

Minutes of meeting on desiltation held on 25/07/2018 in the conference hall, IDRb, Vikas Bhavan, Thiruvananthapuram.

The meeting commenced at 11.30 am. List of the members present are attached.

The meeting commenced with ~~CE IDRb~~ ^{Chulliar, IDRb} Sri Shamsudeen welcoming Dr.Raji Menon and his team who have arrived for giving a presentation on methods for desiltation as well as separation of components. CE gave a short introduction on the proposed desiltation work to be carried out in reservoirs of dams under Irrigation department. He informed about the bathymetric study conducted to assess the quantity of sediments in the reservoirs. Mention was also made about the "Standard Operating Procedure" approved by the state Government by which the entire desiltation is to be carried out, ^{on the basis of which} ~~in which~~ Chulliar and Mangalam are taken as pilot projects. The first part of SOP -Preparations of Environment Management Plan by outside agencies, collection of sample and analysis has been carried out. Collection of sample was carried out by NCESS and analysis by KERI Peechi. Also ~~the~~ ^{other} methods suggested in SOP viz turnkey method and work contract method ^{were} ~~was~~ described to them.

Sri Arunlal, AE Chulliar dam made a presentation on desiltation in which salient features of both dams, ^{and} details of analysis carried out, were included. Dr. Udayakumar, Director, KERI Peechi explained the results of bathymetric survey done in these reservoirs. The results obtained as per analysis was ^{presented.} ~~detailed to them.~~ It was mentioned that as per SOP, investigation is done on 50 m x 50m size grid on which Dr. Soman from Dr.Raji Menon team expressed doubt on the selection of grid size. He also enquired about the fluctuations in reservoir during the dry and wet period which was informed as about 15 m. The average reduction in storage of both the dams over an average period of 50 years was informed to be 10%. Environment Management Plan of both these dams prepared by Ultratech Kochi was also presented in which management programme of environment during desiltation process and restoration afterwards with respect to noise, air, water, land are included.

Dr.Raji Menon introduced his team comprising of "pneuma dredging system" and ^{Russia presentation} based Chimmasheexport" and each one made a presentation on their respective area. The first ^{by the Kochi unit of an} was of "Pneuma Dredging System for desilting of dams and reservoirs", a ^{Kochin based} international firm with projects worldwide, having Kerala State Maritime as technical nodal agency. They started their presentation appreciating our state for bringing out the first SOP in the country. The technicalities of pneuma system was detailed and the highlights of pneuma system presented were

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|----------------|--------------------------|---------------------------|------------------|
| Compact design | Simplicity of operation | Low working cost | No wearing parts |
| Long endurance | Minimum maintenance cost | High solid content output | |

No dredging depth limit Maximum flexibility Long distance transportation of slurries

And their presentation concluded with comparison of different dredging systems of "Clam shell dredge, Cutter Suction Dredge and Pneuma dredge".

The advantages of ^{the system as} pneuma dredge claimed ^{by the agency are}

- High concentration of solid in the dredged mixture upto 90% in mud material. *Chief Engineer Mechanical raised concern over the authenticity of this claim.*
- Wide range of output from 40 to 1800 cumt/h of operations
- No rotating cutters-turbidity inexistent during dredging of mixture. *They ensure a turbidity of 1/2000 times lesser than that used in Cutter section which is the main highlight of the system since in most of our reservoirs, drinking water pumping is involved and hence disturbance is to be controlled.*
- Wide dredging depth from a few metres to 200 metres
- Numerous assembly possibilities
- No rigid connection
- Efficient desilting even in the presence of trunks on the bottom
- The Pneuma pump can selectively remove contaminants layer by layer without disturbing any unwanted layer. This point was elaborated in reply to the query raised by Chief Engineer Irrigation & Administration Sri Joshy regarding the previous experience of finding Hydrogen Sulphide causing foul smell during desiltation of Malampuzha reservoir
- They can traverse between logs and debris.

The demerit admitted was

- The impossibility to operate with rock and hard bottom material:

Theses pumps are now used in Kandla port.

The committee enquired about the maximum particle size that the pump can handle. It was ensured that the data will be made available.

They presented a proforma which requires data input from the client; based on which they claimed to assure the output, time requirement, type of equipment to be used etc.

It was decided to share the sedimentation details of all dams and the EMP prepared for Chulliar & Mangalam to this group.

Dr. Raji Menon suggested that as of now they being the pioneer in this field, two pilot projects namely Chulliar and Mangalam dam alone would not be enough. It was suggested that, at least work of 10 big dams should be tendered initially. He also opined that if needed they can support the department in studies prior to the desiltation process foreseeing the limitations in infrastructure for the department for completing the study process in the timeframe. It was also decided to address Government to modify the period stipulated for desiltation in SOP. Dr. Raji Menon assured that the queries can be answered within a week. It was informed that the Government decision is to take up the work either in turnkey or work contract basis. It was also informed that "international bidding" will be done for the work in two cover system inviting technical and financial bid, since being a Government department, the usual norms will have to be followed.

The meeting concluded at 02.00 pm with decision to take up the matter with Government after getting the following points clarified by the team.

1. Turbidity during operation should be more specified.
2. Actual solid output and maximum particle size of the silted accumulations that can be handled by the pneuma pump.
3. Separation Technology adopted.
4. Availability of videos related to operation of machine.
5. Distance upto which pneuma pump can discharge.

[Signature]
1.8.18

Chief Engineer (I&D), IDR B

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DS DP2
28-07-18

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RV
28/7/18

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List of members present in the committee

1. Sri Shamsudeen.K.H, Chief Engineer IDRB, Thiruvananthapuram
2. Sri Joshy K A, Chief Engineer, Irrigation and Administration
3. Sr Shaji V S , Chief Engineer, Mechanical , Thiruvananthapuram
4. Sri A P Surendra lal . Deputy Director, Mining & Geology
5. Dr.Udaya Kumar , Director, KERI, Peechi
6. Sri Padmakumar , Executive Engineer, Malampuzha
7. Smt Sunnethi . M V, Assistant Executive Engineer, MAangalam Dam
8. Smt Reethamma Varghese, Asst Engineer, Dam Section Mangalam dam
9. Sri Arunlal K, Asst Engineer, Chulliar dam
10. Smt Shaubi M Khan , Asst Engineer, Investigation
11. Smt Rema KP, Joint Director, IDRB
12. Smt Manju S Deputy Director, IDRB
13. Smt Letha Kumari Assistant Director, IDRB
14. Sri Rajesh.S, Assistant Director, IDRB
15. Smt Deepa K.S , Assistant Director, IDRB
16. Dr Raji Menon, Member, Chimmash export
17. Er A Santots Kiy, Dty Gen A/o Chimmash export
18. Dr K Soman , Chimmash export
19. Sri Aneesh Kiz , Pneuma, Cochin
20. Smt Reeja Hari , Pneuma, Trivandrum