



भारत सरकार
Government of India
केन्द्रीय जल आयोग
Central Water Commission
बांध सुरक्षा प्रबोधन निदेशालय
Dam Safety Monitoring Directorate



No. 3/19/NCDS/DSM/ 37th Meeting / 2017/346-378

Date: 10 /04/2017

To

NCDS Members

Sub: Minutes of 37th National Committee on Dam Safety (NCDS) Meeting.

Sir,

The 37th meeting on National Committee on Dam Safety (NCDS) was held on 17th and 18th Feb 2017 under the Chairmanship of Chairman, CWC. A copy of the Minutes of the meeting and the summary of the decisions taken during the meeting are enclosed for taking follow up action on the minutes. It is requested that the follow up action taken report on the minutes may please be submitted to this office at the earliest.

Yours faithfully,

Encl: as above

(N K Mathur)
Chief Engineer, DSO &
Member Secretary, NCDS

Copy for kind information to:

1. PPS to Chairman, CWC, New Delhi
2. PPS to Member (D&R), CWC, New Delhi.
3. Chief Engineer (HSO), (N&W) and (N&WS) CWC, New Delhi
4. Director DSR Dte./Instrumentation Dte./CMDD (N&W) Dte./ Hydrology(S) Dte./ Hydrology(N)Dte./Embankment (NW&S) Dte. CWC, New Delhi.

Chief Engineer, DSO &
Member Secretary, NCD



जल संयंत्र - जल संचय

आठवाँ तल (उत्तर) सेवा भवन, रामा कृष्णा पुरम्, नई दिल्ली
8th Floor (N) Sewa Bhawan, R.K. Puram, New Delhi-110066
Telefax No. 26104104; Email:dsmdte-cwc@ nic.in

Department of Health
Public Health Division
Communicable Disease Control
Unit
100 Victoria Street
Singapore 188062



RE: MINUTES OF 37th MEETING (2017) AND 412

To

NCOS Members

Sub: Minutes of 37th National Committee on Anti-Smoking (NCOS) Meeting

Sir,

The 37th meeting of National Committee on Anti-Smoking (NCOS) was held on 1st and 2nd Feb 2017 under the Chairmanship of Chairman, NCOS. The copy of the Minutes of the meeting and the summary of its decision is being forwarded to you for reference. It is requested that you follow up action on the minutes. It is requested that you follow up action taken on the minutes may please be submitted to the office at the earliest.

Yours faithfully,

[Handwritten signature]

Dr K. Mahalingam
Chairman, NCOS
Ministry of Health

Copy for info information to:

1. Director, NCOS, New Delhi
2. Director, NCOS, New Delhi
3. Director, NCOS, New Delhi
4. Director, NCOS, New Delhi
5. Director, NCOS, New Delhi

Yours faithfully,
Dr K. Mahalingam

Enclosed for your information are the minutes of the 37th meeting of NCOS held on 1st and 2nd Feb 2017.

DAM SAFETY ORGANISATION
CENTRAL WATER COMMISSION

GOVERNMENT OF INDIA

MINUTES

OF

37TH MEETING OF

NATIONAL COMMITTEE ON DAM SAFETY

HELD ON

**17TH AND 18TH FEB 2017 AT HARIDWAR
(UTTARAKHAND)**

DAM SAFETY ORGANIZATION

CENTRAL WATER COMMISSION

GOVERNMENT OF INDIA

MINUTES

OF

THE MEETING

NATIONAL COMMITTEE ON DAM SAFETY

HELD ON

12th AND 13th FEB 1971 AT PUNJAB

GOVERNMENT OF INDIA

Minutes of the 37th Meeting of National Committee on Dam Safety (NCDS)
held at 10:00 hrs of 17th Feb, 2017 Hotel Radisson Blue Haridwar

37th meeting of National Committee on Dam Safety (NCDS) was held on 17th Feb 2017, at 10:00 hrs under the Chairmanship of Shri Narendra Kumar, Chairman, CWC and Chairman of the National Committee on Dam Safety (NCDS). List of Officers from different states/organizations present in the meeting is enclosed at **Annexure-I**

Shri N.K. Mathur, Member Secretary, NCDS, and Chief Engineer DSO, welcomed the members of the National Committee on Dam Safety (NCDS) to the meeting venue in Hotel Radisson Blue Haridwar. Member Secretary, NCDS, requested all the participants to introduce themselves and thereafter, take up the agenda items.

37.1 Confirmation of the minutes of 36th meeting:

Minutes of the 36th meeting of NCDS were circulated vide letter dated 12th February, 2016 to all the members of NCDS. No comments on the minutes have been received and committee confirmed the minutes as circulated.

37.2 Dam Safety Bill, 2016

The dam safety bill agenda item was put on hold from 37th NCDS agenda list on 17th Feb 2017 meeting at Hotel Radisson Blue Haridwar and it was informed that Bill will be discussed on 18th Feb, 2017 at National Institute of Hydrology (NIH) Roorkee in the august presence of Secretary, Ministry of Water Resources RD & GR. Accordingly extended 37th NCDS was held in society room of NIH Roorkee on 18th Feb 2017 at 12:00 hrs (noon) in presence of Secretary Ministry of Water Resources RD & GR.

A detailed presentation was made by Dr. B.R.K. Pillai, Commissioner (CAD), MoWR, RD & GR on dam safety concerns, needs and contents of the Dam Safety Bill. He stressed the urgency to enact a statute on dam safety in view of:

- i) Projections by most of the climate change models which indicate an increase in the frequency of extreme flood incidences;
- ii) Increased potential for human and economic losses due to high population density and extent of development in close vicinities and downstream of dams; and
- iii) High sensitivity and low tolerance of people towards high risk events.

Shri Sanjay Kundu, Joint Secretary (PP), MoWR, RD & GR stated that on account of temporal and spatial variation in precipitation in the country, we require storage for providing water security and other human needs. While there have been lot of debates on the utility of dams by the environmentalists, but historical evidence in the country clearly brings out the merit of having storage which by extension means building dams for this purpose. For a total surface water availability of 690 BCM, it is estimated that the

country requires 450 BCM of live storage. As of the year 2010, the capacity completed was 253 BCM, under construction was 51 BCM and under consideration was 104 BCM aggregating to 408 BCM. However, on account of silting the loss in reservoir capacity is 53 BCM, which will leave 355 BCM of net capacity available in 2050. This means that the country will have to identify new capacity of 95 BCM before 2050. Thus, we need to build additional capacity to meet our developmental needs and ensure the health, maintenance, efficiency and safety of our existing infrastructure. On account of potential risk hazard to the population and property downstream, it is very important that our dams are safe. It is, therefore felt that Dam Safety Bill needs to be taken forward.

Secretary (WR, RD&GR) stated that while dams are assets for the nation and render service to various sectors, but they bring concomitant potential risk to the downstream population. The time has come to take measures for safety of dams and population that are likely to be affected in case of failure. Dam Safety Bill is such important step which will establish an institutional framework throughout the country and define procedures to ensure safe functioning of dams. The Ministry of WR, RD & GR is convinced about the necessity of Bill and requested representatives of the State Governments to express their views. The views of the representatives of State Governments are as follows:

1. **Tamil Nadu:** Tamil Nadu expressed that water being State subject, there is need to review the necessity of Central Bill. However, they were satisfied that their concern in respect of dams owned by them but located in another State is being addressed by the new proposed provision which considers National Dam Safety Authority to function as State Dam Safety organisation for all such dams.
2. **Telangana:** Telangana supports the Bill with suggestions for incorporation provisions on physical security of dams. Telangana requested that water tanks may also be covered in this Bill as water overflowing from these tanks is a hazard especially to roads and railway lines.
3. **Odisha:** Odisha supports the Dam Safety Bill. Their detailed comments/suggestions on various provisions of the Draft Bill have already been sent to the MoWR, RD & GR.
4. **Karnataka:** Karnataka supports the Dam Safety Bill and these suggestions on the draft Bill have already been sent to the MoWR, RD & GR.
5. **Gujarat:** Gujarat has no objection to the Dam Safety Bill but formal response will be sent shortly.
6. **Himachal Pradesh:** Himachal Pradesh has no objection to the Bill as such.
7. **Kerala:** Kerala already has a statute in place with provision of an Authority headed retired High Court Judge. Kerala stated that water being State subject, the need for this proposed Central Bill may be reviewed.
8. **Rajasthan:** Rajasthan has no objection to the Dam Safety Bill but formal response will be sent shortly.
9. **Jharkhand:** Jharkhand has no objection to the Dam Safety Bill.
10. **Uttarakhand :** Uttarakhand supports the Dam Safety Bill.
11. **Bihar:** In Bihar, a Dam Safety Act, 2006 for the State is in force. The comments on the Bill will be sent shortly. Their main concern is that the number of dams where State

Dam Safety Organisation can be headed by Superintending Engineer or equivalent officer should be increase to 30 from the present proposed level of 20. Bihar was assured that concerns will be suitably addressed.

12. **Uttar Pradesh:** Uttar Pradesh has supported the previous versions of this Bill and will sent their comments to the MoWR, RD & GR in 10 days.
13. **Maharashtra:** Maharashtra has no objections to the draft Dam Safety Bill. However, it suggested that CDOs of the States should be involved in detailed design of remedial measures.

Expressing high level of satisfaction with States' response, Secretary (WR, RD & GR) said that barring the States of Tamil Nadu and Kerala, all other States have come forward in support of the proposed Dam Safety Bill. Commenting that perhaps Tamil Nadu and Kerala still retain the bitter experiences related to a particular dam, he requested them to re-examine the issue with an open mind in national interest. He reiterated that the Bill will not bring any alteration in the present framework of ownership, control for the operation and maintenance, or the benefits accruable from the dam. Instead, the Bill will empower the States' dam safety institutional set up, standardize the dam safety practices, and also provide platform for elimination of potentially conflicting issues. Further, the option of conflict resolution through the courts will remain available. He requested both Tamil Nadu and Kerala to reconsider their stand and support the proposed Dam Safety Bill.

Responding to some of the modifications proposed by States, Dr. Pillai said that during the development of the Bill, many proposals of the States have been captured in the draft Bill and a judicious balance has been maintained. Mindful of the dynamic nature of Dam Safety issue, the 'functions' of National Committee, National Authority and State Committee have been shifted to the three Schedules and many technical details have been brought under 'rule making' powers of the State and Central Governments. Further, he assured that all fresh suggestions of the States will be examined and incorporated in the draft Bill to the extent feasible. Clarifying the position of Bihar where State Dam Safety Act is in existence, Shri N.K. Mathur, Chief Engineer, Central Dam Safety Organisation, CWC stated that in all such cases the Central Act, as and when enacted, will supersede the various State Acts in existence to the extent they are in contradiction to the provisions in state legislation.

Representative of NHPC stated that they have large number of dams in many States. Presently, they are reporting their dam safety issues to CWC. Under provisions in the proposed draft Bill, they would be required to report to State Dam Safety Organisations of multiple States. Dr. Pillai was of the view that this issue can be resolved along the lines on which Tamil Nadu's concern is being addressed. The National Dam Safety Authority can function as State Dam Safety Organisation in case of CPSU dams as well. Representative of Himachal Pradesh suggested that in all such cases, the State should be kept informed regarding coverage of safety aspects for dams owned by CPSUs. The view that developed in the meeting was that CPSU dams should additionally report to

State Dam Safety Organisations, as the State Governments were responsible for law & order, safety and welfare of the public.

Secretary (WR, RD & GR) concluded the meeting with the direction that in view of the importance of the draft legislation, there is urgent need to fast track the proposal, consider the comments/suggestions of the State Governments and finalise the draft Bill in consultation with Union Ministry of Law and Justice. List of participants is at **Annexure-II**

(Action: Senior Jt. Commissioner, BM, MoWR, RD&GR)

37.3 Dams of National importance

37.3.1 Bhakra Dam (Punjab)

During the last meeting, the matter related to core sampling to determine properties of rock /concrete and instrumentation of Bhakhara Dam were discussed. Chief Engineer, BBMB informed that core sampling work to determine properties of rock and concrete is under process by NCCBM Ballabgarh. The report will be sent to CSMRS and data will be shared with DSR Directorate of CWC for FEM analysis and modelling. In addition, the data related to instrumentation provided by CWC are also under process in design directorate of BBMB. He informed that PMP studies of Bhakra Dam had already been completed. It was requested that PMP studies of Pong and Pandoh may be expedited with IMD New Delhi. Member Secretary requested BBMB to speed up the process of investigation and sampling and submit the core testing data. Chairman NCDS desired time line of the data submission and Chief Engineer BBMB committed as June 2017.

(Action: BBMB, IMD, Director, DSR Dte., CWC)

37.3.2 Srisailem Dam (Andhra Pradesh)

Chief Engineer, Andhra Pradesh informed that agency has been fixed for protection works opposite to Blocks 6 to 8 in Dec 2016 and work will be completed within three months. Strengthening works of right flank on downstream is under vetting and proposal to extend approach road from tip of bucket upto apron of the dam is under process.

Member Secretary NCDS asked about the status of design flood review of Srisailem Dam to increase the spillway capacity. Chief Engineer, Andhra Pradesh informed that for PMP studies, IMD requested certain data which were furnished in June 2016. But IMD New Delhi representative said that there is no pending issue related to Srisailem Dam.

Member Secretary requested Andhra Pradesh and IMD to resolve this issue as early as possible. Director Hydrology (NE) CWC advised Srisaillam Authorities that flood routing studies should be conducted for various flood discharges ranging from 19 lakhs cusecs to 30 lakhs cusecs impinging at FRL. The routing studies should be carried out with all gates open, one gate inoperative and two gates inoperative and with incremental raise of 2 lakhs cusecs. The reservoir operation schedules should be prepared. Chief Engineer Andhra Pradesh also informed that preliminary investigation of channel for diversion excess flood from fore shore into Kundu River via Pamulapadu is almost complete.

(Action: State of Andhra Pradesh, IMD New Delhi)

37.3.3 Gararda Dam (Rajasthan)

A meeting was held in the office of Chief Engineer PAO, CWC in Oct 2016 whereby it was decided to form a panel of experts retired from CWC and CSMRS to investigate the issue further. Director Dams Rajasthan informed that the panel of experts under chairmanship of Shree M. Gopalkrishnan chief Engineer (retd.) CWC and Dr. K. Venkata Chalam, Director (retd.) CSMRS New Delhi had inspected the dam and submitted the report to Water Resources Dept Rajasthan. The same report was forwarded by Rajasthan WRD to Chairman CWC.

Chief Engineer, Design (N&W) CWC suggested that remaining portion of the Dam may not stable and needs to revisit the matter before taking final decision. Commissioner, CAD, MoWR, RD&GR informed that geological investigation of dam location was not done properly, presence of filter material was not observed and any rehabilitation measures would not work. Director, CSMRS agreed with the views of Chief Engineer (N&W), CWC and Commissioner, CAD, MoWR, RD&GR. He emphasised that it would be appropriate to await the completion of all additional investigations suggested by panel of experts. WRD Rajasthan may facilitate visit of CSMRS experts at the earliest with removal of shrubs and grass etc on downstream face of the dam.

(Action: State of Rajasthan, CSMRS, Chief Engineer (NW&S), CWC)

37.3.4 Temghar Dam (Maharashtra)

Representative from Maharashtra informed the committee that Expert Committee constituted for suggesting rehabilitation measures has submitted its report. Tender for

rehabilitation works have been awarded and work will be started within two weeks. The period of rehabilitation work completion is about 24 months. Commissioner CAD, MoWR, RD&GR inquired about scope of work and requested Maharashtra representative to keep proper sequencing of works such as curtain grouting, upstream and downstream grouting including top grouting. Member Secretary NCDS instructed Maharashtra representative to involve DSRP for proper sequencing and quality of work.

(Action: Chief Engineer (NW&S), CWC. State of Maharashtra)

37.3.5 Maudha Dam (Uttar Pradesh):

Member Secretary NCDS asked Director Dam Safety Uttar Pradesh about latest position of Maudha Dam. He informed that expert team from CWC has not visited the Dam yet as decided in last meeting.

Director, DSR, CWC informed the committee that a visit was planned in Dec 2016 and it was dropped because bad weather. Further, he informed the committee that visit could be planned in March 2017 provided water should be removed from inspection gallery and dry condition should be ensured.

(Action: State of Uttar Pradesh)

37.3.6 Durgawati Dam (Bihar)

Director Dam Safety Bihar informed the committee that rate of discharge due to seepage from downstream dam toe has been measured from 28.01.2016 to 22.12.2016. Maximum discharge was 0.259 cusecs in the month of July and minimum discharge was 0.13 cusecs in the month of February. The water coming out of is free of silt and sandy material. He further informed that the situation is under control and field engineers are keeping close watch on seepage. The work to restore the designed section of the dam on upstream side is underway and work is monitored by concerned Chief Engineer.

The committee suggested that the dam toe Seepage is because of boring for relief wells. Seepage should be measured and linked with reservoir level on a time scale. If time lag is less, there are serious piping issues. A toe pond has also formed which must be dried up. Resectioning should be followed by proper compaction.

After restoring the dam to designed section, curtain grouting will be done from top of dam to earthen strata. Member Secretary NCDS asked if any help is required in investigation, it should be informed. Director Dam Safety Bihar requested chair to

provide guidance in doing curtain grouting properly. Chairman CWC and NCDS instructed Bihar representative to send a proposal for the desired guidance for rehabilitation of dam.

(Action: State of Bihar)

Special Note on Ukai Dam Gujrat

Chief Engineer, Gujrat Engineering Research Institute (GERI) informed the committee an incident in penstock of Ukai Dam. On 10th Feb and 11th September of 2014, sudden overspeeding was observed in unit 3 & 4. Subsequently, penstock gates were dropped down. But instead of dropping, the gate experienced upward pressure for a moment and drooped in uncontrolled manner. This uncontrolled falling of gates resulted in damage of penstock gate and its embedded parts. This all were due to failure of governing of turbine.

Member Secretary, NCDS suggested that this may not be related to Dam Safety and may contact power generation and turbine engineers in this regard.

(Action: State of Gujrat)

37.4 Preparation of Emergency Action Plan (EAP)

The member Secretary, NCDS reviewed the latest status of preparation of Emergency Action Plans (EAPs) and carrying out of mock drills. He congratulated some members such as BBMB, NHPC, Himachal Pradesh and Punjab for high numbers of EAP preparation. Simultaneously, concern was expressed over poor status of EAP preparation in states such as Chhattisgarh, DVC, Gujrat, Jharkhand, Kerala Irrigation, Kerala Electricity Board, Karnataka, Madhya Pradesh, Maharashtra, Odisha, Rajasthan, Tamil Nadu, Telangana, Uttar Pradesh, Uttarakhand, West Bengal and Meghalaya Power Generation. Chief Engineer Andhra Pradesh informed that good result will be shown in next NCDS meeting. Director Dam Safety Bihar informed the lack of expertise in doing dam break analysis and preparation of inundation maps and requested CWC help. Member Secretary NCDS assured help to Bihar representative by CWC, New Delhi in this regard and suggested all NCDS members to share available EAPs with SDMA and local authorities.

(Action: All States/DSOs)

37.5 Pre & Post Monsoon inspection of Dams

Member Secretary NCDS informed that pre & post monsoon inspection of each dam needs to be carried out by Dam authorities and consolidated report should be prepared by state DSO. The inspection report normally covers the observations of inspection team, suggested remedial measures. But the reports are generally silent on action taken on previous report recommendations. It is also observed that all large dams in a particular state are not inspected by particular state authorities. State Govts/DSOs are requested to ensure the regular inspection of each large dam under their jurisdiction and report should be submitted to DSO, CWC regularly.

Some of the member states desire new check list for inspection of small dams but Chairman CWC suggested them to use original check list as suggested by CWC guidelines and leave irrelevant entries. At this juncture, Commissioner, CAD, suggested to all NCDS members to use DHARMA software and upload latest status of Dam health in the form of check list as suggested in Annexure-VIII of 37th meeting agenda.

(Action: All States/DSOs)

37.6 Instrumentation of Dams:

35.6.1 Strengthening of seismic instrumentation as per the decision of National Committee on Seismic Design Parameter (NCSDP)

Seismic Instrumentation needs to be strengthened for dams in zone IV and V. Executive Engineer, DSO, Maharashtra informed that State Govt of Maharashtra has recently formed a committee for purchase of seismic instruments in dams in seismic zone IV and V. BBMB informed that a committee of expert from IMD and IIT Roorkee has been formed for finalization of specification and location of instrument in the dam. Kerala and Tamil Nadu Informed that states lie in Seismic zone II and II and do not require seismic instrument. All other states are in various stages of data collection from field engineers and other preparation stages.

Karnataka informed that at present there are a total of 14 (10 of them in dam locations) VSAT enabled Permanent Seismic Monitoring Stations (In Zone-II and Zone-III) which are installed by the Karnataka State Natural Disaster Monitoring Centre (KSNDMC), Bengaluru in Karnataka State to study the Seismic activities. Director KSNDMC has submitted a proposal for establishment of 16 more VSAT enabled Permanent Seismic

Monitoring Stations. States/DSOs were again requested to strengthen seismic instrumentation in dams under intimation to Director, Instrumentation, CWC.

It was informed that under DRIP, a guideline for instrumentation of Dam is being prepared. MOUs have been signed with various institutes for seismic consultancy and monitoring. Data from all Dam instruments must be collected and analysed at one place. Dams must be bunched together for procuring seismic instrumentation in order to minimise cost. All states should learn from the collaboration of UJVNL with Japan Water Agency for emergency response. UJVNL should be made a member of NCDS. Dam authorities must share all dam safety details with all stakeholders.

(Action: All States/DSOs)

37.6.2 Strengthening of other instrumentations of large dams:

During earlier NCDS meetings it was informed that States/DSO's may submit separate detailed report on performance of existing instruments installed in the dam body and foundation including analysis of data with permissible limits of instruments in prescribed format to the Director, Instrumentation Directorate, CWC on yearly basis. The State Governments/DSOs were advised to ensure proper functioning of instruments and make sure that at least the basic instruments, i.e. plumb line, V-notch & survey settlement point etc. are in working order and the instruments measuring the parameters pertaining to the serious maintenance issues / problems faced by the dams need to be installed in old dams e.g. extra survey points (for deformation), crack meters (cracks), Joint meter (differential settlement), instruments for measuring uplift pressure & pore pressure, plumb line etc.

States under DRIP informed that instrumentation of dams is in process under supervision of CPMU. Andhra Pradesh provided instrumentation detail and data of Srisailem Dam and inquired about the instrumentation of Polavaram Project. Director, Instrumentation, CWC informed that the instrumentation drawings of Polavaram Project have been issued. Chief Engineer, BBMB informed that the replacement/modernization of instruments of dams is under process as per advice of CWC. Executive Engineer, DSO, Maharashtra informed that in Maharashtra, 73 dams are having various type of instruments installed. Total 5236 numbers of various types of instruments are installed in dams out of which 2344 instruments are in working condition while 2892 instruments are in non-working/under repair condition. Out of these 2892 instruments, 806 instruments

are repairable and 2086 can't be repaired or replaced because most of these instruments are embedded during construction. State Govt of Maharashtra has recently formed a committee for purchase of instruments. All other states are in various stages of data collection from field engineers and other preparation stages.

(Action: All States/DSOs)

37.7 Comprehensive Dam Safety Review Panel (DSRP):

Member Secretary informed that as per Dam Safety Procedures, the States/DSOs shall arrange comprehensive safety review of dams which are more than 15 metres in height or which store 50000 acre feet (60Mm^3) or more of water by an independent panel of experts once in 10 years. DSRP shall consist of three or more independent experts with expertise in various technical fields relevant to the safety aspects of dams, representing the domains of (i) geology and foundation engineering, (ii) hydrology and flood management, (iii) concrete and masonry dam designs, (iv) embankment dam designs, (v) hydro-mechanical equipments, (vi) instrumentation and (vii) dam construction with at least one out of state expert. Status regarding constitution of DSRP and number of Dam Safety Reviews carried out by DSRPs in the states/DSOs was reviewed.

Representative of State of Maharashtra informed that state govt has formed regional committee to review safety aspects of Category-I dams which inspects the dams and submits the report to govt. Similarly Gujrat have pool of national/state level experts which inspect the dam during high flood time or after reasonable time.

Chairman NCDS noticed that some of the states has not even constituted independent panel of experts i.e. DSRP and expressed his displeasure regarding very poor level of inspection of dams. Member Secretary, NCDS instructed the members to constitute permanent DSRP as per CWC guidelines till next NCDS meeting.

(Action: All States/DSOs)

37.8 National Register of Large Dams Updation as per new formats

The status of submission by State Governments/Dam Safety Organizations was reviewed and it was observed that the updated information has been received from Maharashtra, Andhra Pradesh and Rajasthan. The information provided by Maharashtra has been updated in the NRLD and updation of information received from Andhra

Pradesh and Rajasthan is under process. All other states has already submitted the information and requested their field offices to update the information in CWC prescribed format of NRLD.

Updation being a continuous process, Member Secretary NCDS requested members to keep on updating the NRLD and fill all the entries of already circulated format. It has been observed in some cases, local Nalla is mentioned in the column 'River' of the format. This may be checked again and name of river/tributaries of river etc. and the details of river basins (wherever not provided) be submitted.

(Action: All States/DSOs)

37.9 Dam Rehabilitation and Improvement Project (DRIP)

The on-going Dam Rehabilitation and Improvement Project (DRIP), with financial assistance from World Bank covered merely 225 dam projects (5% of the dams in country) in seven states only i.e. Jharkhnad (DVC) Karnataka, Kerala, Madhya Pradesh, Odisha Tamil Nadu, and Uttarakhand.

Ministry of Water Resources, River Development and Ganga Rejuvenation, Govt of India is contemplating one more project on similar lines with DRIP, but on an enhanced scale, covering more number of states and dams. The project (DRIP-II) will be formed based on response and requirement of the states."

(Action: All States/DSOs)

37.10 Records of Dam Failures and Major Dam Incidents and their Technical Reports.

State Govts./DSOs/Dam Authorities are requested in earlier NCDS meetings to furnish technical reports of Dam failures/incidents related to

- any structural damage to the dam and appurtenant works,
- occurrence of any flood, the peak of which exceeds the available flood discharge capacity or seventy per cent, of the approved design flood,
- occurrence of a flood, which resulted in encroachment on the available freeboard, or the approved design freeboard,
- Any other incidence which a prudent dam engineer may relate to dam safety concerns and Dam Failures.

Member Secretary, NCDS reviewed the record of Dam failures as reported by State Govts/ DSOs/Dam Authorities. He informed the members that the information provided by them had been uploaded on website <https://damsafety.in> and requested to go through it and suggest amendments if any. He further requested the members to provide detailed reports on reported failures so that the same can be uploaded for the benefits of all.

Secretary, WRD, Karnataka suggested the members, instead of providing only failure reports of the dams, it is better to provide complete history of all dams. He further suggested that this work can be done by Post Graduate students of any nearby college.

(Action: All States/DSOs)

37.11 Upkeep and archival of records - Data Book and O&M Manual etc.:

Member Secretary, NCDS stated that the project authorities should prepare operation & maintenance (O&M) manuals for all the large dams in their States on priority. Accordingly, State Govts./DSOs were requested to prepare data books along with complete set of designs and drawings as per CWC Guidelines on Standardized Data Book Format available at (http://www.cwc.gov.in/Dam_safety.html). He further requested all State Government/DSOs to expedite preparation of data books and O&M manuals for all the large dams under their jurisdiction and intimate and submit the updated status to NCDS Secretariat.

(Action: All States/DSOs)

37.12 Monitoring of safety aspects of inter-State Dams by Sub-Committees:

(a) Mahanadi River System Sub-Committee (MRSS):

Odisha informed that the 8th meeting of the sub-committee was held on August 2014 and 9th meeting will be held shortly on a mutually agreeable date. In the last NCDS meeting, Member Secretary, NCDS requested the member states of sub-committee to convene the meeting in June 2016. Chhattisgarh informed that rule curve/operation schedule of Minimata Bango Dam has been handed over to Hirakund Authorities and Ravishankar Sagar Dam Rule curve/operation schedule is under preparation. It was further requested that the monitoring reports of Inter-state dams have not received and may be submitted

by Chief Engineer, Dam Safety Odisha as earliest possible. Member states are requested to arrange the meeting as earliest possible and send the desired reports.

(Action: Chief Engineer, Dam safety, Odisha (Member Secretary&Convenor), MRSS, Chief Engineer, Mahanadi Project, Chhattisgarh (Member), Chief Engineer&Basin Manager, Upper Mahanadi Basin, Odisha (Member) and Chief Engineer, Minimata Bango Project, Chhattisgarh (Member))

(b) Subarnarekha River System Sub-Committee (SRSS):

It is informed that 7th meeting of the sub-committee was held on 28th Jan 2016 at Jamshedpur. The minutes has been send to Chief Engineer Designs, Master Planning and Hydrology Central Design Organisation, WRD, Govt of Jharkhand and no report has been received yet. It is further requested that the monitoring reports of Inter-state dams has not been received and may be submitted by Chief Engineer, Dam Safety and Member Secretary, Odisha.

(Action: Chief Engineer, Design & Research, Odisha (Member Secretary&Convenor), SRSS, Chief Engineer Design & Research, West Bengal (Member), Chief Engineer, Design, Master Planning & Hydrology, Jharkhand (Member))

(c) Parambikulam Aliyar Project (PAP) System:

Kerala representative requested the committee to revive the PAPS sub-committee for inspection of all PAPS dams.

35.13 Setting up Hydrology units and Design Floods Review:

Member Secretary, NCDS requested States/DSOs to take necessary steps for Design flood review of large dams and for setting up the hydrological units. He further informed the members to regularly intimate the status of flood reviews to Director DSM CWC. States of Chhattisgarh, Jharkhand, Uttar Pradesh, Uttarakhand and West Bengal were requested to constitute the hydrological units for review of design floods for large dams and carry out design flood review of large dams. Andhra Pradesh, Bihar, Gujrat, Karnataka, Maharashtra, Madhya Pradesh, Odisha, Punjab, Rajasthan, Telangana, Himachal Pradesh, KSEB and MePGCL having hydrology units but not reported much progress for the Hydrological review of the large

dams and are again requested to make special efforts to carry out the Hydrological review of dams for all large dams, which is one of the important aspects of dam safety.

(Action: All States/DSOs)

The summary of the decision taken on the points above is enclosed at Annexure-

III

The meeting ended with vote of thanks to chair and appreciation for UJVNL for their organizing efforts.

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Annexure-I

List of participants of 37th NCDS Meeting held on 17/02/2017 at 10:00 hrs at the Hotel Radisson Blue, Hardwar

Sl.No.	Name of officers	Designation	Signature
CWC, MoWR, RD&GR and CSMRS			
1	Shri Narendra Kumar	Chairman, CWC & NCDS	
2	Shri N.K. Mathur	Chief Engineer (DSO) & Member Secretary, NCDS	
3	Shri Hasan Abdullah	Director, CSMRS	
4	Dr. B.R.K. Pillai	Commissioner, CAD, MoWR, RD&GR	
5	Shri Virendra Sharma	Sr. Joint Commissioner (BM), MoWR, RD & GR	
MEMBERS			
Andhra Pradesh			
6	Shri M. Giridhara Reddy	Chief Engineer, CDO	
7	Shri K.V.V. Narasimha Rao	Deputy Chief Engineer, CDO	
Bihar			
8	Shri Binod Kumar Sinha	Director, Dam Safety Cell, WRD	
Chhattisgarh			
9	Shri Ajay Thakur	Executive Engineer, WRD	
Gujarat			
10	K.A. Keshvani	Chief Engineer & Director, GERI	
11	Shri U.R. Patil	Assistant Engineer, GERI	
Jharkhand			
12	Shri Ashok Ram	Chief Engineer, C.D.O.	
13	Shri Ganesh Ram	Chief Engineer, WRD,	
Himachal Pradesh			
14	Er. J.D. Sharma	Chief Engineer (Authority), Dte. Of Eenergy	
15	Er. M.S. Thakur	Dy. Chief Enngineer, DoE	
16	Er Sanjay Kumar Rana	Addl. Superintending Engineer, HPSEBL	
17	Er. Suneel Singh	Addl. Superintending Engineer, HPSEBL	
Karnataka			
18	Shri Gurupada Swamy B.G.	Secretary, WRD	
19	Shri Madhava	Superintending Engineer Project Director, WRD, KERS	
20	Shri N. Rama Krishna	Director, KERS	
Kerala			
21	Shri Mahanudevan V.K.	Chief Engineer, Irrigation, WRD,	
22	Shri T.G. Sen	Chief Engineer, IDRB, WRD	
23	Shri K.H. Shamsudeen	Director, WRD	
Madhya Pradesh			
24	Shri Gulsingh Dabar	Deputy Director (BODHI), Dam Safety	

THE HOTEL RABBITON
LIST OF PARTICIPANTS OF 22ND WOODS MEETING

ALPH.	NAME OF OFFICER
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CW. MOYER, FINGER AND COMES

1	Mr. H. H. Moyer	Chairman
2	Mr. J. H. Moyer	Secretary
3	Mr. J. H. Moyer	Director
4	Mr. J. H. Moyer	Commissioner
5	Mr. J. H. Moyer	St. John's Commission

MEMBERS

6	Mr. J. H. Moyer	Mr. J. H. Moyer
7	Mr. J. H. Moyer	Mr. J. H. Moyer
8	Mr. J. H. Moyer	Mr. J. H. Moyer
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100	Mr. J. H. Moyer	Mr. J. H. Moyer

Maharashtra		
25	Shri Pravin H. Mohite	Executive Engineer, DSO
Odisha		
26	Shri S.C. Mohanty	Engineer-in-Chief, P&D, WR
27	Shri B.B. Panda	Chief Engineer, Dam Safety, DOWR
Punjab		
28	Er. S.B. Garg	Senior Design Engineer, Punjab Irr.
29	Er. K.C. Bhagat	Executive Engineer, Ranjit Sagar Dam, Pb.Irr.
30	Shri.V.Anand	Executive Engineer, Punjab Irrigation Deptt.
Rajasthan		
31	Shri Sanjay Sethi	Director, WRD
32	Shri Rajesh Kumar Kalaria	Executive Engineer, WRD
Tamil Nadu		
33	Shri T. Asokan	Chief Engineer, PWD, O&M
34	Shri P. Ameer Hamsa	DSE, WRD, Dam Safety Dte.
Telangana		
35	Shri K.S.S. Chandra Sekhar	Director, SDSO, Office of CDO
36	Shri S. Srinivasulu	Executive Engineer, DSO
Uttar Pradesh		
37	Shri C.S. Vishwakarma	Director, Dam Safety Cell, UP Irrigation Deptt.
Uttarakhand		
38	Shri D.S. Kachhawaha	S.S.O. (Planning), Irrigation
39	Shri Sandeep Singhal	Director, Project, UJVNL
40	Shri B.C.K. Mishra	Director (Operations), UJVNL
Bhakra Beas Management Board(BBMB)		
41	Shri Tarlochan Singh	Chief Engineer, Dam Safety
42	Shri Sanjeev Suri	Chief Engineer, Bhakra Dam
Damodar Valley Corporation(DVC)		
43	Shri Biswajit Kumar Basar	Dy. Chief Engineer (Civil)
44	Shri S.K. Maji,	M.R.O.
45	Shri S.K. Sinha	Executive Director (Civil)
Kerala State Electricity Board(KSEB)		
46	Shri R. Anil Kumar	Chief Engineer, Dam Safety & DRIP,
National Hydro Power Corporation(NHPC)		
47	Shri Narendra Kumar	General Manager (Design Divn.)
48	Shri Mukesh Kumar	Manager (Civil), (Design Divn.)
THDC		
49	Shri H.L. Arora	Executive Director
India Meteorological Department(IMD)		
50	Dr. Ashok Kumar	Scientist-D
Meghalaya Power Gen. Corpn. Ltd.(MePGCL)		
51	Er. Kheidor Tiewsoh	Chief Engineer
Geological Survey of India(GSI)		
52	Shri Pradeep Singh	Director

CWC Officials

53	Shri T.K. Sivarajan	Chief Engineer Design (N&W)	
54	Shri Pramod Narayan	Director, DSR Dte	
55	Shri Sameer Kumar Jha	Director, DSM Dte	
56	Shri Yoki Vijay	Director, Instrumentation Dte.	
57	Shri P. Devender Rao	Director, Embankment (NW&S)	
58	Shri S. Ghosh	Director, CMDD(N&W)	
59	Shri N.N. Rai	Director, Hydrology(NE)	
60	Shri Kayum Mohammad	Director, CMDD (NW&S)	
61	Shri O.P. Gupta	Director (FE&SA)	
62	Shri M. Ramesh Kumar	Director, Embankment (N&W)	
63	Dr. Manish Gupta	Scientist 'D', CSMRS	

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Annexure-II

List of participants of 37th NCDS Meeting (Extension) held on 18/02/2017 at 12:00 hrs at the N.I.H., Roorkee

Sl.No.	Name of officers	Designation	Signature
CWC, MoWR, RD&GR and CSMRS			
1	Dr. Amarjeet Singh	Secretary, MoWR, RD&GR	
2	Shri Narendra Kumar	Chairman, CWC & NCDS	
3	Shri N.K. Mathur	Chief Engineer (DSO) & Member Secretary, NCDS	
4	Shri Sanjay Kundu	Joint Secretary (PB&PR), MoWR, RD & GR	
5	Shri Hasan Abdullah	Director, CSMRS	
6	Dr. B.R.K. Pillai	Commissioner, CAD, MoWR, RD&GR	
7	Shri Virendra Sharma	Sr. Joint Commissioner (BM), MoWR, RD & GR	
MEMBERS			
Andhra Pradesh			
8	Shri M. Giridhara Reddy	Chief Engineer, CDO	
Bihar			
9	Shri Binod Kumar Sinha	Director, Dam Safety Cell, WRD	
Gujarat			
10	K.A. Keshvani	Chief Engineer & Director, GERI	
11	Shri U.R. Patel	Assistant Engineer, GERI	
Jharkhand			
12	Shri Ashok Ram	Chief Engineer, C.D.O.	
Himachal Pradesh			
13	Er. J.D. Sharma	Chief Engineer (Authority), Dte. Of Eenergy	
14	Er. M.S. Thakur	Dy. Chief Enngineer, DoE	
Karnataka			
15	Shri Gurupada Swamy B.G.	Secretary, WRD	
16	Shri N. Rama Krishna	Director, KERS	
17	Shri Sunil Kumar S.	Assistant Engineer, W.R.D.O.	
Kerala			
18	Shri Mahanudevan V.K.	Chief Engineer, Irrigation, WRD,	
19	Shri T.G. Sen	Chief Engineer, IDRB, WRD	
Maharashtra			
20	Shri I.S. Chaudhari	Chief Engineer, Hydrology & Planning, Dam Safety	
Odisha			
21	Shri S.C. Mohanty	Engineer-in-Chief, P&D, WR	
Punjab			
22	Er. S.B. Garg	Senior Design Engineer, Punjab Irr.	
Rajasthan			
23	Shri Sanjay Sethi	Director, WRD	

LIST OF PARTICIPANTS OF 27th MEETING
23-26 JULY 1971 AT THE ILM, A. 1. 1. 1.

Sl. No.	Name of Officers
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CIVIC MOWA ROSSER AND CAMPS

1	Dr. Arsenio J. J. J.
2	Dr. J. J. J.
3	Dr. J. J. J.
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8	Dr. J. J. J.
9	Dr. J. J. J.
10	Dr. J. J. J.

ATTACHES

1	Dr. J. J. J.
2	Dr. J. J. J.
3	Dr. J. J. J.
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24	Shri Rajesh Kumar Kalaria	Executive Engineer, WRD	
Tamil Nadu			
25	Shri T. Asokan	Chief Engineer, PWD, O&M	
Telangana			
26	Shri K.S.S. Chandra Sekhar	Superintending Engineer, CE/CDO/Hyd.	
Uttar Pradesh			
27	Shri C.S. Vishwakarma	Director, Dam Safety Cell , UP Irrigation Deptt.	
Uttarakhand			
28	Shri R. Chalisgaonkar	Engineer-in-Chief, Irrigation Deptt.	
29	Shri Sandeep Singhal	Director, Project, UJVNL	
Bhakra Beas Management Board(BBMB)			
30	Shri Tarlochan Singh	Chief Engineer, Dam Safety	
31	Shri Sanjeev Suri	Chief Engineer, Bhakra Dam	
Damodar Valley Corporation(DVC)			
32	Shri S.K. Sinha	Executive Director (Civil)	
Kerala State Electricity Board(KSEB)			
33	Shri R. Anil Kumar	Chief Engineer, Dam Safety & DRIP,	
National Hydro Power Corporation(NHPC)			
34	Shri Narendra Kumar	General Manager (Design Divn.)	
35	Shri Mukesh Kumar	Manager (Civil), (Design Divn.)	
Geological Survey of India(GSI)			
36	Shri Pradeep Singh	Director	
CWC Officials			
37	Shri Pramod Narayan	Director, DSR Dte	
38	Shri Sameer Kumar Jha	Director, DSM Dte	
39	Shri Yoki Vijay	Director, Instrumentation Dte.	
40	Shri N.N. Rai	Director, Hydrology(NE)	

1. The Board of Directors of the Corporation

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CENTRAL DAM SAFETY ORGANISATION
National Committee on Dam Safety
37th Meeting
Summary of the Decisions Taken at the Meeting

Date of Meeting: 17.02.2017

Time: 10:00hrs to 1300hrs

Venue: Hotel Radisson Blue Haridwar

Chairperson: Shri Narendra Kumar, Chairman, CWC
Vice Chairman: Shri.N.K Mathurl, Member (D&R), CWC
Members & Invitees (Name, Designation, Organization):

At Annexure-I

Sl.No.	Agenda Point / Decision	Responsibility	Remarks
37.1	Confirmation of the minutes of 37th meeting: The minutes of the 37 th meeting of the NCDS were confirmed.		
37.2	Dam Safety Bill, 2016	(Action: Senior Jt. Commissioner, BM, MoWR, RD&GR)	
37.3	Dams of National importance:		
37.3.1	Bhakra Dam (Punjab): Member Secretary requested BBMB to speed up the process of investigation and sampling. He informed that PMP studies of Bhakra Dam had already been completed requested that PMP studies of Pong and Pandoh may be expedited with IMD New Delhi. Chairman NCDS desired time line of the data submission and Chief Engineer BBMB committed as June 2017.	(Action: BBMB, Director, DSR Dte., CWC)	
37.3.2	Srisaillam Dam (Andhra Pradesh): Director Hydrology (NE) CWC advised Srisaillam Authorities that flood routing studies should be conducted for various flood discharges ranging from 19 lakhs cusecs to 30 lakhs cusecs impinging at FRL. The routing studies should be carried out with all gates open, one gate inoperative and two gates inoperative and with incremental raise of 2 lakhs cusecs. The reservoir operation schedules should be prepared. Member Secretary requested Andhra Pradesh and IMD to resolve the issue of flood review as early as possible.	(Action: State of Andhra Pradesh)	
37.3.3	Gararda Dam (Rajasthan): The formation of a team of experts retired from CWC and CSMRS is under process. Chief Engineer Design (N&W)	(Action: State of Rajasthan, CSMRS, New	

		CWC suggested that remaining portion of the Dam is not stable and desires one more visit before taking final decision.	Delhi, Chief Engineer (NW&S), CWC	
	37.3.4	Temghar Dam (Maharashtra): Tender for rehabilitation works have been awarded and work will be started within two weeks. The period of rehabilitation work completion is about 24 months. Member Secretary NCDS instructed Maharashtra representative to involve DSRP for proper sequencing and quality of work.	(Action: State of Maharashtra)	
	37.3.5	Maudha Dam (Uttar Pradesh): Director Dam Safety Uttar Pradesh informed that expert team from CWC has not visited the dam. Director, DSR, CWC informed the visit could be planned in March 2017 provided water should be removed from inspection gallery and dry condition should be ensured.	(Action: State of Uttar Pradesh)	
	37.3.6	Durgawati Dam (Bihar): Chairman CWC and NCDS instructed Bihar representative to send a proposal for curtain grouting guidance.	(Action: State of Bihar)	
	37.4	Preparation of Emergency Action Plan (EAP) The member Secretary, NCDS reviewed the latest status of preparation of Emergency Action Plan: All States/DSOs were requested to make all out efforts for the preparation of EAPs in a time bound manner of all the large dams under their jurisdiction.	(Action: All States/DSOs)	
	37.5	Pre & Post Monsoon inspection of Dams: Commissioner, CAD, MoWR, RD&GR suggested to all NCDS members to use DHARMA software and upload latest status of Dam health in the form of check list as suggested in Annexure-VIII of 37 th meeting agenda.	(Action: All States/DSOs)	
	37.6	Instrumentation of Dams		
	37.6.1	Strengthening of seismic instrumentation as per the decision of National Committee on Seismic Design Parameter (NCSDP): States/DSOs were requested that strengthening of seismic instrumentation at different locations in the dams in seismic zone IV and Seismic Zone V under their jurisdiction may be carried out under intimation to Instrumentation Directorate, CWC.	(Action: All States/DSOs)	
	37.6.2	Strengthening of instrumentation of large dams: All States/DSOs to submit	(Action: All States/DSOs)	

		separate detailed report on performance of existing instruments installed in the dam body and foundation including analysis of data with permissible limits of Instruments in prescribed format enclosed at Annexure-IX of 37 th meeting agenda to the Director, Instrumentation Directorate, CWC on yearly basis.		
37.7	Comprehensive Dam Safety Review Panel: It is noticed that some of the states has not even constituted independent panel of experts i.e. DSRP. Member Secretary, NCDS instructed the members to constitute permanent DSRP as per CWC guidelines till next NCDS meeting.		(Action: All States/DSOs)	
37.8	National Register of Large Dams (NRLD): Updation being a continuous process, Member Secretary NCDS requested members to keep on updating the NRLD and fill all the entries of already circulated format. It has been observed in some cases, local Nalla is mentioned in the column 'River' of the format. This may be checked again and name of river/tributaries of river etc. and the details of river basins (wherever not provided) be submitted.		(Action: All States/DSOs)	
37.9	Dam Rehabilitation & Improvement Project (DRIP): DRIP-II		(Action: All DRIP member States)	
37.10	Record of Dam Failures and Major Dam Incidents and their Technical Reports: Member Secretary NCDS informed the members that the information provided by them had been uploaded on website https://damsafety.in and requested to go through it and suggest amendments if any.		(Action: All States/DSOs)	
37.11	Upkeep and archival of Records-Data Book and O&M Manual: Member Secretary requested all State Government/DSOs to expedite preparation of data books and O&M manuals for all the large dams under their jurisdiction and intimate and submit the updated status to NCDS Secretariat.		(Action: All States/DSOs)	
37.12	Monitoring of safety aspects of inter-State Dams by Sub-Committees:			
	(a)	Mahanadi River System Sub-Committee (MRSS): Member states are requested to arrange the 9 th meeting as earliest possible and send the desired	Chief Engineer, Dam Safety, Odisha (Member Secretary), MRSS, Chief Engineer, Mahanadi	

		reports.	Project, Chhattisgarh (Member), Chief Engineer, Upper Mahanadi Basin, Odisha(Member) and Chief Engineer, Minimata Bango Project, Chhattisgarh (Member)	
	(b)	Subarnarekha River System Sub-Committee (SRSS): It is informed that 7 th meeting of the sub-committee was held on 28 th Jan 2016 at Jamshedpur. CWC further requested that the monitoring report of Inter-state dams are not being received and may be submitted.	Chief Engineer, Design & Research, Odisha(Member Secretary& Convenor), SRSS, Chief Engineer Design & Research, West Bengal (Member), Chief Engineer, Design, Master Planning & Hydrology, Jharkhand(Member)	
37.1 3		Setting up Hydrology units and Design Floods Review: Member Secretary, NCDS requested States/DSOs to take necessary steps for Design flood review of large dams and for setting up the hydrological units. He further informed the members to regularly intimate the status of flood reviews to Director DSM CWC.	All States/DSOs	

