

Minutes of the thirteenth National Committee on Dam Safety meeting held on 24.1.1995 at Central Water Commission, New Delhi.

The thirteenth meeting of the National Committee on Dam Safety (NCDS) was held on 24.1.1995 in Sewa Bhavan, R.K.Puram, New Delhi under the Chairmanship of Shri A.B.Joshi, Chairman, CWC and Chairman, NCDS. A list of officers who attended the meeting is given at Annex I.

Shri T.D.Sundarababu, Chief Engineer (DSO) and Member Secretary, NCDS welcomed the Chairman, members of NCDS and officers of the States.

The Chairman, NCDS, at the outset, expressed that with the present liberalizing economic policies of the Government, privatization trend is gaining momentum. With the result that more and more private enterprises are coming forward to take up river valley projects on the ownership basis and would also be responsible for operation / benefit generation thereof. He mentioned about few examples, namely, Tatas who own and operate their dams in Maharashtra State. Besides, State Electricity Boards in many States also own and operate their dams. Kerala and Tamil Nadu State Electricity Boards are among the few who own and operate large number of dams. He, therefore, emphasized that in view of this, issues which are under discussions of this Committee require a fresh look and the safety of all dams could be ensured by enacting a proper Dam Safety Legislation. He, therefore, requested that all the States / Organizations should pursue vigorously with their Governments to accept such a legislation. Thereafter, items of agenda of the meeting were taken up for discussions.

13.1.0 Confirmation of the minutes of the twelfth meeting of NCDS.

- 13.1.1 The minutes of 12th meeting were circulated to all the members of NCDS, special invitees and State Dam Safety Cells vide CWC Letter No.3/19/NCDS/93-DS/818-37 dated 8.6.1994.

The minutes as recorded were confirmed.

13.2.0 Status of implementation of "Dam Safety Assurance and Rehabilitation Project" for information of the Committee

- 13.2.1 Member Secretary (NCDS) / Chief Engineer (DSO), CWC gave a brief account of deliberations held in connection with the mid-term review of DSAR Project being implemented in CWC and the four participating States, viz. Madhya Pradesh, Orissa, Rajasthan & Tamil Nadu. The mid-term review was carried out by CWC on behalf of MoWR in the presence of the World Bank Mission. He informed that progress of the project implementation in the areas of institutional strengthening, Phase I inspection and setting up of

procedures and processes for remedial works has been found satisfactory. Thus, the primary objective of Dam Safety Assurance Programme in the four participating States has been achieved. However, the progress on the basic safety facilities and remedial works of 33 identified dams which constitutes about 90% of the cost of the entire project is extremely slow. It has been made clear by the Bank that further extension of two years beyond the project closing date of June 1997 as requested by all these States will be considered only after the States show considerable improvement in project performance in the next few months, particularly in the remedial works component. He emphasized that all the four States would have to step up their activities and expedite the progress during the next few months.

- 13.2.2 He mentioned that due to variation in Dollar Rupee exchange rate, sufficient funds under this project are now available. The Bank in principle has agreed to expand this project in the four participating States and also participation of the additional States in the Dam Safety Programme. He stated that funds to the tune of Rs.500 million for participation of additional States and Rs.400 million for expanding the activities in the four existing States would be available. He further informed that the identification reports from the State of Uttar Pradesh have already been received and the remaining three States, Andhra Pradesh, Gujarat and Karnataka have assured to submit their reports by the end of January 1995.

13.3.0 Review of National Scenario.

- 13.3.1 The Committee was informed that Shri M.S.Reddy, Secretary to the Government of India, Ministry of Water Resources visited a number of dams in Mahanadi Basin in Madhya Pradesh and noticed severe damages on dams during the last monsoon. Shri Reddy in his letter addressed to the Chief Secretary, Madhya Pradesh desired for taking up measures for rehabilitation of these dams. The issue was discussed and the State representatives were requested to send a detailed report. Chairman, NCDS desired that the State of Madhya Pradesh may take the advantage of on-going DSARP and include these dams under Category II for providing remedial measures.
- 13.3.2 NCDS was informed that the Chairman, CWC / NCDS, along with the State Minister, inspected Maniary dam near Biaspur (Madhya Pradesh) which was reported to have developed cracks during the last monsoon. State's engineers informed that as directed, repairs of urgent nature have been carried out and further works are in progress. However, there is no threat to the dam.

13.3.3 Chief Engineer (DSO), CWC drew the attention of Uttar Pradesh State engineers to a news item in the Hindi daily 'Aaj' of 26.12.1994, which reported failure due to heavy seepage of Bhonka dam in Uttar Pradesh. The State engineers were requested to confirm the news and furnish a report to NCDS.

13.4.0 Progress of implementation of recommendations of the "Report on Dam Safety Procedures."

13.4.1 The States were requested to implement the recommendations contained in the chapters of "Report on Dam Safety Procedures" circulated during the year 1987 and send a consolidated report indicating follow-up action taken on various issues and to highlight those recommendations, which were difficult to implement.

13.4.2 The representatives from the States of Andhra Pradesh and West Bengal stated that DSOs in their States are virtually functioning with only one officer and requested this forum to put a pressure on their Governments to suitably strengthen their respective DSOs. In the absence of a full-fledged DSO, it would be difficult for them to implement recommendations contained in the "Report on Dam Safety Procedures."

13.5.0 Dam Safety Legislation

13.5.1 Chairman, NCDS once again requested all the member States / Organizations to convey their concurrence or comments, if any, expeditiously on the draft bill of Dam Safety Legislation. States of Andhra Pradesh, Gujarat, Kerala, Orissa and Tamil Nadu have already sent their concurrence on the Draft. However, Uttar Pradesh and Karnataka still do not consider the legislation essential. The State of Rajasthan has asked two amendments under clause "General" and sub-clause 5(2) and 6(3) in the draft bill of Dam Safety Legislation. West Bengal advocated for bringing out such a legislation preferably a Central Act. Madhya Pradesh and Maharashtra States would be intimating their decision very soon which is under active consideration of their Governments. The remaining States did not express their views in favour or otherwise on the draft bill. The Chairman again stressed that the Dam Safety Legislation may be given a fresh look as entry of more and more private agencies owning and operating dams in future cannot be ruled out.

13.6.0 Preparation of Emergency Action Plans and inundation maps for d/s area.

13.6.1 A decision for preparation of Emergency Action Plan for downstream areas of dams of National Importance by all the States was taken during the earlier meetings of NCDS. It was also decided that the four participating States – Madhya Pradesh, Orissa, Rajasthan & Tamil Nadu – under the World Bank assisted Dam Safety Assurance and Rehabilitation Project (DSARP) would take up Emergency Action Plans for the 33 identified dams posed for rehabilitation in the first phase and remaining may be taken up later.

13.6.2 It was informed by the States that preparation of Emergency Action Plans for Ghodahada dam in Orissa, Kangsabati dam in West Bengal, Sathanur and Kodaganar in Tamil Nadu are under progress.

In Gujarat, field officers have been asked to prepare Emergency Action Plans and inundation maps for Kadana and Karjan dams of National Importance whereas flood zone marking of Linganamukhi dam is completed by Karnataka. Dam Break Study of Isapur dam in Maharashtra is under progress in CWC. Rajasthan has prepared Emergency Action Plan for Matrikundia dam which has been approved by DSRP. First report on Emergency Action Plan and inundation maps of Matatila dam prepared by Uttar Pradesh is now under modification.

Information regarding action taken is awaited from NHPC, Kerala Irrigation Department and Bihar. Dam Break Studies for Idukki dam in Kerala is under progress as intimated by Kerala State Electricity Board. The Punjab State has not intimated any progress in this regard.

13.6.3 The Chairman, NCDS desired that at least the basic input data (downstream cross sections) required for the Dam Break Study may be taken up immediately.

13.7.0 Compilation of "Data Books."

13.7.1 As per the decision taken in the 4th meeting, "Data Books" for dams of National Importance are to be prepared by the States and sent to DSO, CWC for record. Critical geological features of every dam are to be highlighted instead of giving a detailed geological report.

13.7.2 The States of Andhra Pradesh, Bihar, Gujarat, Karnataka and Tamil Nadu and also BBMB have submitted "Data Books" for dams of

National Importance. NHPC has submitted "Data Book" for Salal HE project. The States of Maharashtra has submitted "Data Book" for one dam and for the remaining four, it would be submitted subsequently. Madhya Pradesh intimated that "Data Book" of two dams will be submitted by March end. Legible copies of "Data Books" from Rajasthan as requested are still awaited.

- 13.7.3 Information from the States of Kerala and Orissa is still awaited. The States of Uttar Pradesh and West Bengal intimated the progress made in this regard. NHPC assured to send the "Data Book" for Chamara project at the earliest.

13.8.0 Preparation of completion report of large dams

- 13.8.1 Completion reports of all large dams are to be prepared by the respective States giving priority to dams of National Importance. Original geological report will also form part of the completion report.

- 13.8.2 The States of Karnataka, Rajasthan and Tamil Nadu have intimated their progress in this regard. The State of Maharashtra has completed reports of 10 dams. Karnataka has prepared history of 19 dams and copies of reports will be submitted to DSO, CWC shortly. In Andhra Pradesh, Bihar and West Bengal, the field Chief Engineers have been requested to finalize the completion report of dams under their control. Uttar Pradesh intimated that completion reports in respect of Matatila, Rihand, Obra, Ramganga, Lalitpur and Shahjad have been framed. The States of Kerala and Orissa, so far, have not given any information. It was clarified that completion reports are to be prepared for all the existing large dams. In this connection, Chairman suggested that the completion report of Koyna dam which is available for reference may be seen. He suggested that if the work cannot be completed through their existing set ups the possibility of getting it done by engaging consultants preferably experienced retired officers of the State may be explored.

13.9.0 Preparation of Operation & Maintenance Manuals

- 13.9.1 Chairman, NCDS has been emphasizing that Operation & Maintenance Manual is an important document for operation and maintenance of the dams and this Manual should be available before commissioning of the project. As O&M Manuals have not prepared for many dams which are now under operation, the same must be prepared without further delay.

13.9.2 The States of Andhra Pradesh, Bihar, Gujarat, Maharashtra, Rajasthan and West Bengal and BBMB have already initiated the work and completed the Manuals for some dams. The State of Madhya Pradesh informed that O&M Manual for 25 gated dams is being taken up on priority. The States of Karnataka, Kerala and Orissa have not furnished any information. NHPC intimated that the reports are under finalization and will be submitted shortly.

13.9.3 The representatives from the States were once again requested that O&M Manuals are important documents and these should be prepared / taken up for all large dams.

13.10.0 Periodical inspection of dams and the report on dam safety activities in the States.

13.10.1 The States / Organizations are required to perform periodical inspection of dams in their States and send a consolidated yearly report on the status of dams and dam safety activities under the title "Health Status of Dams and Dam Safety Activities in the States" to DSO, CWC.

13.10.2 The States of Gujarat, Madhya Pradesh and Maharashtra & BBMB are submitting yearly consolidated report regularly. The State of Bihar has initiated action for the periodical inspection of dams. The State of Orissa has submitted a consolidated report during the 11th meeting; NHPC submitted a report for Salal project; Rajasthan is sending periodical inspection reports in piecemeal only; the States of Kerala and West Bengal are submitting periodical inspection report in brief.

The State of Andhra Pradesh has submitted a report on the dam safety activities covering a period upto March 1994. The States of Karnataka, Kerala and Orissa have not submitted latest report on dam safety activities in their States. Maharashtra has submitted the report for 1992-93 for identified dam and for 1993-94 the report is stated to be under compilation. NHPC has assured to submit the status report on Chamara shortly.

13.10.3 All the States / Organizations are required to send the yearly consolidated report on health status and dam safety activities to DSO, CWC regularly.

13.11.0 Safety review of large dams once in ten years.

13.11.1 In accordance with the recommendations contained in the "Report on Dam Safety Procedures", submitted in 1987 to the Government,

safety review of large dams which are more than 15 m in height or which store 60 million cubic metre or more of water, are to be carried out by an independent panel of experts once in ten years. It has also been reiterated that the expert committees may be constituted of the officers from the States who were not connected with the construction or maintenance of the structures at any stage.

- 13.11.2 The States of Rajasthan, Uttar Pradesh and West Bengal informed that the appointment of the panel is under active consideration of their respective Governments, whereas Madhya Pradesh intimated that terms of reference for constituting the panel is under preparation. The State of Bihar has also initiated action in this regard. Tamil Nadu intimated that the schedule of review has been submitted to DSO, CWC and the work will be completed by 1997. Karnataka informed that the proposal has been included in DSAR Project which is under finalization. Orissa informed that they have completed review of 82 out of 137 dams. In the absence of State Dam Safety Panel in Gujarat, the job is being attended to by their SDSC and so far review of 144 dams has been completed. Andhra Pradesh has drawn a programme for the safety review of large dams in the State. Maharashtra informed that Dam Safety Review Panels (DSRP) under MCIP (III) (R) would also review the work of 9 dams. Review of 28 dams in the Latur and Osmanabad area is planned to be carried out by a special committee. Besides, a standing DSRP has been proposed for the review of 685 identified large dams. BBMB has already completed the review work for the dams under them and NHPC assured to initiate the work.
- 13.11.3 The Chairman, NCDS desired that the States / Organizations that have not yet taken up this activity may make a start by identifying dams and complete the work progressively.

13.12.0 Safety status of dams of National Importance.

- 13.12.1 The States are required to prepare safety status of 43 dams of National Importance in the prescribed proforma already circulated by DSO, CWC. So far, information has been received only for 32 dams.
- 13.12.2 The States of Andhra Pradesh, Bihar, Gujarat, Karnataka, Maharashtra, Orissa, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal and BBMB have submitted the report for the National Importance dams. Madhya Pradesh has submitted report for two dams and for the remaining two dams it will be submitted in due course. NHPC submitted a report for the Salal dam; the State of

Kerala has not sent any information. However, the representative of Kerala State Electricity Board agreed to submit the status report for dams under them.

- 13.12.3 It was decided to include Lakhya dam in Karnataka and Chamera in Himachal Pradesh in the list of National Importance dams thus raising the total number to 45. DSO, Irrigation Department of Kerala was also requested to send the information to CWC in the prescribed form immediately.

13.13.0 Monitoring of safety report of inter-State dams by sub-committees.

- 13.13.1 Three sub-committees were set up during March 1990 to monitor the safety aspects of inter-State dams in the Parambikulam Aliyar System (PAP), Mahanadi River System and Subarnarekha River System.

- 13.13.2 The State of Tamil Nadu intimated that their field officers are taking necessary follow-up action as recommended by the committee. The State of Kerala is awaiting the progress on the follow-up action taken by Tamil Nadu on the recommendations of the committee to enable them to convene the next meeting. Tamil Nadu was requested to intimate the progress in this regard.

- 13.13.3 The State of West Bengal intimated that the report of sub-committee for Subarnarekha River System is ready for submission. However, no progress has been reported by Orissa. The State of Bihar has intimated the action in this regard.

- 13.13.4 The State of Orissa convened the first meeting of the sub-committee for Mahanadi River System on 8.9.93 in which officers from Madhya Pradesh also participated. No progress has so far been intimated to DSO, CWC by the participating States of Mahanadi basin. Health status and flood release information of the projects upstream of Hirakud in Madhya Pradesh sought by Orissa has not yet been furnished so far. Progress may be intimated to NCDS.

- 13.13.5 Chairman, NCDS observed that not much progress has been achieved on this item by the three sub-committees and requested all the participating States to convene meetings of sub-committees regularly. They may also inform DSO, CWC the safety status of inter-State dams and the follow up actions taken on the recommendations of the committees.

13.14.0 Setting up of hydrological unit in the States for review of hydrology of existing dams.

- 13.14.1 Hydrology of existing dams is required to be reviewed by setting up or strengthening existing hydrology units in the States. Some States / Organizations have already initiated actions for strengthening / setting up of hydrology units and taken up review of hydrology of some of the dams.
- 13.14.2 Gujarat, Madhya Pradesh, Maharashtra and Orissa have completed hydrology review of 154, 30, 35 and 26 dams in their States respectively; BBMB also submitted their report for the dams under their control; Orissa informed that two hydrology review divisions are functioning under DSO. Maharashtra, Tamil Nadu and Uttar Pradesh informed that action for strengthening of existing hydrology unit has yet to be taken. However, the review work of some of the dams is in progress. Rajasthan intimated that the existing hydrology unit would carry out review of 124 dams in the State. Bihar and Karnataka informed that the review is being done by separate units in their States; Andhra Pradesh and West Bengal are awaiting strengthening of their DSO units for taking up this work. No information was received from Kerala and NHPC.
- 13.14.3 Chairman, NCDS desired that all the States / Organizations should take up hydrological review and complete expeditiously.

13.15.0 Instrumentation for dams.

- 13.15.1 NCDS had decided that the States may take stock of the status of instrumentation installed on all large dams in order to see their performance, mortality, periodicity for analysis of data, referring the analysis to the designers for their suggestions, studies of structural behaviour report and the adequacy or otherwise of the staff engaged on the job. Information reported by some of the States / Organizations are as under:

Andhra Pradesh	3 dams
Gujarat	25 dams
Karnataka	1 dam
Kerala	7 dams
Madhya Pradesh	11 dams
Maharashtra	46 dams
Orissa	14 dams
Tamil Nadu	6 dams
BBMB	3 dams

The State of Karnataka has informed that the review of instrumentation of 5 dams has been carried out; report for one dam has been submitted; and for remaining 4 dams it will be submitted shortly. Tamil Nadu informed that micro-earthquake instruments would be installed on Mettur and Vaigai dams. In the State of Uttar Pradesh, micro-earthquake instruments have been installed on Ramganga dam.

- 13.15.2 All the remaining States / Organizations were requested to expedite submission of information to DSO, CWC. The Chairman stressed the need for analysis of instrumentation data to know the structural behaviour of dam. Progress in this regard may be intimated to NCDS.

13.16.0 Standardized meteorological and other observations.

- 13.16.1 All the States have been requested to supply detailed information in a specified format on the type of meteorological instruments installed in the catchment areas and reservoirs of large dams for meteorological observations. The States of Andhra Pradesh, Gujarat, Karnataka, Madhya Pradesh and BBMB had supplied information in respect of few dams. The State of Orissa informed that 15 dams covered under DSARP have been selected for providing meteorological observation units at dam sites and installation of instruments is in progress. No information has been received from the State of Kerala and NHPC. States may intimate up-to-date progress to NCDS.

13.17.0 Data on gated storages.

- 13.17.1 NCDS had requested all the States / Organizations to furnish data on gated storages of large dams in a specified format. The States which have already submitted information are Andhra Pradesh, BBMB, Gujarat, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Tamil Nadu and West Bengal. Orissa has only 30 large dams having storages against gates and the information for all the 30 dams has been supplied. Rajasthan has supplied information for 22 out of 28 dams whereas Uttar Pradesh has furnished information for 44 dams. NHPC has submitted for Salal and Chamera projects. Bihar has not sent any information so far.

13.18.0 Safety inspection of barrages.

- 13.18.1 During the 7th NCDS meeting, it has been decided to collect State-wise information in respect of all barrages in a prescribed format and send to DSO, CWC. The information has been received from

most of the States except Bihar. Uttar Pradesh has now furnished information in respect of 26 barrages. The State of Bihar is again requested to expedite information. NHPC is also requested to supply data of barrage(s) under their control.

13.19.0 National Register of Large Dams

- 13.19.1 A publication titled "National Register of Large Dams" (NRLD) brought out by DSO, CWC during April 1990 had been circulated to all the States / Organizations for scrutiny and to intimate corrections / modifications / additions, if any, for updating the first edition.
- 13.19.2 The entire data for "National Register of Large Dams" received upto December 1994 has been stored in NIC Computer and the same can be retrieved by the States / Organizations on NICNET System even at the District level throughout the country. The revised edition is under print and likely to be released by April 1995. All the States / Organizations were requested to keep on informing the latest information on large dams so that stored data is updated from time to time for the benefit of users.

13.20.0 Seismic status of dams of National Importance.

- 13.20.1 DSO, CWC has forwarded a document titled "Guidelines for Inspection of Dams following Earthquake" to all the members of NCDS with a request to make use of this format and report to NCDS immediately after occurrence of each earthquake.
- 13.20.2 After the occurrence of Uttarkashi earthquake in October 1991, reports were received only from BBMB in respect of 3 dams; NHPC for Salal dam and Uttar Pradesh for Ram Ganga dam. All the northern States were expected to conduct a thorough inspection of large dams in their States in accordance with ICOLD Guidelines and report the findings to NCDS.
- 13.20.3 After the occurrence of recent earthquake in the early morning of 30.9.93 in Latur and Osmanabad Districts of Maharashtra, post-earthquake inspection in accordance with the "Guidelines for Inspection of Dams following Earthquake" brought out by the International Commission on Large Dams (ICOLD) were circulated and the States of Andhra Pradesh and Maharashtra have submitted their reports. The Expert Committee constituted by the Government of India under the Chairmanship of Chief Engineer (DSO) and other members from the IMD, GSI, Government of

Maharashtra and CWC has also submitted their report to the Government.

- 13.7.1 The State of Karnataka reported that there were no damages to large dams located in Gulbarga, Bidar and Bijapur Districts of Karnataka due to earthquake of September 1993 with epicenter at Killari, Marathwada region of Maharashtra. The Dam Safety Cell in the State was requested to send a report on Amarja Project in connection with a VIP reference on this dam. The post-earthquake survey report has since been received.

13.21.0 Problem bank on research & development.

- 13.21.1 All the members of NCDS have been requested from time to time to suggest areas requiring research for development of projects and gadgets in the field of dam safety and send their suggestions to DSO, CWC. The Chairman, during the 10th, 11th and 12th meeting desired that the States should examine the areas / fields as indicated in the list appended as Annex II and take up research on a subject of their choice. They should also prepare a project report on the scheme for research and send the same to CWC.
- 13.21.2 Rajasthan informed that they have to carry out special analysis for the embankment dam and spillway portion of Chandra Prabha dam by using ultra sound, isotopic test and alkali aggregate reacting tests. However, the detailed report is yet to follow. Chairman, NCDS desired that the States / Organizations consider this item actively and to come forward specifying the areas required for research and development of projects and dam safety activities.

13.22.0 Any other item with the permission of Chair

- 13.22.1 Member Secretary, NCDS / Chief Engineer (DSO), CWC informed that under the World Bank assisted Dam Safety Assurance and Rehabilitation Project (DSARP), suitable guidelines for Risk Based Decision Analysis are to be developed. He requested the representatives from the States / Organizations to offer their valuable suggestions before the next meeting to make a consistent approach to this subject.

The meeting ended with a vote of thanks to the Chair and it was unanimously decided to hold the next NCDS meeting in the last week of June 1995.