



राष्ट्रीय बाँध सुरक्षा प्राधिकरण
भारत सरकार
जल शक्ति मंत्रालय
जल संसाधन, नदी विकास और गंगा संरक्षण विभाग



Sub: 2nd meeting of the National Committee on Dam Safety (NCDS) constituted as per Dam Safety Act, 2021-Minutes of meeting-reg.

Sir,

I am directed to forward herewith a copy of approved minutes of the second meeting of the National Committee on Dam Safety (NCDS) held on 06th June 2023 at CWC, HQ, Sewa Bhawan, New Delhi.

Encl: Copy of approved Minutes

Yours Sincerely

Signed by Vijai Saran

Date: 30-06-2023 12:18:13

Member (Policy & Research), NDSA
& Member Secretary NCDS

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To,

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Copy along with enclosures for kind information to:

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3. PPS to Hon'ble Minister of State for Jal Shakti & Tribal Affairs. [Email: mos-mowr@nic.in]
4. PPS to Secretary, DoWR, RD & GR, Ministry of Jal Shakti.
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5. All Members of NDSA
6. All Regional Directors of NDSA



Dam Safety Act, 2021
**National Committee
on Dam Safety**

Minutes of the 2nd Meeting

06 June 2023
10:30 – 16:00 hours
209, 2nd Floor Conference Room
Central Water Commission, New Delhi

Ministry of Jal Shakti
Government of India
NDSA Secretariat
New Delhi

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Dam Safety Act, 2021

National Committee on Dam Safety

Ministry of Jal Shakti, Government of India, New Delhi

2nd Meeting

06 June 2023

Conference Room, CWC, New Delhi

Minutes

List of Participants

S.No.	Designation and Affiliation	Shri/Ms.
Chairman		
1	Chairman, Central Water Commission <i>Ministry of Jal Shakti, Government of India</i>	Kushvinder Vohra
Members		
(a) Representatives of the Central Government		
2	Chairman, National Dam Safety Authority, Ministry of Jal Shakti, Government of India	S. K. Sibal
3	Member (Design & Research), Central Water Commission, Ministry of Jal Shakti, Government of India	S. K. Sibal
4	Member (Hydro), Central Electricity Authority, Ministry of Power, Government of India	M A K P Singh
5	Representative of Department of Water Resources, River Development & Ganga Rejuvenation, Ministry of Jal Shakti, Government of India -Joint Secretary, RD& PP	Anand Mohan
6	Representative of National Disaster Management Authority, Ministry of Home Affairs, Government of India -Joint Advisor, NDMA	Biswarup Das
7	Representative of Ministry of Environment, Forest & Climate Change, Government of India -Scientist 'C'	Saurabh Upadhyay
8	Representative of Director General, Indian Meteorological Department <i>Ministry of Earth Science, Government of India</i> -Scientist 'F'	Rahul Saxena
9	Representative of Director General, Geological Survey of India, Ministry of Mines, Government of India -Director, DGCO	Neetu Chauhan
10	Representative of Director, National Remote Sensing Centre, ISRO <i>Department of Space, Government of India</i> -Group Director, RSAA, NRSC	P V Raju
11	Representative of Director, National Geophysical Research Institute <i>Ministry of Science and Technology, Government of India</i> -Senior Scientist, NGRI	Dr. Sandeep K Gupta
(b) Representatives of the State Governments		

12	Group I : Andhra Pradesh, Chief Engineer, WRD	T.V.V.A.R Kumar
13	Group II : Himachal Pradesh, Engineer-in-Chief, Jal Shakti Vibhag	-
14	Group III : Arunachal Pradesh, Chief Engineer (Mon), DHPD	-
15	Group IV : Manipur, Add. Chief Engineer-I WRD	-
16	Group V : Bihar, Engineer-in-Chief, Irrigation Creation, WRD	Rakesh Kumar
17	Group VI : Gujarat, Chief Engineer (NG) & Add. Secretary	M D Patel
18	Group VII : Rajasthan, Chief Engineer, SDSO, Jaipur	Ravi Solanki
(c) Specialists in Dam Safety and allied fields		
19	Specialist Chairman, HP Electricity Regulatory Commission	D K Sharma
20	Specialist Institute Chair Professor, Dept of Civil Engineering, IIT Madras	C V R Murty
(d) Special Invitees		
21	Member (Technical), NDSA	Vivek Tripathi
22	Member (Regulation), NDSA	S. D. Sharma
Secretary		
23	Member (Policy and Research), National Dam Safety Authority, Ministry of Jal Shakti, Government of India -Member Secretary, NCDS	Vijai Saran

The National Committee on Dam Safety deliberated on the Agenda Items and took the following decisions:

S. No.	Item
1.0 WELCOME	
1.0.1	Chairman
	<p>At the outset of the meeting, Chairman, NCDS and CWC welcomed all the participants in the 2nd meeting of National Committee on Dam Safety. Thereafter, a brief introduction was given by all the participants. After the brief introduction, Chairman of the committee asked the Member Secretary-NCDS to take up the agenda points wise.</p> <p>Member (Policy and Research), NDSA then took up the Agenda points for discussions.</p>
2.0 Confirmation of minutes of 1st meeting of NCDS	
	The minutes of the 1 st meeting of NCDS were circulated on 23.09.2022. Since no comments have been received, the minutes were confirmed by the committee.
2.1 Constitution of SCDS and SDSO	
	Status informed, Deliberation held and Decisions taken
	<p>It was informed that at present 28 States and 3 UTs have constituted State Committee on Dam Safety and State Dam Safety Organization in accordance with the provisions of Act.</p> <p>The progress was noted by the committee. No further action is required in this regard.</p>
2.2 Formation of Rules and Regulations under section 54 of Dam Safety Act, 2021	
	Status informed, Deliberation held and Decisions taken
	<p>It was informed that there are 19 subjects under Section 54(2) of the Dam Safety Act, for which regulations are to be framed. As decided in the 1st NCDS meeting, NDSA has prepared the 7 prioritized draft regulations (c, d, e, g, h, o, q). The list of these 7 regulations are given below: -</p> <ol style="list-style-type: none"> 1. 54(2)(c) “the details and form pertaining to the maintenance of log books or database under sub-section (1) of section 18”; 2. 54(2)(d) “the qualifications, experience and training of the individuals responsible for safety of specified dams under section 23”; 3. 54(2)(e) “the employment of competent engineers and their qualifications and experience for the purpose of investigation, design and construction of specified dams under sub-section (3) of section 26”; 4. 54(2)(g) “the level of competent engineers for the dam safety units under section 30”; 5. 54(2)(h) “the guidelines and check-lists for inspection of specified dams

	<p>under clause (a) of sub-section (3) of section 31”;</p> <ol style="list-style-type: none"> 6. 54(2)(o) “time interval for updating the emergency action plan under clause (b) of sub-section (1) of section 36”; 7. 54(2)(q) “the mandatory review of design flood of existing specified dams under clause (b) of sub-section (2) of section 38”; <p>These draft regulations were shared with expert members of NCDS i.e. Prof. C.V.R. Murty and Sh. D.K. Sharma for comments vide email dated 13.12.2022. These 7 draft regulations were also shared with Members of NCDS vide email dated 09.01.2023 and State/UT WRD Secretaries for their comments vide email dated 25.01.2023. A reminder was sent to NCDS members and State/UT WRD Secretaries vide email dated 21.03.2023. Comments received from SDSOs of Tamil Nadu, Karnataka, Maharashtra and IMD. Later on, these 7 draft regulations were shared with World Bank for comments; and discussion were made with the expert of World Bank through online meeting on 2nd June 2023.</p> <p>The 7 prioritized draft regulations were deliberated in detail and with some modifications these regulations were approved. The finalized regulations are placed as Annexure-I.</p> <p>Chairman, NDSA and Member (D&R), CWC apprised the committee members that these regulations were also discussed with experts of World Bank and suggestions given by them were noted and considered. The team of World Bank advised that these regulations should be linked with some manuals/guidelines.</p> <p>Chairman, NCDS advised that as these regulations will be placed before each house of the parliament, so, it would appropriate to link these regulations with regular guidelines/manuals to be prepared in this regard. This approach would be convenient as it would allow us to update the regulations as per the requirement from time to time without going to the Parliament. This would save time and any update in the regulations can be implemented timely.</p> <p>The committee was also apprised that in addition to above, draft for 6 regulations (i, j, k, l m, r) has been shared with members of NDSA, and will be shared with NCDS members and State/UTs/CPSUs for review and comments. The list of these 6 draft regulations are given below: -</p> <ol style="list-style-type: none"> 1. 54 (2) (i) “the minimum number of set of instrumentations in the specified dams and the manner of their installation under sub-section (1) of section 32”; 2. 54 (2) (j) “the form, manner and time interval for forwarding the analysis of readings to the State Dam Safety Organisation under sub-section (2) of section 32”; 3. 54 (2) (k) “the data requirements of hydro-meteorological stations in the vicinity of specified dams under sub-section (1) of section 33”;
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	<p>4. 54 (2) (l) “the data requirements of seismological stations in the vicinity of specified dams under sub-section (1) of section 34”;</p> <p>5. 54 (2) (m) “the suitable location and manner of collection, compliance, process and storage of data under sub-section (2) of section 34”;</p> <p>6. 54 (2) (r) “the mandatory site-specific seismic parameter studies of existing specified dams under clause (c) of sub-section (2) of section 38”.</p> <p>These 6 draft regulations shall be finalized after receipt of comments from members of NCDS.</p>
2.3 Dissolution of All National Committees related to Dam Safety and other Inter-State Sub-Committees existing prior to enactment of The Dam Safety Act, 2021	
	Status informed, Deliberation held and Decisions taken
	<p>The earlier formed committee at national level and all its three sub-committees (Parambikulam Aliyar Project (PAP) System, Mahanadi River System, Subarnarekha River System) prior to enactment of the Dam Safety Act, 2021 have been dissolved vide MoJS letter No. R-24011/21/2021-Pen Riv Section-MOWR dated 19-12-2022.</p> <p>NCDS noted the action.</p>
2.4 Technical Documentation – National Registry of Specified Dams	
	Status informed, Deliberation held and Decisions taken
	<p>The comprehensive database of all the specified dams is under preparation in CWC/NDSA. As on 06.06.2023, 7162 specified dams have been reported by the states. The State wise details of these specified dams is attached as Annexure II.</p> <p>The Salient Information of specified dams and detailed record of all failures and distresses has been sought from all SDSOs. The SDSOs have also been regularly reminded regarding the same in NDSA meetings held on 27.12.2022, 18.01.2023, 15.03.2023, 11.04.2023 and 12.05.2023. The comprehensive information from some of the SDSOs is still awaited. Regular follow up with stake holders are being done by NDSA.</p> <p>The work for renovation of DHARMA portal is awarded to M/s Velocis Systems P Ltd. The work has started in Feb-2023. Work is being done as per the suggestions of committee formed for the purpose of monitoring the work. The beta version of the software is expected to be available by June 2023.</p> <p>Chairman, NCDS directed that the list of specified dams needs to be updated at the earliest including details pertaining to salient features. He also advised that the matter may be taken up with the Principal Secy/Addl. Chief Secy of WRDs and SDSOs from which the information is pending.</p> <p>The Committee also advised that a presentation should be delivered on DHARMA portal after finalization of beta version. It should be ensured that DHARMA tool may be linked with various aspects of the dam safety (Hydraulic, Hydrologic, Structural Engg. & Earthquake Safety, Hydro-</p>

	mechanical, Electrical, Geological-Geo-physical & Geo-technical, Instrumentation etc).
2.5 Comprehensive Dam Safety Evaluation Procedures	
	Status informed, Deliberation held and Decisions taken
	<p>All the SCDS and SDSOs have been requested to comply with the above direction of NCDS and submit necessary confirmation to NDSA. Regular follow up being done by NDSA for the same.</p> <p>The matter was deliberated and representatives of State present in the committee was requested to apprise the committee members regarding steps taken in this context. Accordingly, it was informed that Comprehensive Dam Safety Evaluation is a very exhaustive study in which every aspect of dam safety will be assessed in detail. To conduct these safety review, experts from every dam safety field is required, of which there is shortage.</p> <p>Representative from NRSC suggested that before conducting Comprehensive Dam Safety Evaluation, risk assessment study of dams shall be conducted in order to prioritize the dams for conduction of safety evaluation. In this regard, it was discussed that limited expertise for carrying out Risk Assessment Study is available at present, however, in DRIP Phase-II, a collaboration is planned with United States Bureau of Reclamation (USBR) for risk assessment study.</p> <p>In this context, Chairman, NDSA apprised the committee members that applications of 60 experts have been received from State WRDs/CPSUs/Academic Institutes for empanelment as experts of NDSA. These applications will be reviewed and finalized at the earliest.</p> <p>Chairman NCDS advised to finalize the list immediately and share with State SDSOs so that they can proceed further in direction of Comprehensive Dam Safety Evaluation. He also advised that States may be directed to chalk out a roadmap for conducting comprehensive evaluation of the dams to be taken on priority.</p> <p>The committee was also apprised about the constitution of team by NHPC for conducting comprehensive dam safety evaluation at 2 dams. In this regard, Chairman, NCDS desired that a power point presentation may be arranged from officials of NHPC to have insight about methodology adopted for conducting the comprehensive dam safety evaluation.</p>
2.6 Emergency Action Plan and Disaster Management Initiatives	
	Status informed, Deliberation held and Decisions taken
	<p>NDSA has directed to all SCDS and SDSOs for preparation of Emergency Action plan of each specified dam. The regular follow up being done by NDSA on the matter.</p> <p>Emergency Action Plan has been received in respect of Panchet Dam and</p>

	<p>Maithan Dam from Office of Chief Engineer (Civil), Damodar Valley Corporation, Maithan vide email dated 10.04.2023.</p> <p>Chief Engineer, UP informed that EAP for Category-I and II dams will be taken up in DRIP Phase-II and remaining dams will be taken later on. Also, Chief Engineer, Gujarat informed that EAP for 56 dams has already been prepared and these will be revised in accordance with existing CWC/DRIP guidelines till manual/guidelines are finalized by NDSA.</p> <p>Sh D K Sharma, expert member advised that States should develop in-house capability for preparation of Emergency Action Plan using GIS and for that high resolution maps of NRSC, Hyderabad may be utilized.</p> <p>The regulation as per provision of 54 (2) (o) of DSA, 2021 pertaining to “time interval for updating the action plan under clause (b) of sub-section (1) of section 36 has already been finalized.</p>
2.7 Operation and Maintenance	
	Status informed, Deliberation held and Decisions taken
	<p>All the SCDS and SDSOs have been directed to submit necessary compliance to NDSA. In this regard, regular follow up being done by NDSA for the same.</p> <p>Govt. of Gujarat informed that as a road map, initially for 91 gated dams O&M manual will be taken for updation/preparation.</p> <p>Committee directed that guideline/manuals prepared under DRIP for preparation of Operation and Maintenance Manual may be shared with all SCDS/SDSOs.</p>
2.8 Reports of Safety related to specific dams submitted by SCDS	
	Status informed, Deliberation held and Decisions taken
	<p>The following draft regulations related to above have been prepared by NDSA:</p> <ul style="list-style-type: none"> the qualifications, experience and training of the individuals responsible for safety of specified dams under section 23; the employment of competent engineers and their qualifications and experience for the purpose of investigation, design and construction of specified dams under sub-section (3) of section 26; the level of competent engineers for the dam safety units under section 30; <p>The regulations pertaining to above cited three sections of Dam Safety Act has already been finalized as stated in agenda item no. 2.2 and will be issued after notification.</p>
2.9 Establishment of Dam Safety Unit	
	Status informed, Deliberation held and Decisions taken
	<p>All the SCDS and SDSOs have been advised to submit necessary compliance to NDSA. Regular follow up being done by NDSA for the same.</p>

	<p>The details of Dam Safety Units have been received from Karnataka, Maharashtra, Odisha & Tamil Nadu.</p> <p>The regulation as per provision of 54 (2) (g) of DSA, 2021 pertaining to “the level of competent engineers for the dam safety units under section 30” has already been finalized.</p>
2.10 Pre-and Post Monsoon Inspection of dams	
	Status informed, Deliberation held and Decisions taken
	<p>It has been reported that pre monsoon inspection of 3919 dams were carried out during 2022 and post-monsoon inspections for about 5024 dams have been carried out. Further, pre-monsoon inspections of about 4050 dams have been carried out as on 06.06.2023.</p> <p>Based upon the inspection reports, the dams have been categorized under I, II or III by the respective SDSOs. As reported, four dams (2 UP + 2 Odisha) have been identified as Category-I and 90 dams have been identified as Category-II dams so far during pre-monsoon inspections.</p> <p>NDSA has asked the concerned states to take necessary remedial measures for these dams.</p> <p>Chairman, NCDS advised to take up the matter with concerned SDSOs for remedial interventions to be taken for Category-I dams. Also, he directed that detailed note from SDSO Odisha and UP may also be taken for the rehabilitation measures adopted on Category-I dams.</p> <p>Chairman, NCDS also desired that list of Category-II dams shall be prepared which are proposed for rehabilitation under DRIP Phase-II and III.</p>
2.11 Instrumentation of Dams, establishment of hydro-meteorological Station & Installation of seismological stations	
	Status informed, Deliberation held and Decisions taken
	<p>NDSA has directed all SCDS and SDSOs for seeking information over following subjects:</p> <ul style="list-style-type: none"> i) Maintenance of Log Books (Section 18 of DSA, 2021) ii) Instrumentation to be installed in every specified Dam (Section 32 of DSA, 2021) iii) Hydro-meteorological Station (Section 33 of DSA, 2021) iv) Seismological Station (Section 34 of DSA, 2021) v) Initial filling of reservoirs (Section 27 of DSA, 2021) vi) Operation & Maintenance (Section 28 of DSA, 2021) vii) Dam Safety Unit (Section 30 of DSA, 2021) <p>Chairman, NCDS advised to ensure that provisions for installations of minimum number of instrumentations in the dams are kept in the Project Screening</p>

	<p>Template (s) of dams under DRIP Phase-II.</p> <p>The committee was briefed by Member Secretary, NCDS that draft regulation pertaining to minimum number of set of instrumentations in the specified dams and the manner of their installations have been prepared. In this context, it was decided that this regulation may be shared with committee members for their review and suggestions.</p>
2.12 Formation of Sub-Committees	
	Status informed, Deliberation held and Decisions taken
	<p>NDSA has prepared a draft composition of two sub-committees namely, “Structural Engineering & Earthquake Safety of Dams”, and “Capacity Development”. The Terms of Reference (ToR) and Terms of conditions (ToC)) of these two sub-committees have been concurred by Member (Admin and Finance) NDSA. Concurrence of individual sub-committee member has also been obtained.</p> <p>Further, for drawing experts from all over the country for remaining sub-committees, an advertisement for empanelment of experts was published on the CWC website (https://cwc.gov.in/vacancies). 59 experts have applied for empanelment on the link and about 40 nominations have been received from Rajasthan, Karnataka, Gujarat and Odisha.</p> <p>NDSA has also requested IITs, SDSOs, CPSUs for recommendation of domain experts for sub-committees in various domains. The total 61 nominations have been received from IITs, SDSOs, CPSUs.</p> <p>The composition and ToR of the two sub-committees namely, “Structural Engineering & Earthquake Safety of Dams”, and “Capacity Development” were approved by the Committee. The composition & ToR of the sub-committees are attached as Annexure-III.</p> <p>The Committee suggested that a provision for inviting the Chairman/Member of one sub-committee to another shall be kept in order to have synergy in functioning among the 9 sub-committees. This will ensure exchange of ideas among different sub-committee(s) members for better deliverables.</p>
2.13 Activities performed by NDSA	
	Status informed, Deliberation held and Decisions taken
	<p>To sensitize all the Central/State Governments, CPSUs, local authority, company who own, control, operate or maintain a specified dam, a National Workshop on Dam Safety Act, 2021 for dam safety governance in India was organized on 16th June 2022 by CWC, DoWR, RD & GR, and Ministry of Jal Shakti.</p> <p>NDSA organized meeting-cum workshop in all the four Regions in the country to sensitize and stress upon the states to implement the provisions of DSA, 2021 wherein the officers from State SCDS & SDSO and Central/State PSUs in the respective region participated in the meeting. The region-wise meeting details are as follows:</p>

	<ol style="list-style-type: none"> 1. Southern Region at Coimbatore on 3rd September 2022 2. Northern Region at Chandigarh on 10th September 2022 3. Western Region at Pune on 11th November 2022 4. Eastern & North Eastern Region at Guwahati on 19th November 2022 <p>NDSA has organized outreach program at the iconic dam sites across the Country with community participation under “Azadi Ka Amrit Mahotsav (AKAM)” for promoting Dam Tourism. So far, the outreach program has been organized on 4 dams which are as under:</p> <ol style="list-style-type: none"> 1. Tungabhadra Dam (Karnataka) on 24.03.2023 2. Sardar Sarovar Dam (Gujarat) on 25.03.2023 3. Maithon Dam (Jharkhand) on 28.03.2023 4. Idduki Dam (Kerala) on 30.03.2023 <p>Further, outreach program at 20 more dam sites is planned to be conducted before August, 2023.</p> <p>It was also informed that NDSA has signed Memorandum of Understanding with MNIT Jaipur (Rs 30 Cr.) for establishment of National Center for Earthquake Safety of Dam on 22.05.2023. The scope of activities will include Institutional Capacity Building, Capacity Development, Technology Demonstration, Standards Development and International Collaboration. The duration of MoU is five years.</p> <p>NCDS noted the activities performed by NDSA.</p>
2.14 Directions of the Committee to NDSA	
	<ul style="list-style-type: none"> • The seven draft regulations as per section 54(2) (c, d, e, g, h, o, q) were approved and committee directed that these regulations may be forwarded to D/o WR, RD and GR for further needful action at their end. • Six regulations as per section 54(2) (i, j, k, l, m and r) drafted already, may be shared with committee members/State WRDs/CPSUs for their review and suggestions. • The task for updating the database for National Registry of Specified Dams may be concluded immediately. Meetings with Addl. Chief Secy/Principal Secy of State WRDs may be conducted to ensure timely submission of information. • A virtual meeting may be planned for the Committee members for reviewing the beta version of DHARMA. • The list of experts for empanelment under NDSA may be finalized at the earliest and share with SCDS/SDSO for taking further needful action at their end.

	<ul style="list-style-type: none"> • A training program at NWA, Pune may be planned on various dam safety aspects for dam owning agencies. Also, wherever required, hands on training module especially for Dam Break Analysis may be kept for better exposure of the activities. • NDSA may critically examine the Emergency Action Plan of few dams already existing in line with the available guidelines/manuals. • The list of guidelines/manuals prepared by CWC or under DRIP pertaining to dam safety may be shared with all SCDS/SDSOs for reference/implementing the activities as per provisions of Dam Safety Act. • Proposal for rest of the sub-committees may be finalized early.
2.15 CLOSING COMMENTS	
2.15.1	Members
	<p>Sh. D. K. Sharma advised that National Committee on Dam Safety is constituted to work as think tank for developing new policies/guidelines and bringing State of Art Technology in Dam Safety. The constitution of committee comprises of senior level officials of different Ministries/State WRDs/Renowned Expert in Dam Safety. However, it is seen that the officials are not attending the meeting of NCDS as per the constitution order of NCDS. Therefore, in the next meeting it should be ensured that the officers attending the meeting should as per the Gazette Notification of NCDS and no officer below the rank as specified in notification should attend the meeting.</p> <p>Chairman of the committee agreed with the suggestion given and directed that in the next meeting it should be clearly mentioned in the meeting notice.</p>
2.15.2	Chairman, NCDS
	<p>At the end, Chairman, NCDS appreciated the efforts being put in by NDSA officials for achieving progress in implementation of the provisions of the Dam Safety Act and hoped that the decision taken in this meeting will be implemented by the time this committee meets next time. Chairman, NCDS also appreciated the important inputs provided by the members of committee in various regulations which were finalized in the meeting.</p> <p>The meeting ended with vote of thanks to Chair.</p>

Regulations under Section 54 of Dam Safety Act, 2021

54(2)(c) Regulation on “the details and form pertaining to the maintenance of log books or database under sub-section (1) of section 18”;

Sub-section (1) of section 18: Every State Dam Safety Organisation shall maintain a log book or database for each specified dam under their jurisdiction recording therein all activities related to the surveillance and inspection and all important events related to dam safety and with such details and in such form as may be specified by the regulations

Format of Log Book for Dam data recording purpose in digital form:

1 Cover Page

- Name of the Dam
- Name, Phone number and Email-id of Officer In-Charge along with designation along with date of taking charge

2 Salient Features of the Dam (as per proforma prepared/modified by NDSA from time to time as may be required)

3 (a) Record of data as per Performa below: (The periodicity and the observations/recording of the items in this proforma is for the Dam Safety Unit)

Name of Dam:		Date:
S.No.	Item	(to be recorded at 8am on daily basis)
1	Reservoir Water Level (m)	
2	Reservoir Inflow (cumec)	
3	Discharge/Outflow (cumec)	
4	Seepage (lpm)	
5	Leakage through body of the dam (lpm)	
6	Average Rainfall (mm) during the day in the catchment Area/ Sub catchment Area/Dam site	
7	Any other relevant item(s)	

3 (b) Detail of maintenance works to be recorded with date:

1	i. Details of any repairs/modifications/ rehabilitation/addition work being carried out ii. Details of any repairs/modifications/ rehabilitation/addition work planned in future along with date/period.	
2	*Description in brief about the incidents/ failures/unusual events	

	<ul style="list-style-type: none"> (i). any structural damage to the dam and the appurtenant structure; (ii). any unusual readings of any instrument in the dam; (iii). any unusual seepage or leakage through the dam body; (iv). any unusual change in the seepage or leakage regime; (v). any boiling or artesian condition noticed below the dam; (vi). any sudden stoppage or unusual reduction in seepage or leakage from the foundation or body of the dam or any of its galleries; (vii). any malfunction or inappropriate operation of gates; viii). Any issue observed due to electrical fault/malfunctioning of panels/equipment; (ix). occurrence of flood, the peak of which exceeds the available flood discharge capacity of the dam or seventy per cent. of the approved design flood; (x). occurrence of flood, which resulted in encroachment on the available freeboard, or the approved design freeboard; (xi). any unusual erosion in the near vicinity up to five hundred meters downstream of the spillway or waste-weir; (xii). any unusual seismic event; and (xiii). any other relevant item(s) 	
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4 Brief details of inspections:

S. No.	Item	Description/Remarks
1	Date of inspection	
2	Details of Team members who inspected	
3	Observations of Inspection Team	
4	Remedial measures suggested by Team	
5	Timelines within which the recommended work are to be completed	
6	Review of past dam rehabilitation works suggested, executed within time frame assigned mentioning the status/quality of the works	
7	Date of next inspection	
8	Any other relevant item(s)	

54(2)(d) Regulation on “the qualifications, experience and training of individuals responsible for safety of dams under section 23”.

Section 23: *Every individual responsible for safety of specified dams and all activities related thereto shall possess such qualifications and experience and shall undergo such training as may be specified by the regulations.*

Qualifications, experience and training of individuals responsible for safety of dams

S.No.	Designation	Qualification	Experience during total service	Training
1	Chief Engineer or equivalent	Graduation in Civil/Mechanical Engineering from a recognized University/Institution	Minimum 3 years of experience in Dam Engineering/ Dam Safety aspects/ Hydro-mechanical/related works.	The topic and domain of the training to be formulated by NDSA from time to time as per the functional requirement.
2 a	Superintending Engineer Civil or equivalent	Graduation in Civil Engineering from a recognized University/Institution	Minimum 3 years of experience in Dam Engineering/ Dam Safety aspects/ related works.	
2 b	Superintending Engineer Mechanical or equivalent	Graduation in Mechanical Engineering from a recognized University/Institution	Minimum 3 years of experience in dealing with operation and maintenance of gates and Hydro-mechanical equipment/ related works.	
2 c	Superintending Engineer Electrical or equivalent	Graduation in Electrical Engineering from a recognized University/Institution	Minimum 3 years of experience in dealing with Electro-mechanical equipment/ related works.	
3 a	Executive Engineer Civil or equivalent	Graduation/Diploma in Civil Engineering from a recognized University/Institution	Minimum 3 years of experience in dealing with Dam Engineering/ Dam Safety aspects/related works.	
3 b	Executive Engineer Mechanical or equivalent	Graduation/Diploma in Mechanical Engineering from a recognized University/Institution	Minimum 3 years of experience in dealing with operation and maintenance of gates and Hydro-mechanical equipment/related works.	
3 c	Executive Engineer Electrical	Graduation/Diploma in Electrical	Minimum 3 years of experience in dealing with	

	or equivalent	Engineering from a recognized University/Institution	Electro-mechanical equipment/ related works.	
4 a	Asst. Executive Engineer(AEE) /Assistant Engineer (AE) Civil or equivalent	Graduation//Diploma in Civil Engineering from a recognized University/Institution	Minimum 2 years of experience in dealing with Dam Engineering/ Dam Safety aspects/related works.	The topic and domain of the training to be formulated by NDSA from time to time as per the functional requirement.
4 b	Asst. Executive Engineer/Assistant Engineer Mechanical or equivalent	Graduation/Diploma in Mechanical Engineering from a recognized University/Institution	Minimum 2 years of experience in dealing with operation and maintenance of gates and Hydromechanical equipment/related works.	
4 c	Asst. Executive Engineer/Assistant Engineer Electrical or equivalent	Graduation/Diploma in Electrical Engineering from a recognized University/Institution	Minimum 2 years of experience in dealing with Electro-mechanical equipment/ related works.	
5 a	Junior Engineer (JE) Civil or equivalent	Graduation/Diploma in Civil Engineering from a recognized University/Institution	Minimum 2 years of experience in dealing with Dam Engineering/ Dam Safety aspects/ related works.	
5 b	Junior Engineer Mechanical or equivalent	Graduation/Diploma in Mechanical Engineering from a recognized University/Institution	Minimum 2 years of experience in dealing operation and maintenance of gates and Hydromechanical equipment/ related works.	
5 c	Junior Engineer Electrical or equivalent	Graduation/Diploma in Electrical Engineering from a recognized University/Institution	Minimum 2 years of experience in dealing with Electromechanical equipment/ related works.	

Note:

1. Relaxation in experience may be considered for officers recruited at entry level (JE/ AE/ AEE or equivalent). In such cases, adequate training has to be provided before posting.

54(2)(e) Regulation on “the employment of competent engineers and their qualifications and experience for the purpose of investigation, design and construction of specified dams under sub-section (3) of section 26;”

[Sub-section (3) of section 26: Every agency referred to in sub-section (1) shall for the purpose of investigation, design and construction employ such qualified, experienced and competent engineers, as may be specified by the regulations.

(Sub-section (1) of section 26: Any construction or alteration of a specified dam shall be undertaken subject to investigation, design and construction being done by such agencies as may be accredited by the Authority or the State Government)]

Qualifications & Experience of ~~competent~~ Engineers employed by the agency should be as follows:

S. No.	Designation	Qualification and Experience
1.	Survey / Investigation Engineer	Graduation/Diploma in Civil Engineering/Geology from a recognized University/Institution; Minimum 5 years’ experience should be in survey investigation of Water Resource Projects.
2.	Dam Design Engineer (Concrete/ Masonry/ Earth/ Rockfill Dam) as the case may be	Graduation in Civil Engineering from a recognized University/Institution. Preference may be given to Masters degree in Structural/ Geotechnical/ Earthquake Engineering or related areas; Minimum 6 years’ experience in Planning & Designs of Concrete/ Masonry/ Earth/ Rockfill Dam as the case may be.
3.	Geologist	Graduation in Geology from a recognized University/Institution; Preference may be given to Masters/Ph.D. in Geology. Minimum 6 years of field experience in Geological investigations of Concrete/ Masonry/ Earth/ Rockfill Dam as the case may be.
4.	Hydrologist	Graduation in Civil Engineering from a recognized University/Institution, Preference may be given to Masters degree in Hydrology/Water Resources Engineering; Minimum 5 years’ experience in Hydrology related areas
5.	Hydro Mechanical Engineer	Graduation in Civil/Mechanical Engineering from a recognized University/Institution; Minimum 5 years’ experience in design/execution of Hydromechanical works in Water Resources projects.
6.	Electrical Engineer	Graduation in Electrical Engineering from a recognized University/Institution; Minimum 5 years’ experience in design/execution of Electrical works in Water Resources projects.

7.	Material /Quality control Engineer	Graduation in Civil Engineering from a recognized University/Institution; Minimum 5 years' experience in Quality control aspects of Concrete/ Masonry/ Earth/ Rockfill Dams, selection of quarry/ Material etc.
8.	Instrumentation Engineer	Graduation in Civil/Mechanical/Electrical/Electronics & Instrumentation Engineering from a recognized University/Institution; Minimum 5 years' experience in Instrumentation planning, technical specification of instruments and analysis of instrumentation data of Concrete/ Masonry/ Earth/ Rockfill Dams.
9.	Dam Break Analysis and Emergency Action Plan Engineer	Graduation in Civil Engineering from a recognized University/Institution; Preference may be given to Masters degree Minimum 5 years' experience in hydrological and hydraulic modeling using relevant advance modeling tools, Dam Break Analysis, Flood Routing, Inundation Mapping, preparation of Emergency Action Plan etc.
10.	Dam construction/ rehabilitation Engineer (Concrete/ Masonry/ Earth/ Rockfill Dam) as the case may be	Graduation in Civil Engineering from a recognized University/Institution. Preference may be given to Masters degree in Structural/ Geotechnical/ Earthquake Engineering or related areas; Minimum 3 years' experience in construction/rehabilitation of Concrete/ Masonry/ Earth/ Rockfill Dam as the case may be.

54(2)(g) Regulation on “the level of competent engineers for the dam safety units under section 30”;

Section 30: *For each specified dam, the owner shall, within the operation and maintenance establishment, provide a dam safety unit consisting of such competent levels of engineers as may be specified by the regulations.*

Level of competent engineers for the dam safety units

S. No.	Height of dam from lowest foundation to the top of dam/ Gross Storage of the reservoir	Competent engineers for the dam safety units (#)	Reviewing Level	Remarks
1	Height \geq 60m or Gross Storage \geq 100 MCM	Chief Engineer (Head) Superintending Engineer Executive Engineer Assistant Executive Engineer/ Assistant Engineer	Engineer-in-Chief*	
2	Height \geq 30m & < 60m or Gross Storage \geq 60 & < 100 MCM	Superintending Engineer (Head) Executive Engineer Assistant Executive Engineer/ Assistant Engineer	Chief Engineer	
3	Height \geq 15m & < 30m or Gross Storage \geq 30 & < 60 MCM	Executive Engineer (Head) Assistant Executive Engineer/ Assistant Engineer	Superintending Engineer or above	
4	Height \geq 10 m & < 15 m and Gross Storage \geq 1 MCM & < 30 MCM	Assistant Executive Engineer/ Assistant Engineer (Head) Junior Engineer	Executive Engineer or above	

*The States not having the post of Engineer in Chief, appropriate Chief Engineer may be considered.

or Equivalent level officers

54(2)(h) Regulation on “the guidelines and check-lists for inspection of specified dams under clause (a) of sub-section (3) of section 31”;

Section 31

(1) Every owner of a specified dam shall undertake every year, through their dam safety unit, a pre-monsoon and post-monsoon inspections in respect of each such dam.

(2) Without prejudice to sub-section (1), every owner of a specified dam shall inspect or cause to be inspected every specified dam by the dam safety unit, during and after every flood, earthquake or any other natural or man-made calamities, or if any sign of distress or unusual behavior is noticed in the dam.

(3) Every owner of a specified dam shall,—

(a) carry out all inspections referred to in sub-section (1) and sub-section (2) in accordance with the guidelines and check-lists as may be specified by the regulations;

Dam safety inspection is mandatory for every dam as per the schedule and conditions specified in the Act. These inspections shall be undertaken as per the guidelines and checklist for the inspection of specified dams approved by NDSA.

54(2)(o) Regulation on “the time interval for updating the emergency action plan under clause (b) of sub-section (1) of section 36”

Clause (b) of sub-section (1) of section 36: *In respect of the dam which is constructed and filled before the commencement of this Act, prepare emergency action plan within five years from the date of commencement of this Act and thereafter update such plans at regular intervals as may be specified by the regulations.*

- The EAP of all specified dams shall be prepared within 5 years from the date on which the Act became effective. Thereafter, the EAP should be updated as specified in EAP Manual approved by NDSA but not exceeding 10 years.

54(2)(q) Regulation on “*the mandatory review of design flood of existing specified dams under clause (b) of sub-section (2) of section 38*”

Clause (b) of sub-section (2) of section 38: *general assessment of hydrologic and hydraulic conditions with mandatory review of design floods as specified by the regulations;*

- The design Flood review of all specified dams shall be carried out within 5 years from the date on which the Act became effective. Thereafter, the review of Design Flood shall be carried out every 10 years or lesser period as may be specified in the Comprehensive Dam Safety Review manual approved by NDSA.

Annexure-II

State wise list of specified dams as on 06.06.2023

S.N.	State	Specified Dams Reported so far (under update)
1	Andaman & Nicobar Island	2
2	Andhra Pradesh	166
3	Arunachal Pradesh	4
4	Assam	5
5	Bihar	26
6	Chhattisgarh	258
7	Goa	5
8	Gujarat	632
9	Haryana	1
10	Himachal Pradesh	29
11	Jammu & Kashmir	15
12	Jharkhand	79
13	Karnataka	232
14	Kerala	61
15	Ladakh	2
16	Madhya Pradesh	1409
17	Maharashtra	3153
18	Manipur	4
19	Meghalaya	9
20	Mizoram	1
21	Nagaland	1
22	Odisha	204
23	Punjab	16
24	Rajasthan	325
25	Sikkim	2
26	Tamil Nadu	128
27	Telangana	184
28	Tripura	1
29	Uttar Pradesh	147
30	Uttarakhand	25
31	West Bengal	36
Total		7162

A. Composition of Sub-committee of National Committee on Dam Safety (NCDS) on “Structural Engineering and Earthquake Safety of Dams”

1.	C. V. R. Murty, Professor, Civil Engineering, IIT Madras	Chairman
2.	I. D. Gupta, Former Director, CWPRS, Pune	Member
3.	Yogendra Singh, Professor, Earthquake Engineering, IIT Roorkee	Member
4.	D. Srinagesh, Professor of Practice, Civil Engineering, IIT Madras	Member
5.	Sankhdip Chaudhary, General Manager, NHPC Limited, Delhi	Member
6.	Sanjay Belsare, Director General, Maharashtra Engineering Research Institute, Nashik, WRD, Maharashtra	Member
7.	Director, FE&SA, CWC, New Delhi	Member-Secretary

Technical Terms of Reference**(a) Finalize Draft Guidelines and Manuals on:**

- (1) Earthquake Analysis of Dams (Concrete and Embankment),
- (2) Structural and Earthquake Vulnerability Assessment of Dams,
- (3) Earthquake Risk Assessment of Dams,
- (4) Structural Rehabilitation and Retrofitting of Dams, and
- (5) Any other aspect related to Structural Engineering and Earthquake Safety of Dams.

(b) Finalize Draft Regulations as per Section 54(2) of the Dam Safety Act-2021 on:

- (1) Criteria for Risk Classification of Specified Dams as per Section 17,
- (2) Data Requirements of Seismological Stations in the vicinity of Specified Dams as per Section 34(1),
- (3) Time interval for carrying out Risk Assessments of Specified Dams as per Section 35(2),
- (4) Time interval for carrying out Comprehensive Safety Evaluations of Specified Dams in respect of Structural and Earthquake Safety as per Section 38(1), and
- (5) Mandatory Site-Specific Earthquake Studies of Specified Dams to be undertaken as per Section 38(2)(c).

(c) Render Technical Advice on:

Any other related matter to Structural Engineering and Earthquake Safety of Dams, as and when referred to it by NCDS.

B. Composition of Sub-committee of National Committee on Dam Safety (NCDS) on “Capacity Development”

1.	Sh D. K. Sharma, Chairman, HP Electricity Regulatory Commission, Shimla	- Chairman
2.	Sh Ananth Ramaswamy, Professor & Course Co-ordinator M.Tech Program under DRIP, IISc Bengaluru	-Member
3.	Sh N. K. Goel, Professor & Course Co-ordinator M.Tech Program under DRIP, IIT Roorkee	-Member
4.	Sh C. P. Singh, Chief Engineer, Bhakra Beas Management Board, Nangal, Punjab	-Member
5.	Chief Engineer, National Water Academy, CWC, Pune	-Member
6.	Director, Training, CWC, New Delhi	-Member Secretary

Terms of References (ToR):

- a) Identify the areas, resource persons/institutes for capacity development in the field of Dam Safety
- b) Prepare the course content for Short and Long Term Courses on dam safety
- c) Prepare a road map for capacity building of States in the area of dam safety
- d) Any other aspect related to Capacity Development
- e) Render technical advice on any other related matter as & when referred to it by NCDS.