE/G3/KHEP/GS/2019-20 dated 21-11-2019 of the Director (G-E & SCM) (Agenda Item No.65/11/19)

ORDER

The Kuttiadi HEP (KHEP) is the third largest Generating station under KSEBL with an installed capacity of 225 MW. The project consists of 3x25MW (units #1,#2 &#3) ,commissioned in 1972 in the old Power House, 1x50MW machine (Unit#4) in Kuttiady Extn. Power House & 2x50MW (Units #5&#6) at KAES. The Chief Engineer(Generation & PED) as per letter read (1) above reported the contribution of employees in the rectification of unit #4 MIV at KHEP and recommended for Good Service Entry/Letter of Appreciation to those who were actively participated in the rectification works at Kuttiadi HEP.

It is also reported that the MIV of Unit#4 was faced with issues due to jamming in the course of opening and closing of the valve. This posed a serious problem that inspection and maintenance of unit#4 was possible only with shutdown of Unit#1,2,3 &4 because a common penstock feeds water to these four machines.

As per the original design, closing of MIV is achieved by penstock water pressure and opening is achieved by oil pressure. Water pressure of around 60-65 bar is constantly applied on the servo piston for fail safe operation of the MIV and the opening is achieved by applying oil pressure of around 70-75 bar against this water pressure. Oil pressure will become zero when the MIV closing command is initiated and the MIV will go to the closing position on water pressure. The works attempted for the MIV rectification and the history of events were explained in the report .

It is reported that, MIV of unit#4 was found not closing during tripping of the machine and stuck up in the open position, during the year 2009. Subsequently, it was closed with mechanical supports and while opening of the valve again, full opening was not achieved. Temporary arrangements were made by providing hydraulic jacking to make initial movement of the servo for closing the MIV. Though it was successful initially , the method was not effective. Therefore, it was decided to arrange rectification through an external agency and the work was awarded to the lowest bidder, M/s Dipak constructions with a PAC of Rs.6,28,000/-. They started the work on 07-11-2016 , by dismantling the self-lubricating bearing of Non Drive End(NDE) side of the valve, found that a strip(wear ring) , provided on the back end side of the bearing that acts as a guide and protection for "O" ring was damaged.

In order to identify the material composition of the wear ring, the same was tested at South India Textile Research Association lab (SITRA lab),Coimbatore and it was identified as epoxy resin cast polymer as base and coating of Alkyd Resign and Bisulphate (carbon fibre type) over its periphery. Since the same material was not available in Indian market, alternate material named "BELZONA-1111", having sufficient strength and properties similar to the epoxy resin cast material was found almost suitable for replacing the damaged wear ring. The replacement work was completed on 21-11-2016 and the MIV closing problem was found rectified ,but the opening was not satisfactory and the same was made possible by leaking out the penstock water from the closing side of MIV servo on normal operation. But ,the status of operation of MIV lasted only for 3 months and the closing problem appeared again.

Further rectification was attempted , by dismantling the Drive End (DE) side bearing. As it involved more time than NDE, it was directed to arrange a dummy flange ready to avoid the shutdown of Units#1,2&3. Subsequently, a dummy flange was procured for Rs.19,64,750/- after obtaining relevant design specifications from the Design wing of Civil Construction(N). But, even after repeated requests, M/s Dipak Constructions was not ready to execute the balance works, as the contract period was over. Therefore, the work order was cancelled up on request of the contractor and they have not claimed any bill for the works they have carried out.

In this context, the estimate was revised by collecting a budgetary offer from M/s Shree Abhirami Engineering works, Chennai, who has done similar works. As the amount offered by the company was as high as Rs.32,14,320/-, it was decided to carry out the work departmentally by using our expertise, as suggested by the Executive Engineer , K.G Division, Kakkayam .

Accordingly, a methodology was finalised and commenced the work departmentally, by draining the old penstock on 25-04-2019. After draining of the penstock , disconnected the servo piston of MIV from operating arm and checked the condition of the servo system, by applying governor oil pressure and found working properly. Necessary welding, cutting ,drilling, preparation of templates etc. were carried out and decoupled the operating arm from trunnion shaft by means of heavy hammering accompanied with heating using LPG and acetylene gas flames. The "O" rings and accessories were refitted and closed the MIV by using power pack and pressurised the governor. Then filled the penstock and trial operation of the MIV was carried out successfully without applying any external force and successfully completed the work on 08-05-2019. Other major works such as replacement of damaged fixed seal ring of service seal of unit#2,Annual mace of Unit#4 &#2 were also carried out simultaneously.

Key Benefits of doing the above works departmentally, as pointed out by the Chief Engineer (Generation &PED) is that , the KHEP team successfully completed the works by availing temporary imprest of only Rs.1,46,000/- as against the rate offered by Sree Abhrami Engineering works of Rs.32,14,320/- .The execution of the work took less than 14 days to complete the work, against 40 days demanded by Sree Abhrami Engineering works. Thus , KSEBL had benefitted much in the cost of the work as well as in minimising the shutdown. Moreover, it is pertinent to note that other important works such as replacement of fixed seal ring of service seal of unit#2, Annual mace of unit#2 & #4 were also carried out simultaneously by utilising the above period of shutdown which had enabled KSEBL to have more hydel availability .

In the above circumstances, the Chief Engineer (Generation &PED) has forwarded the names of employees involved, attached as **Annexure,** in the rectification of unit#4 MIV at KHEP, and recommended Good Service Entry/ Letter of Appreciation towards their meritorious Service, as a motivation for their team work and to boost their morale. Also recommended for monetary benefit to those contract employees involved in the execution of the subject work.

The matter was placed before FTD as per paper (2) above .Having considered the matter , the Full Time Directors meeting held on 21-11-2019, resolved to accord sanction to acknowledge the meritorious service and contribution of employees , in carrying out the rectification of unit#4 MIV at Kuttiadi Hydro Electric Project (KHEP), with Good Service Entry, as recommended by the Chief Engineer (Generation &PED), Moolamattom.

Orders are issued accordingly.

By Order of the Full Time Directors,
Sd/-
(LEKHA.G)
Company Secretary
(In -charge.)

To:

1. The Chief Engineer (Generation& PED),Moolamattom.
2. The Deputy Chief Engineer, Generation Circle, Thrissur.

Copy to:

The Financial Advisor/The Chief Internal Auditor,
The TA to CMD/D(GE&SCM)/ D(T,SO & S)/ D(D,IT&HRM)
The Fair copy Superintendent/Library/Stock File

Forwarded / By Order
Sd/-
Asst. Executive Engineer