

## **Minutes of the twenty fifth meeting of National Committee on Dam Safety (NCDS) held in CWC New Delhi on 16.12. 2003**

The 25<sup>th</sup> meeting of the National Committee on Dam Safety (NCDS) was held on 16<sup>th</sup> Dec 2003, in the Committee Room of Central Water Commission, 3<sup>rd</sup> floor, Sewa Bhavan, R.K.Puram, New Delhi under the Chairmanship of Shri R.Jeyaseelan, Chairman, CWC & NCDS.

List of officers / representatives of various States / Organizations who attended the meeting is given at Annex I.

At the outset, Chairman, CWC & NCDS welcomed the members and others present. After a brief self introduction by all, Chairman requested Chief Engineer (DSO), the Member Secretary of NCDS, to take up the agenda points.

### **25.1.0 Confirmation of the minutes of the 24<sup>th</sup> meeting of NCDS**

Chief Engineer (DSO) and Member Secretary, NCDS informed that the minutes of the 24<sup>th</sup> meeting were circulated to all members vide letter No. 3/19/NCDS/DSM/2003/304-343 dated 21 March 2003 and no comments on the same from the States / Organizations have been received. CE (DSO), therefore, requested for confirmation of the minutes of 24<sup>th</sup> meeting as circulated. All the members present at the meeting agreed to the same.

### **25.2.0 Schemes for funding Dam Safety activities by the States/Centre**

Member Secretary informed the members that a proposal "Dam Safety Assurance Rehabilitation & Disaster Management Project (DSP-II)" has been sent to World Bank for taking up the same for funding on the pattern of Dam Safety Assurance and Rehabilitation Project (DSARP) funded by them. The scheme is under their consideration. Member from Kerala State Electricity Board (KSEB) raised a point regarding non inclusion of KSEB dams in the proposal. It was clarified by Member Secretary that presently those dams were included in the scheme as per the proposals received from the State Governments concerned. This is not a final list and can be reviewed before final acceptance by World Bank. Member (D&R) also clarified regarding the criteria adopted for selection of dams.

The representative from Maharashtra informed that out of 13 major and 29 medium dams proposed by them, only 10 are included in the scheme for rehabilitation. Clarifying the issue once again, Member Secretary informed that the States may review the dams to be taken up for rehabilitation at the time of approval of the scheme.

### **25.3.0 Review of National Scenario**

Member Secretary requested the members present to present details regarding their respective States. The following was informed:

#### **Madhya Pradesh**

Regarding the breach in Jamunia Dam (M.P), the member informed that the remedial measures to be carried out have been finalized and second stage strengthening works have been taken up. The member was requested to send a detailed report after the work is completed.

#### **Uttar Pradesh**

Maudha Dam: As regards the seepage problem of Maudha Dam, member from Uttar Pradesh informed that field officers could not inspect the galleries of the dam because of heavy leakage. Member (D&R) suggested that a detailed report, after inspection, may be sent to DSO, CWC, so that the problem could be assessed and remedial measures could be suggested. Uttar Pradesh was requested to furnish the detailed inspection report.

Rajghat Dam: Member Secretary requested the Director, Dam Safety Rehabilitation Directorate (DSR) to explain about the findings of his visit to the project. Director (DSR) briefed the Committee about his visit and informed about the status of reported cracks in the earthen embankments. He further informed that documents at the site are not being maintained as per the check list. He also intimated that Matatila-Rajghat dam need to have a joint operation manual and the matter needs to be coordinated between Uttar Pradesh and Madhya Pradesh. Member from Uttar Pradesh also briefed about the difficulty in measuring the seepage due to failure of V-notch.

#### **Gujarat**

Member from Gujarat was appraised NCDS regarding rehabilitation work carried out at Thoriyali dam. As regards rehabilitation works of dams in Kutch and Saurashtra, the member informed that out of 185 dams, for 160, bids were prepared and work on 29 dams was in progress. All works are planned for completion by September, 2005. Member (D&R) suggested sending a detailed report regarding works carried out for rehabilitation of the earthquake affected dams of the region. Detailed reports are to be sent by Gujarat.

## **Punjab**

Member from Punjab informed about the problems being faced in respect of foundation of Ranjit Sagar Dam. Member from GSI explained the technical details about the geological problems being faced in the dam foundation. He briefed about the seepage problems in 4 zones that have been identified in the foundation gallery. In zone-I, seepage could be plugged after grouting. In zone-II and III, no piezometers are available to measure the seepage and in zone-IV, the seepage is alarming. After grouting twice, seepage has reduced. He mentioned that if the seepage continues, it may lead to deterioration of the rock condition, joints and ultimately may lead to piping. Chairman, NCDS opined that the issue needs to be followed up closely and asked the member from Punjab to get in touch with Dam Safety Organization, CWC with complete details in order to work out proper measures required at site.

## **Damodar Valley Corporation (DVC)**

Representative from DVC informed the members that Konar Dam has developed some cracks and the DVC has taken up remedial measures. Further, Hydel Power Generation is proposed at this dam and requested for a CWC team to visit the dam. Member (D&R) asked about the action taken on Dr.K.C.Thomas' report and wanted to know what is expected from CWC team visit. Member from DVC said that since power generation is proposed, whether the height of the dam could be increased. Member (D&R) asked DVC to refer the matter to CWC alongwith a detailed report.

## **Maharashtra**

Representative from Maharashtra informed that Sondeggar dam has failed on account of improper alignment of cement pipes and improper jointing. However, because of dam failure, there was

no casualty. Government of Maharashtra has appointed a committee to look into the cause of failure and to suggest remedial measures. Chairman, NCDS, stressed about the importance of proper compaction around the pipes. Member Secretary requested for a detailed report on the issue. Member from Maharashtra wanted to know whether any standard criteria about leakage through Masonry dams were available. Member (D&R) replied that no such standards are available, but some recommendations from the researchers were there, published by CBIP.

### **Andhra Pradesh**

Representative from Andhra Pradesh informed that one gate of Annamayya Project has been washed away and rectification measures are under way.

#### **25.4.0 Updating of Guidelines on Dam Safety prepared by CWC**

Member (D&R) informed that CWC has received some response from Karnataka as well as Maharashtra and requested other members to furnish their reply. Representative from BBMB informed that they are looking into the matter and would be making some suggestions.

#### **25.5.0 Dam Safety Legislation**

Member Secretary explained about the importance of bringing in Dam Safety Legislation and requested the members to appraise about the latest position.

Representative from Kerala (KSEB) informed that the State has recently passed one act titled "The Kerala Irrigation and Water Conservation Act -2003." On this, Member (D&R) and Member Secretary clarified that the above act has not covered the dam safety aspects in a detailed manner. As such, a legislation on the lines as proposed by CWC needs to be passed in the State, which makes carrying out regular inspections and monitoring compulsory for all large dams in the State.

Representative from Maharashtra informed that legislation is under active consideration with the Government and shall introduce it in the assembly for passing. Representative from Andhra Pradesh said that consent to the act, [as proposed by CWC] has already been given by the Government of Andhra Pradesh, Tamil Nadu has submitted their proposals to the Govt.

It was clarified by the Member Secretary that consent is not sufficient, but the act has to be passed by the State, and advised to take up the matter with the State Government at the earliest. Representative from DVC wanted to know about the legislation in respect of dams owned by them alone, as no State has owned those dams. On this aspect, Chairman, NCDS and Member (D&R) clarified that the dam owners are responsible for the safety of the dams but legislation is to be passed by State Governments only which will cover all dams in the State.

Representative from Bihar informed that they have sent the legislation to Law Department for vetting.

Member Secretary informed the members that the Dam Safety Act 2002 as proposed by CWC is amenable to changes, if the States so desire to suit their conditions. Some States have mentioned that no penalty clauses are there in the Draft Act circulated by CWC. Member Secretary informed that it was not considered desirable to include this in the Draft Act as all States may not like to incorporate the same in the Act. He requested the members to speed up the process of bringing in the legislation at the earliest.

#### **25.8.0 Preparation of Emergency Action Plans and inundation maps**

Initiating the discussion, Member Secretary informed that the progress in respect of preparing Emergency Action Plan (EAP) is lagging. Member (D&R) asked the members to expedite preparation of EAPs and inundation maps for major dams in their States. For the dams which have downstream areas in another State, it was suggested to prepare the EAPs and inundation maps up to the boundary of the State. Some of the members present requested for some guidelines on preparation of EAPs. Director (DSR) informed that the States / Organizations who want to initiate the preparation of EAP can request DSO, CWC for the guidelines so that the same can be sent. Representative from Maharashtra informed that EAP and inundation map are being prepared in the field offices for 44 Cat - I and 42 Cat - II dams. Dam Break Analysis of Isapur dam was completed. Further he wanted to know whether any training on Dam Break Analysis could be given to their engineers either at Nasik or Pune. Representative from Andhra Pradesh wanted to know whether any workshop could be held at Hyderabad. For this, members were asked to send the proposal to DSO, CWC for consideration.

## 25.7.0 **Compilation of data books, preparation of completion reports of large dams, preparation of O & M manuals**

Member Secretary explained the importance of preparing O&M manuals, data books and completion reports and desired to know the progress in this regard from various States as not much information was available in DSO, CWC.

Representative from Tamil Nadu wanted to know whether any software is available in this regard. Further he wanted to know about the preparation of completion reports. Member (D&R) explained that the completion report should show the difference between the designed and conceptualized parameters for the structure as against those for which it has been actually executed. The report should also contain details of any special problems encountered and how they have been resolved.

Members from Kerala, Madhya Pradesh, Andhra Pradesh and DVC appraised the Committee about the progress in compilation of data books, completion report etc. The present status, in respect of dams of National Importance as received from different States, is as below:

SI No	State	No. of NI Dams	Name of NI Dam	Status regarding preparation of		
				Data Book	Comp. Rep.	O & M Manual
1	Andhra Pradesh	4	Nagarjunasagar	Available	Under preparation	Under preparation
			Sriramsagar	-do-	-do-	-do-
			Srisaillam HE Project	-do-	-do-	-do-
			Somasila	In progress	-do-	-do-
2	Chhattisgarh	1	Manimat (Hasdeo Bango)	Not available	Not available	Not available
3	Gujarat	2	Ukai	Available	Under preparation	Under preparation
			Kadana	Available	-do-	-do-
4	Jharkhand	3	Maithon	Not available	Not available	Available
			Panchet Hill	-do-	-do-	Available
			Tenughat	-do-	-do-	Not available
5	Karnataka	12	Krishnarajasagar	Available	Not available	-do-
			Tungabhadra	-do-	Completed	-do-
			Bhadra	-do-	Completed	-do-
			Linganamakki	-do-	Not available	-do-

			Malaprabha	-do-	Completed	-do-
			Hidkal	-do-	Completed	-do-
			Narayanpur	-do-	Not available	-do-
			Hemavathy Project	-do-	-do-	-do-
			Supa	-do-	Completed	-do-
			Mani	-do-	Completed	-do-
			Lakhya	Not available	Not available	-do-
			Almatti	-do-	-do-	-do-
6	Kerala	5	Kakki (KSEB)	Available	Available	Available
			Idukki (KSEB)	-do-	Not available	-do-
			Cheruthoni (KSEB)	Not available	-do-	Not available
			Kulamavu (KSEB)	-do-	-do-	-do-
			Idamalayar (KSEB)	Available	-do-	Available
7	Madhya Pradesh	3	Gandhisagar	Not available	Under preparation	Under preparation
			Tawa	Available	Under preparation	Available
			Bargi (R. A. B. S. Project)	Available	Under preparation	Under preparation
8	Maharashtra	5	Koyna	Available	Not available	Not available
			Paithan (Jayakwadi)	-do-	-do-	Available
			Ujjain	-do-	-do-	Not available
			Isapur	-do-	-do-	Available
			Totladoh (Pench Hydel)	-do-	Available	-do-
9	Orissa	4	Hirakud	Available	Completed	Prepared but approval awaited
			Balimela	Available	Not available	Not available
			Rengali	-do-	Completed	-do-
			Upper Kolab	-do-	Completed	-do-
10	Punjab	1	Thein ( Ranjit Sagar )	Not available	Not available	-do-
11	Rajasthan	2	Rana Pratap Sagar	Available	-do-	-do-
			Mahi Bajaj Sagar	Not available	-do-	Available
12	Tamil Nadu	2	Mettur	-do-	-do-	-do-
			Sholayar	-do-	-do-	-do-
13	Uttaranchal	1	Ramganga	Information not available		
14	Uttar Pradesh	4	Rihand	Available	Available	Available
			Matatila	-do-	-do-	-do-
			Rajghat	-do-	-do-	-do-
			Jamrani	-do-	-do-	-do-

15	West Bengal	1	Kangsabati	Information not available		
16	BBMB	4	Bhakra (H.P)	Not available	Available	Available
			Pong (H.P)	-do-	Not available	Not available
			Chamera (H.P)	Available	-do-	Available
			Salal (J & K)	-do-	Available	-do-

**Note:** Bihar does not have any dam of national important. Members are requested to verify the above information and discrepancies if any may be informed.

#### **25.8.0 Periodical inspection of dams and report on dam safety activities**

Certain discrepancies were observed in the agenda in respect of status of inspection of dams. Some of the members informed that the periodical inspection reports have already been submitted. It was clarified that some of the reports have been received after preparation of agenda and some of the reports were not in the proper format or for proper time period. However, the present status as informed by some of the members has been incorporated and is shown below. Chairman suggested to reconcile the status and update the information. Members were requested to furnish the latest information.

<b>SI No</b>	<b>State / Organization</b>	<b>Whether report for 2002-03 is received or not</b>	<b>Remarks</b>
1	Andhra Pradesh	Yes	
2	Bihar	Yes	
3	Chhattisgarh	No	No information available
4	Gujarat	Yes	
5	Jharkhand	No	No information available
6	Karnataka	No	Prepared for 1999-2000
7	Kerala ( KSEB)	No	Prepared for 2001-02
8	Kerala (Irrg. Dept)	No	No information available
9	Madhya Pradesh	Yes	
10	Maharashtra	Yes	
11	Orissa	Yes	



12	Punjab	No	No information available
13	Rajasthan	Yes	
14	Tamil Nadu	No	No information available
15	Uttaranchal	No	No information available
16	Uttar Pradesh	Yes	
17	West Bengal	No	No information available
18	BBMB	No	Prepared for 2000-01
19	NHPC	Yes, for Pre-monsoon only	Advised to submit consolidated report.
20	DVC	No	No information available

#### **25.9.0 Safety review of large dams, once in 10 years**

Member Secretary informed that the safety aspects of all large dams are to be reviewed once in every 10 years by carrying out a comprehensive dam safety review by an independent review panel. Members were requested to provide status regarding the same.

Representative from Maharashtra informed that 27 dams have been reviewed. As it is not possible to review all the dams by one agency, region-wise review panels have been formed to review the safety aspects of the dams. Further he informed that a request has been made to Government of Maharashtra to form a separate review panel for major dams in the State. Some of the other States also informed that the matter is being taken up with their respective Governments.

Representatives from NHPC and BBMB appraised the Committee about the activities of their respective Dam Safety Review Panels (DSRP). Member (D&R) requested for a write up on the activities of these DSRP.

#### **25.10.0 Sub Committees for monitoring safety aspects of inter-State dams**

**Mahanadi River System:** Two meetings of the Sub-Committee have been held (before bifurcation of Madhya Pradesh). Last meeting was held on 23.6.2000. Member Secretary requested the representative from Orissa to inform about the activities of the sub committee on Mahanadi River System. Member (D&R)

wanted to know whether any meeting has taken place between Orissa and Chhattisgarh, which is an upstream State now. Representative from Orissa replied that no meeting could be conducted, as the newly formed State Chhattisgarh has yet to nominate a member.

**Parambikulam Aliyar Project:** Representative from Tamil Nadu stated that there is a sub-committee (of Kerala & Tamil Nadu engineers) to review the safety of dams periodically by carrying out inspections. However, as the owner of the dams, Tamil Nadu is conducting periodical inspections as per laid down procedures and as such there, is no need for this sub committee and can be disbanded. Representative from Kerala insisted for the joint inspection of the dam. Member (D&R) suggested formation of a committee with representation from Tamil Nadu, Kerala and CWC to review the safety status of these dams. Representative from Kerala (KSEB) wanted to raise the issue of Mulla Periyar dam also. Chairman, NCDS intervened and said that since the matter is sub judice, need not be discussed in this meeting.

**Subarnarekha River System:** Representative from Orissa informed that there is no response from the newly formed Jharkhand State about the sub committee and as such there is no progress.

Member from Andhra Pradesh informed that Jalaput Project in Orissa was not being maintained properly and being the downstream State, Andhra Pradesh was concerned about the matter. He requested for formation of a sub-committee.

#### **25.11.0 Review of hydrology of existing dams**

Member Secretary explained the importance of establishing State Hydrological Study Units to carry out hydrology review of existing dams and requested the members to appraise the Committee about the status in their respective States. The following is the status, as explained by the members:

Sl. No.	State / Organisation	Whether HSO Unit established or not	Remarks
1	Andhra Pradesh	No, but likely to be established	
2	Bihar	Separate unit under CDO is functioning	
3	Chhattisgarh	Information not available. To be set up.	
4	Gujarat	Separate unit under CDO is functioning	
5	Jharkhand	Information not available.	
6	Karnataka	Separate cell under CE (IDB) is functioning	
7	Kerala (KSEB)	Yes. Separate unit available	
8	Kerala (Irrg.Dept)	Separate unit under CE (IDRB) is functioning.	
9	Madhya Pradesh	Established under CE (BODHI)	
10	Maharashtra	Separate unit established under CDO.	24 dams were taken up in annual programme
11	Orissa	Yes. Separate unit is functioning.	
12	Punjab	Separate unit established under CDO.	
13	Rajasthan	Separate unit established.	
14	Tamil Nadu	Separate unit not available. But for 2 projects, cells have been established.	
15	Uttaranchal	Not yet established.	Establishing the unit under progress
16	Uttar Pradesh	Work under progress	CWC is doing the review works
17	West Bengal	Information not available.	
18	BBMB	Yes, separate unit available.	
19	DVC	Yes, separate unit available.	
20	NHPC	Yes, separate unit available.	

Member Secretary, NCDS informed the members that CWC is not in a position to carry out hydrological review for too many projects, and the States should take up the issue independently without relying on CWC. Members from Andhra Pradesh, Maharashtra and Gujarat requested to conduct training/ workshop in their States on hydrological studies and particularly design flood estimation for which facilities would be extended.

Representative from IMD volunteered to give lectures and to provide faculty for the workshops.

It was informed that CWC is conducting one workshop on the subject during January, February 2004. Chairman asked the States to nominate their engineers for training.

#### **25.12.0 Instrumentation of Dams**

Representative from Maharashtra spoke about the failure of instruments installed in the dams. The failure is as high as 40%, and wanted to know about the availability of modern/digital instruments. Director, Instrumentation spoke about the availability of (a) Vibrating Wire Instruments and (b) Resistance Wire Instruments and explained the difference between the above two types. Further he said that with proper maintenance of the instruments their longevity could be extended. Member (D&R) spoke about the proper installation of the instruments and said that longevity of the instruments depended upon the proper care during installation. He suggested to procure Remote Operated Vehicle (ROV) with associated instruments for carrying out proper inspections under water and suggested to place trained personnel for operating the instruments. Member from BBMB said that some private operators have ROV equipments. Chairman, NCDS mentioned that ROV equipment was used at Prakasam Barrage in Andhra Pradesh. He informed that some good facilities are available with NIOT, Chennai.

Member Secretary informed that though the annual inspection reports are being received, details regarding instrumentation are not being submitted by the States. The importance of instrumentation in monitoring the health status of the dams was highlighted again and all the members were requested to submit the details about instrumentation also. Representative from Tamil Nadu wanted to know the procedure for replacing the old instruments. Member (D&R) advised him to take up the issue with the Director (Instrumentation), CWC. Representative from BBMB enquired about the finalization of "Manual on Instrumentation." Director (Instrumentation), CWC informed that it would be ready after another 6 months.

#### **25.13.0 National register of Large Dams**

Member Secretary informed that the National Register of Large Dams 2002 has been published and circulated to all the members during the last meeting. He requested all the

members to go through the same and intimate discrepancies, if any, so that they can be incorporated. Some of the States informed the discrepancies in the Register. Member Secretary requested that the information may be sent in writing for incorporating in the Register.

Member from Maharashtra wanted to include some barrages, as the storage area of such barrages was within the definition of ICOLD. Member (D&R) clarified that though the storage area was as per the guidelines, barrages cannot be included in the Register. Member from Maharashtra wanted to know whether any Management Information System (MIS) for large dams was developed. Member Secretary said that it was being taken up during the X<sup>th</sup> Plan.

#### **25.14.0 National Performance of Dams Programme (NPDP)**

Most of the States/Organizations intimated that they were already maintaining websites in their States. Member from Madhya Pradesh intimated that they have launched the website. Members from Maharashtra & Tamil Nadu intimated that they are daily updating the site. Member from Gujarat intimated that their website will soon come up.

Member (D&R) requested for the details of websites. All members were also requested for computerization of the data and setting up a Management Information System. Central Water Commission is at present maintaining a website [www.cwc.nic.in](http://www.cwc.nic.in) and email id for Dam Safety Monitoring Directorate is [damsindia2003@yahoo.co.in](mailto:damsindia2003@yahoo.co.in).

#### **25.15.0 Important issues related to safety of dams.**

Member (D&R) asked the States concerned to send detailed note about the remedial measures undertaken in DSRP– I indicating salient features, actual cost incurred for the work, etc., as already requested by DSO, CWC.

Member from Maharashtra spoke about the problem of leakage in Koyna dam and remedial measures taken up. He wanted to know the latest techniques, methods, literature available for arresting the leakage. He intimated that Maharashtra is planning to organize a seminar on this subject and some other topics. He requested to arrange for faculty to conduct the seminar. Member (D&R) intimated that DSO, CWC could assist in arranging the faculty. Member from BBMB wanted to share their

expertise. He spoke on coal grouting and also volunteered to be a faculty. Member from Rajasthan spoke about the identification & treatment of expansive soils.

The meeting ended with a vote of thanks to the Chair.