

## ORISSA FLOOD DISASTER

### WRONG OPERATION OF HIRAKUD DAM RESPONSIBLE THE DISASTER COULD HAVE BEEN AVOIDED/ REDUCED

#### From the History books:

"The Hirakud project is a work which will not cause more misery to the people but it will bring about an end to their miseries".

*Prime Minister Jawaharlal Nehru on April 12, 1948,  
while laying the foundation stone for the Hirakud Project*

"Sage Valmiki, author of the immortal Epic Ramayana, in his own unique way, declares that people who always sing praises in sweet and soft language are easily found, but those that give, or listen to, wholesome but unpleasant advice are rare... it (the Hirakud project) will not bring about the anticipated miraculous transformation of the province but... would bring about bankruptcy of the province of Orissa."

*Chief Engineer (Mysore) M G Rangaiya in August 1947*



Look at the contours of the disastrous consequences of the current Orissa floods in Mahanadi River basin: According to Engineer in Chief, Water Resources Department of Orissa, this is the worst floods in Orissa since 1982. 20 lakh people of 2960 villages in 110 blocks and 870 gram panchayats in 17 districts including Kendrapara (18 embankment breaches), Jagatsinghpur (16 breaches), Puri (4 breaches) & Cuttack (30 breaches) have been affected, 15 lakh are marooned, 1.8 lakh people are evacuated, hundreds are feared killed, embankments have breached at 78 places by 3 pm on September 22, 2008. Over 15 lakh ha of cropped land is submerged, destroying all the crops on those lands, destroying the possibility of next crop in most of those lands.

Now let us see what caused this flood disaster? According to the Report (Aug 2007) of the High Level Committee on Hirakud Dam (HLCH) appointed by Orissa Government (see: <http://www.dowroissa.gov.in/NEWS/Hirakud%20HLC/HirakudHLC.htm>), safe level of flow in Mahanadi at Mundali barrage (located at the delta end of the Mahanadi river basin) is 10 lakh cusecs (cubic feet per second). This means that if the flow in Mahanadi at Mundali is below 10 lakh cusecs, there won't be any flood disaster in the lower Mahanadi districts. The disaster started this year on Sept 19, when by 0900 hours, flow at Mundali was already at 13.83 lakh cusecs. This flow increased to 15.81 lakh cusecs by 1200 hours on Sept 20. It did reduce there after, but remained above the safe limit of 10 lakh cusec till 0900 hours on Sept 23, by when the flow had reduced to 7.84 lakh cusecs.

So what caused such high flows? Part of the explanation lies in high rainfall in the Mahanadi basin area in Orissa, but the real story lies in the upstream. Upstream of Mahanadi, as the river enters Orissa from Chhattisgarh, there is a huge dam called Hirakud Dam. This dam was releasing huge quantities of water throughout the high flood period in Orissa. The releases from Hirakud were

4.63 lakh cusecs at 1200 hours on Sept 19, 7.91 lakh cusecs on Sept 20, 5.72 lakh cusecs on Sept 21, 3.79 lakh cusecs on Sept 22 and 1.13 lakh cusecs on Sept 23

**The Full reservoir level of the Hirakud dam is 630 feet and the dam was already at that level a day before the flood disaster started in Orissa. After the dam reaches FRL, the dam operators have no option but to release all the water that flows into the dam. So the Hirakud dam operators released all the water that was flowing in.**

(see: <http://www.dowroissa.gov.in/FLOOD/DailyFloodBulletin.htm>). At each stage, when the flow in Mahanadi River at Mundali was above the safe limit of 10 lakh cusecs, if the releases from Hirakud were subtracted from the flow at Mundali, the flow at Mundali comes down below 10 lakh cusecs. (All the figures quoted above are from the Orissa government's daily flood bulletins.) So it is clear that if Hirakud had not made releases during this period, the flow at Mundali would have been below the safe limit of 10 lakh cusecs and there would have been no flood disaster in Orissa, in any case, the flood would have caused much, much less damage.

**The Hirakud dam is one of the few dams of India where flood control cushion has been provided in its storage capacity. In fact, as the report of the HLCH notes, "Hirakud Dam Project is primarily planned for flood control/ management." The idea is that the flood cushion portion of the storage should not be filled right till the end of the monsoon. By filling up the reservoir to full capacity before the end of the monsoon, the dam operators destroyed the flood control role of the Hirakud dam and thus brought an avoidable flood disaster on the people of coastal Orissa districts.**

Hirakud dam operators released all the water that was flowing in, and in fact on Sept 20, they were releasing *more* water that the inflows into the reservoir.

The story so far seems very straight, logical. The problems start now. Hirakud dam is one of the few dams of India where flood control cushion has been provided in its storage capacity. In fact, as the report of the HLCH notes, "Hirakud Dam Project is primarily planned for flood control/ management." The idea is that the flood cushion portion of the storage should not be filled right till the end of the monsoon, which is in the first week of Oct. By filling up the reservoir to full capacity before the end of the monsoon, the dam operators have destroyed

(see: <http://www.dowroissa.gov.in/FLOOD/DailyFloodBulletin.htm>). At each stage, when the flow in Mahanadi River at Mundali was above the safe limit of 10 lakh cusecs, if the releases from Hirakud were subtracted from the flow at Mundali, the flow at Mundali comes down below 10 lakh cusecs. (All the figures quoted above are from the Orissa government's daily

So then why did Hirakud dam operators not keep this in mind when they knew that the releases from the dam are creating the worst flood disaster in Orissa since 1982, creating all the damages described above? Well, for the simple reason that the dam was already filled to the capacity by Sept 18, 2008. The Full reservoir level (FRL) of the Hirakud dam is 630 feet and the dam was already at that level a day before the flood disaster started in Orissa. After the dam reaches FRL, the dam operators have no option but to release all the water that flows into the dam. So the

the flood control role of the Hirakud dam and thus brought an avoidable flood disaster on the poor people of coastal Orissa districts. This disaster could have been avoided or hugely reduced, had they operated the dam keeping in mind the flood cushion role of the reservoir and made substantial releases from the dam before Sept 18, when the flow at Mundali was way below the safe limit of 10 lakh cusecs.

Moreover, ever since Aug 1, 2008, when the rule curve for current year came into operation, the Hirakud dam operators have kept the water level at the Hirakud Dam way above the rule curve recommended for the dam, which is currently supposed to be followed.

For example, on Aug 1, 2008, the recommended water level at Hirakud dam was 590 feet (this is the dead storage level of Hirakud dam), but the actual water level on that date this year was already way high at 607.5 feet. On Aug 13, 2008, the water level was 618.5 feet, against the recommended level of 606 feet. On Sept 10, 2008, the water level was 627 feet, just three feet below the full level, when the recommended level was 623 feet. And by Sept 18, the dam was full to the brim.

In fact, similar incidents had happened in 1982 and 2002 and it seems no lessons have been learnt from those disasters, says well known flood expert Dinesh K Mishra of *Barh Mukti Abhiyan*. The 2006 flood in Surat was also entirely due to the wrong operation of the Ukai dam on Tapi river, upstream from Surat in South Gujarat. Unfortunately, no dam operator ever gets punished in India for wrong operation, and so they are simply not bothered to follow the rules.

**Need for reassessment** In fact, considering that a significant portion of the live storage capacity of Hirakud has already been silted up, there is need for a review of the 1988 rule curve of the Hirakud dam operation (currently supposed to be followed), so that the reduced live storage capacity is reflected and the levels are appropriately adjusted for the various dates. Here it may be noted that when the Hirakud dam was commissioned, the dam filling was supposed to start only on Sept 1, as against Aug 1, as per the rule curve adopted in 1988. As HLHC has noted, "As per the original project report

(1953), the reservoir was to be maintained at Dead Storage level to utilize the full live storage space for flood control up to 1<sup>st</sup> September and impoundment was to commence thereafter for filling up to full reservoir level by the end of October." It is clear from the experience of

this year, as well as the experience of earlier years after 1988, that the 1988 rule curve needs a review as it is leading to greater flood disasters.

**Dubious Data of CWC** Here it may be added that the Central Water Commission (CWC) of the Government of India has been using

completely outdated figures of reservoir capacities. For example, for Hirakud, while the HLCH has said that the live storage capacity of Hirakud in 2007 was down to 4.647 Billion Cubic Meters (BCM) (down from 5.818 BCM at the time of start up in 1957), CWC's reservoir storage

website ([http://www.cwc.gov.in/Reservoir\\_level.htm](http://www.cwc.gov.in/Reservoir_level.htm)) says the Hirakud's live storage capacity is 5.378 BCM. It is also shocking to note that CWC's flood forecast site for the first time (during the current phase) mentioned the Mahanadi floods only on September 19, 2008, after the news was already out in the media. What is the value of such forecasts of CWC?

**Will those responsible be held accountable?** The

Orissa government needs to answer to the people of Orissa and the nation, why this shocking manmade disaster was allowed to happen and what it would do to ensure that those who are responsible for the wrong operation of the Hirakud dam are held accountable? The minimum that needs to be done is to institute a credible, independent enquiry with suitable open ended terms of reference into the role of operation of Hirakud dam in inviting flood disaster for Orissa. The enquiry should also go into the issue of scores of breaches of the embankments. It should hold the responsible officers and ministers accountable and recommend the quantum of exemplary punishment.

In the meantime, it is the duty of the government of Orissa to ensure that proper relief, compensation for all the losses and resettlement is provided to the affected people in a dignified manner. Orissa government won't be doing a favour to the people in doing that, it would be their duty to do that.

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[www.sandrp.in](http://www.sandrp.in)

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**Moreover, ever since Aug 1, 2008, when the rule curve for current year came into operation, the Hirakud dam operators have kept the water level at the Hirakud Dam way above the rule curve recommended for the dam. The rule curve itself is outdated in view of the siltation of the reservoir, making it all the more imperative that the water level in the reservoir should be kept below the level recommended in the rule curve.**