

**Minutes of the fourth meeting of National Committee on Dam Safety  
held on 25.5.1989 at Nasik (Maharashtra)**

1. The fourth meeting of National Committee on Dam Safety (NCDS) was held on 25 May 1989 at the Central Designs Organization, Nasik (Maharashtra) under the Chairmanship of Shri M.S.Rao, Chairman, Central Water Commission.

A list of officers who attended the meeting is given at Annex I.

Shri D.N.Kulkarni, Chief Engineer & Jt.Secretary, Government of Maharashtra welcomed the members of National Committee and other participants for the 4<sup>th</sup> meeting.

**2. Dam Safety Assurance Programme.**

Shri Kulkarni then made a detailed presentation of the Dam Safety Assurance framework of the Government of Maharashtra and the findings & recommendations of the Joint Mission (JM) of World Bank / CWC / Government of Maharashtra set up to review the existing Dam Safety Assurance framework of Maharashtra to determine what improvements could be made so as to evolve a model for use by other States. This presentation was followed by further detailed presentations on the present set up and working of CDO by Shri V.C.Shahane, Superintending Engineer (Earth Dams), on Hydrology Unit by Miss Naidu, Executive Engineer, on MERI by Shri G.P.Ralegaonkar, Chief Engineer & Director. Shri V.G.Washimkar, Superintending Engineer (Masonry Dams) and Shri A.B.Mahendrakar, Superintending Engineer (Gates) described the work being done on masonry dams and gates respectively in the CDO.

- 2.1 Shri Kulkarni informed that while the State has a comprehensive Dam Safety Assurance Programme, not much work had been on the preparation of completion reports and hydrological review of existing dams. Proposals for strengthening the Dam Safety Organization and creation of a division for hydrologic safety review were under process.
- 2.2 Chairman then requested the members to give their views on the presentation.
- 2.3 Members expressed their initial personal reaction to the model Dam Safety Assurance Programme and their views were subject to final

decision of their respective State Governments in the matter. BBMB also gave a presentation of their Dam Safety Activities.

Brief write ups given by members from Karnataka, Kerala, Gujarat, Orissa, Rajasthan & Tamil Nadu and IMD are enclosed as Annex II to VII.

- 2.4 After a detailed discussion on the subject, the Committee concluded that the model evolved by Government of Maharashtra was very comprehensive and should form a basis for adoption by other States with suitable modifications depending upon the number of dams in the State. Need for independent reviews once in 10 years was accepted. Implementation of remedial measures was another aspect which should be expedited. Progress on Dam Safety Assurance Programme was subject to adequate financial provisions. The State Governments of course would have to allot funds for effective implementation of Dam Safety Assurance Programme. Thereafter, the agenda was taken up for discussion.

#### **Item No.1: Confirmation of the minutes of the third meeting.**

It was decided that item 8 of the minutes may be amended as under:

##### **"8.0 Setting up of hydrological unit in the State**

- 8.1 The States of Bihar, Gujarat, Karnataka Madhya Pradesh & Maharashtra intimated that a hydrological unit was functioning in their States. BBMB also said that a hydrological unit was functioning in their organization. The representative from Maharashtra informed that action was being taken for establishing an additional hydrological unit in the State. Chairman desired to know the position of this subject in other States. Rajasthan's representative intimated that their Irrigation Department had a Dy. Director for hydrology, but no review had been conducted for the hydrological safety of dams in the State. Representative from Bihar informed that though a cell on hydrology exists, no work had been taken up for hydrological review. Representative from Uttar Pradesh mentioned that hydrology unit in his State dealt with new dams and review of hydrological aspects of existing dams was not conducted.
- 8.2 Chairman stated that since the hydrological review of existing dams was imperative from the point of view of safety of dams, it was necessary to write to the Irrigation Ministers of States for establishing an independent hydrological unit in each State, and

also to train a large number of engineers from the States on hydrology.

- 8.3 The existing intake of the P.G. Diploma Course in hydrology would need to be increased for meeting the further requirements of trained persons in hydrology and related subjects in future. Keeping in view the future requirement there was a need to admit fresh graduates into the P.G. Programme of hydrology and due emphasis should be given for the training of candidates having scientific background."

With the above amendment, the minutes of the third meeting of NCDS were approved.

#### **Item No.2: Review of National Scenario.**

- 2.1 Members expressed that the operation of dams during the past six months, i.e. since the last meeting, was satisfactory and there was nothing special to report to the Committee.
- 2.2 Members would prepare a brief note on the subject of operation of reservoirs during monsoons & post-monsoon inspections and present the same during the next meeting.

(Action : all members)

#### **Item No.3 (a) : Compilation of National Register of Dams**

- 3.1 It was decided that Members / States should examine the list of dams sent by their States to check up if all dams as per ICOLD criteria, i.e. dams between 10 and 15 metres in height subject to certain conditions were included or not. Dams under various agencies other than Irrigation / Water Resources Department should also be included in the list.

(Action : Members)

- 3.2 It was decided that only dams on which physical activities had been started should be included as dams under construction. Dams under planning should not be included.
- 3.3 As regards inclusion of saddle dams as a separate entry, it was decided the ICOLD Secretariat would be consulted for clarification.

(Action : DSO, CWC)

**Item No.3 (b) : Implementation of the recommendations of "Report on Dam Safety Procedures."**

- 3.4 Monitoring of the follow-up action on the implementation of recommendations was one of the main functions of NCDS.
- 3.5 Members would send a report on the action taken by the States in implementation of the recommendations of the "Report on Dam Safety Procedures" to the Dam Safety Organization of CWC by 30 June 1989 for compilation. Members / States who had already sent a report earlier may indicate further progress, if any.

(Action : Members)

**Item No.3 (c) : Creation & strengthening of Dam Safety Cells in States**

- 3.6 It was noted that Bihar had created a Dam Safety Cell. With this, all States having significant number of dams had created Dam Safety Organization / Cells. However, in most of the States, the organization created was inadequate and would need strengthening for effective implementation of the Dam Safety Programme. Some States were not able to make any headway due to financial restraint. Only Maharashtra and Gujarat had adequate organizational set up.
- 3.7 In some States like Tamil Nadu and Kerala, the State Electricity Boards also own a number of dams. These as well as dams owned by other agencies should also be brought under the purview of the State Dam Safety Cells created by the Irrigation / Water Resources Departments. Members should take up this issue with their State Governments.

(Action : Members from Kerala & Tamil Nadu)

**Item No.3 (d) : Setting up of hydrological unit in the State for review hydrology of existing dams**

- 3.8 The Committee noted that, at present, except Gujarat, no other State was carrying out hydrological review of existing dams. Orissa had reviewed the hydrology of 18 (eighteen) dams as a World Bank requirement.
- 3.9 The Committee stressed that the hydrological review was an important aspect of safety assessment of existing dams and considered it

essential to carry out hydrological review to determine the adequacy of existing spillway capacity. A specific report on progress on this item may be reported in the next meeting.

(Action : Members)

**Item No.3 (e) : Categorization of health status of dams**

3.10 It was decided that the following could be considered as major deficiencies.

- Inadequate spillway
- Inadequate freeboard
- Cracks in upstream face of masonry / concrete dams and structural cracking in earth dams.
- Inadequate flood forecasting system / flood warning system / communications.
- Excessive seepages through drainage holes, porous pipes, downstream face of dam, downstream area, etc., and development of high uplift pressures.
- Maloperation of gates.
- Excessive leaching / choking of porous drains / chocking of drainage holes.
- Non-availability of standby / alternate source of power.
- Structural review indicating tension on the upstream face of dam.
- Non-availability of Emergency Action Plan.

**Item No.4 : Report on Dam Safety Activities in the State including status report on the health of dams.**

4.1 The report on "Dam Safety Activities in India" was sent to all the members of NCDS. It was informed that the details of dam failures and strengthening were collected and supplied by CBIP for the report. The Committee was informed that status reports were not received from some States. As such they could not be included in the report.

4.2 The second annual report would be compiled this year.

4.3 It was decided that report on dam safety activities in States including the health status report should be sent to the Dam Safety Organization in CWC by 31 October 1989 to enable compilation of the draft report by 31 December 1989. The report from States should contain observations on health status of dams after the post-monsoon inspection.

(Action : Members / States)

**Item No.5 : Preparation of Operation & Maintenance Manual.**

- 5.1 The Committee decided that members would pursue with their Designs Organizations / Dam Safety Cells / Project Authorities for preparation of operation & maintenance manuals for all existing dams and reservoirs in their States.
- 5.2 It was also decided that each State may send one operation & maintenance manual prepared by them for a major dam to the Dam Safety Organization of CWC who would prepare a checklist of contents for operation & maintenance manuals and place before the Committee for examining its adoption for a uniform procedure.

(Action : Members / States)

**Item No.6 : Preparation of completion reports of large dams.**

- 6.1 It was decided that members would immediately consult their States regarding administrative proposals for getting the completion reports prepared and report further developments to the Chief Engineer (DSO), CWC for placing before the Committee in its next meeting.
- 6.2 Members from Karnataka informed that retired officers had been engaged for preparation of completion reports and out of 12 (twelve) projects entrusted to them, drafts for seven projects had been prepared. The Chairman, suggested that similar steps could be taken by other States.
- 6.3 It was decided that as a first step, a target could be set up for preparation of completion reports for dams of National Committee.

(Action : Members / States)

- 6.4 It was decided that "Data Books" may be compiled for all dams of National Importance by the end of June 1989 and a copy of the same be sent to the Dam Safety Organization of CWC for record.

(Action : Members / States)

- 6.5 "Data Books" should also be compiled for all large dams in a phased programme and copies of these should be recorded in the State Dam Safety Organization.

## **Item No.7 : Dam Safety Legislation.**

- 7.1 The Committee was informed that views / observations had been received from Gujarat, Madhya Pradesh, Orissa and BBMB. Gujarat and Orissa had agreed for the legislation. BBMB had also agreed for legislation on the subject. Madhya Pradesh has observed that as most of the dams were owned by Government, legislation was not considered necessary. Member from Maharashtra informed that the views of Government of Maharashtra would be communicated in due course. Member from Tamil Nadu felt that legislation could be useful so that the large number of dams under Tamil Nadu Electricity Board could be covered under the Dam Safety Programme. Member (D&R) felt that a legislation would help ensure commitment of full financial support for the programme.
- 7.2 Chairman suggested that members from States who had not yet replied may consult their States and intimate the views of State Governments at an early date.

(Action : Members)

## **Item No.8 : Data on gated storages.**

- 8.1 The Committee was informed that data on gated storages had been received from Andhra Pradesh, Gujarat, Karnataka, Madhya Pradesh, Maharashtra, Orissa, Rajasthan & Tamil Nadu and BBMB.
- 8.2 In the data received from Andhra Pradesh, storages against gates had not been given. Member from Andhra Pradesh should arrange to get this data compiled from the capacity curves and arrange to send the same to the Dam Safety Organization, CWC.
- 8.3 Members / States who had not yet sent the information may also expedite the same.

(Action : Andhra Pradesh / Members)

## **9. Supplementary Agenda**

### **Item No.1 : Safety Status of Dams of National Importance**

- 9.1 It was decided that Members / States / Dam Safety Organizations should arrange to send the safety status reports of dams of National Importance, i.e. dams having a height of more than 100 metres or

storage more than one km<sup>3</sup> (1 x 10<sup>9</sup>m<sup>3</sup>) to the Dam Safety Organization of CWC by 30 June 1989 so that these could be compiled before monsoon strikes.

- 9.2 A copy of the format for the safety status report as circulated with the Agenda is enclosed as Annex IX.

(Action : All members / States)

## **10. Item No.2 : Safety review of dams**

- 10.1 The action point 10.8 of the "Report on Dam Safety Procedures" states that "the States arrange safety review of dams which are more than 15 metres in height or which store 50000 acre feet or more of water by an independent panel of expert once in 10 years."
- 10.2 It was decided that the storage mentioned in this action point should be taken as 60 x 10<sup>6</sup>m<sup>3</sup> (sixty million cubic metres), instead of 50000 acre feet, as all units are required to be mentioned in metric units.
- 10.3 It was decided that members / States / Dam Safety Organizations should take immediate action to prepare a programme of safety reviews of dams in their States and intimate the programme to the NCDS by 30 June 1989.

(Action : all members / States)

## **11. Item No.3 : Standardized meteorological & other observations at all dams.**

- 11.1 It was agreed that observations should be done at all large dams. The observations should include rainfall (with S.R.Gauges), atmospheric pressure (with barometer), maximum – minimum temperatures, humidity, wind speed, wind direction, height of waves, temperature of downstream face of the dam, etc. A start could be made by establishing such observatory at dams of National Importance wherever such observations were not carried out. Wherever meteorological observations were carried out at other dams, these could be enhanced to include the parameters indicated above.
- 11.2 Members / States / Dam Safety Organizations would intimate the names of all large dams and the type of observations presently being done at these dams in their State, to the NCDS by 30 June 1989.

(Action : all members / States)

**12. Item No.4 : Dams under purview of State Dam Safety Organizations / Cells**

- 12.1 The Committee noted that presently all large dams did not come under the purview of State Dam Safety Organization / Cell.
- 12.2 It was decided that members / State Dam Safety Organizations would intimate the number of dams under the purview of State Dam Safety Cells to the Dam Safety Organization of CWC by 30 June 1989. This should include dams owned by other agencies in the State wherever the same come under the purview of State Dam Safety Cells.
- 12.3 Where dams under other agencies did not come under the purview of State Dam Safety Organizations, details of the dams and the owning organizations may be intimated to the Dam Safety Organization. On receipt of this information, the Chairman, NCDS would write to the Chief Secretaries of States concerned, to bring these dams under the purview of State Dam Safety Organization of the Irrigation Department.

(Action : all members)

**13. Item No.5 : Formation of sub-committees to monitor safety aspects of inter-State dams.**

- 13.1 As per the terms of reference, the National Committee, in consultation with the State Governments and MoWR may set up sub-committees to monitor the safety aspects of selected inter-State dams.
- 13.2 It was decided to set up three sub-committees consisting of members of National Committee as under:

<b>Sl.No.</b>	<b>Members</b>	<b>Inter-State dams of basin</b>
1	Tamil Nadu, CWC, Kerala (Member-Secretary)	Parambikulam Aliyar System
2	Madhya Pradesh, Orissa (Member – Secretary)	Mahanadi
3	West Bengal, Bihar, Orissa (Member – Secretary)	Subarnarekha

- 13.3 For the third sub-committee, the West Bengal Government would be requested to nominate a representative. After obtaining the concurrence of the concerned States and MoWR, the sub-committees

would monitor the safety aspects of identified dams and submit their reports to the National Committee before the next meeting.

(Action : members as indicated above / DSO,CWC)

The meeting ended with a vote of thanks to the Government of Maharashtra for agreeing to host the meeting and making excellent arrangements for organizing the meeting. The meeting also passed a vote of thanks to the Chair.