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AWARENESS ON POLAVARAM DAM – THE NEED FOR AN ALTERNATIVE

1. Technical Alternative (T.A) for the Polavaram Head works (PH), suggested by me are presently being discussed at the state and the central levels. The state Government has a responsibility to work out such an alternative for the headworks, in the interest of the state, in order to make the much needed project possible. The earlier design of a high dam for the headworks, which was found feasible and desirable about 6 years back, is now proving to be risky and extremely undesirable due to certain unprecedented later developments, noted below. When an innovative concept was presented to solve the problems, it has to be either to be improved wherever needed or a better alternative worked out in order to solve the problems now faced. Otherwise the project would get delayed extraordinarily, even though the state Govt. is keen to complete it early. This alternative given has to be treated as a helping hand in the direction of quickly completing the project. The following two main issues will have to be addressed and solved, first, before undertaking any discussions on technical alternative suggested. Any such technical discussion would only be futile, since the alternative is suggested only to solve the problems faced, and not as an end in itself. Again this alternative should be considered as a solution to the existing problems and not a problem by itself.

2. Issue 1: Peak flood flows and stability of earthen dam:

An earth cum rock fill dam (commonly called as earthen dam) is proposed to be built at Polavaram, which is located almost at the end of the river, where the peak discharge of the river occurs. The maximum ever observed discharge at this place in Godavari is 24% more than the corresponding one of river Ganga, though Godavari catchment area is about one third and annual yield is about one fifth of that of Ganga. (vide CWC journal Bhagirath Jan – March 2001) . Only 4 rivers in the world have more flood peaks than Godavari and none of them have earthen dams, where such peak flood flows occur. Other major rivers in the world which have lesser peak flood discharges than Godavari such as Yangtze (biggest river in China), Mekong, Mississippi(biggest in US), Volga (Russia), do not have earthen dams at locations where such high flood flow conditions occur. Nile, the longest river in the world, has an earthen dam, at almost at the end of

the river, but the peak flood of this river at this place is less than one sixth of that of the Godavari. Though the proposed earthen dam at Polavaram, may be the first of its kind in the world, viewed according to peak flood flow parameters, it does not mean that we should not construct an earthen dam at this place. We can still do it, because we have a proven technology for the same. But this confidence was shattered due to the occurrence of a huge flood in the River Krishna (an adjacent catchment) during October 2009. This flood was estimated as 2.7 times more than the ever occurred flood, during the past 100 years. If a similar flood in river Godavari occurs, at any time in the future it would be of the magnitude of about 90 lakh cusecs. The possibility of this cannot be ruled out as we had practically witnessed such an event only a few months ago in a contiguous catchment. The Possible Maximum Flood (PMF) was revised by the Central Water Commission and determined as 50 lakh cusecs, a few years back. Even though the dam spillway is designed for this huge discharge, it still falls short of the above extraordinary flood of 90 lakh cusecs. In such an event the breach (dam break) of the earthen dam is very much real and not hypothetical. If past few years occurrence of breaching of earthen dams in Andhra Pradesh (of about the same height as Polavaram) is any guide, the breach can occur suddenly without any warning even without receiving the P.M.F. With regard to experience in the case of masonry/ concrete dams, they are relatively free from risk, since even when water over flowed over them, structures did not breach. In the case of Polavaram dam, it is not possible to build a masonry / concrete dam due to lack of rocky strata at any reasonable depth in the foundations.

Studies revealed that in the event of a dam break of Polavaram dam occurring in a night at about 10 pm, 46 lakh people living in the delta, would have a watery grave before they get up in the morning. It is this real threat that frightens anybody and the need for seeking an alternative technical proposal (that would give the same benefits as the dam) would arise. This is all the more necessary, since the proposed dam is located very close to a huge habitat area, where the density of population is the highest in the state. The technical alternative is a step in this direction and the technical details will have to be formulated/ improved, so as to make it possible, or else another alternative solution will have to be worked out to solve the issues. Since the progress on the headworks is almost nil during the past 5 years, this alternative is possible. To proceed on the construction of the dam on the basis that there is no risk, would amount to gambling with the lives of 46 lakh people, and the planners would be well advised to consider whether it is worth taking such a risk when there is a scope for exploring alternative solutions.

When there is no dam and a flood of about 90 lakh cusecs occurs, it would be gradual and increases over a few days. In such a situation people would have time to vacate their habitats as per the advance flood warnings, and move to the assigned safe places. Where as in the case of a dam break, the Tsunami like flood wave would occur suddenly giving no scope for the people to vacate. This is the main difference between a natural calamity and a man made one. In this connection it would be apt to recollect the words of caution of ICOLD (International conference on large dams), Director of Dams, Pennsylvania and others that the worst large scale human destruction can be caused by manmade activities, firstly through atomic plants and secondly through the major dams. It would also be relevant to note the Marphy's Law (followed by NASA, USA) namely that "if there is a possibility of a failure, it would certainly occur sometime or the other". Thus, if there is an alternative to a major earthen dam, it has to be preferred at all costs.

2nd issue : Submersions in Orissa and Chattisgarh States :

The Polavaram dam would submerge 23 Villages in Chattisgarh and Orissa States (13+10) as stated by Andhra Pradesh and more than 35 villages as contended by the two upstream states. These two State Governments were objecting during the past six years, to the various clearances given by the Govt of India, and being unsuccessful, they had taken up the issues to the High Court of Orissa and the Supreme Court. Among their several other objections, their main contention is that the conditions prevailing at the time of issue of the Bachawat award in 1980, have since changed now, and due to this, the award is not valid, and hence will have to be reopened and that the award itself made a provision for such reopening of the issues whenever the conditions changed. According to these States, the condition of 36 Lakh cusecs flood (on which the award is based) is changed to 50 lakh cusecs flood and that due to this, more than 35 Villages (as against 23 earlier) would get submerged and that they are not agreeable to the Polavaram dam on account of this. These issues are now pending with the Supreme Court and these States have requested for a stay on the construction of Polavaram dam. In this connection, it would be of interest to note how the Orissa government had stalled the construction of Vamsadhara Stage – II project and Jhanjhavathi project of Andhra Pradesh on the plea of submission of a few villages, in that State. The expenditure incurred by Andhra Pradesh Government about 20 years back, is lying as waste all these years as the full benefits of these projects could not be realized. The sad thing about this, is that nobody knows when these two irrigation projects can be completed if at all they can be done. If this experience is any guide, the Andhra Pradesh Government would be well advised not to proceed with the construction of the

Polavaram dam without obtaining the consent of Chhattisgarh and Orissa states. 20 years back the wastage was in tens and hundreds Crores of rupees, and if Polavaram dam is stalled, the wastage would then run into thousands of Crores of rupees, as already over Rs. 3000 Crores, was spent on this project. Planners will have to note this as huge amounts of tax payers money is involved in such capital expenditures. The technical alternative proposed is exactly intended to address these serious problems and solve it. In this proposal, there will not be any submersion of even a single village in Chhattisgarh and Orissa States. The additional benefits of this alternative proposal as stated in Para 3 of the report) are incidental.

3. CONCLUSION: From the above discussion, it can be seen that the technical alternative proposed is only intended to solve the above two main issues arising now, and also to ensure that the full benefits of the earlier proposal are achieved and the progress on the project speeded up so as to derive the benefits early and simultaneously ensure the safety of lives of 46 lakh people living in Godavari Delta. In fact the State Government will have to work out such solutions on their own, in the interest of common good, and therefore treat this alternative proposal as a helping hand in this direction.

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In addition to experience in field investigation, planning, design, research and water management in irrigation projects, the author had field experience in the construction of Rallapadu Project, Hirakud Dam (Orissa), Nagarjunasagar Dam, Mid Pennar Dam, Tungabhadra High Level Canal, Uravakonda Deep Cut, Kalyani Dam, Sriram Sagar Dam, Telugu Ganga Project (Noted in the order of his Service from 1950 to 1989). His later field experience in irrigation projects was in the African Countries, during his assignments with the World Bank and in the Asian Countries during his assignments with the United Nations (O. P. S.)