

Government of India  
Ministry of Jal Shakti  
Department of Water Resources, RD & GR  
**National Dam Safety Authority**

## **Minutes of the Regional Meeting-cum-Workshop of Southern Region States/UTs held by National Dam Safety Authority on 03.9.2022 at Coimbatore**

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A Regional Meeting-cum-Workshop was organized by National Dam Safety Authority (NDSA) under the chairmanship of Shri J. Chandrashekhar Iyer, Member (D&R), Central Water Commission (CWC) & Chairman, National Dam Safety Authority (NDSA) on 3<sup>rd</sup> September 2022 at Coimbatore to review the various activities undertaken under the Dam Safety Act, 2021 by the State/UT Governments/dam owners for safety of dams falling under their jurisdiction as well as sensitize all the stakeholders about the provisions contained in the Dam Safety Act, 2021. Senior officers from Department of Water Resources, RD & GR, Ministry of Jal Shakti, CWC, NDSA and the States/UTs/dam owners falling under the Southern Region participated.

The representatives from the State of Andhra Pradesh, Karnataka, Kerala and Tamil Nadu participated in the meeting. Among the Dam owning States, the representatives from the State of Telangana and U.T of A&N Islands did not participate. In the U.T of Puducherry and U.T of Lakshadweep, no specified dam exists and no representative participated. The list of participants in the meeting is enclosed as **Annexure-I**.

Chairman, NDSA welcomed the participants and briefly outlined the objective of holding the regional meeting-cum-workshop. He stated that regional meeting-cum-workshop is being held in the four regions by National Dam Safety Authority under the directions of Ministry of Jal Shakti. The Parliament of India has enacted the Dam Safety Act, 2021, which has come into force with effect from 30<sup>th</sup> December, 2021. The Act provides for surveillance, inspection, operation and maintenance of the specified dam for prevention of dam failure related disasters and to provide for institutional mechanism to ensure

their safe functioning and for matters connected therewith or incidental thereto. Under the provisions of the Act, National Committee on Dam Safety has been constituted and National Dam Safety Authority has been set up at the Central Government level. At the State Government level, State Committee on Dam Safety and State Dam Safety Organisation are to be notified. He emphasized upon the need for taking all necessary actions timely by all the SCDS and SDSO of the States/UTs as well as the Heads of CPSUs, private dam owners and other agencies, as stipulated under the Act, to ensure the safety of the specified dams under their jurisdiction. He stated that the implementation of the Act is being closely monitored by Ministry of Jal Shakti and Prime Minister Office. He stressed upon timely carrying out the pre and post monsoon inspection of specified dams. The inspection reports need to be analyzed and appropriate remedial/ rehabilitation works as required are to be carried out in a time bound manner to ensure the safety of dams.

Chairman, then requested Shri Sarbjit S. Bakshi, Director, NDSA Secretariat to make a brief presentation on Dam Safety activities in India and then to take up the agenda items for deliberations. The power point presentation of Director, NDSA Secretariat was followed by presentations by each of the participating States/UT of the Southern region on the agenda points. The following points emerged from the deliberations.

## **1. STATE/UT-WISE STATUS ABOUT SPECIFIED DAMS**

*(as per criteria stipulated in Dam Safety Act, 2021)*

The State/UT-wise status about the number of existing specified dams and those under construction, including their ownership, were presented by all the States in their power point presentation made during the meeting, which were deliberated at length. In some of the States, both, Water as well as their Energy/Power Departments, own dams. The number of specified dams presented were also found to be in variance with the number in the National Register of Large Dams, 2019.

It was decided that the Head of SDSO of the States/UTs shall compile and tabulate the details of all the dams in their State/UT in the format as desired in Agenda Note and

communicate the same officially to Director, NDSA Secretariat, 407(s) Sewa Bhawan, 4<sup>th</sup> Floor, R.K.Puram, New Delhi at the earliest.

**(Action: Head of SDSO of States/UTs)**

## **2. STATUS ABOUT NOTIFICATION OF SCDS AND SDSO:**

(Post enactment of the *Dam Safety Act, 2021*)

In the Southern Region, the constitution of SCDS and establishment of SDSO in respect of the State of Kerala and Union Territory of Andaman & Nicobar Islands is yet to be notified. The representative from the State of Kerala, Chief Engineer-IDRB, WRD, informed that the matter in this regard is under process at the Ministry level. Chairman, NDSA stated that the SCDS and SDSO were to be notified within 180 days from the date of commencement of the Act which has passed. He urged the representative of State of Kerala to get the notification of SCDS & SDSO expedited. Similarly, he expected that the UT of A&N Islands would expedite the notification.

**(Action: State of Kerala, UT of A&N Islands)**

## **3. DAM SAFETY UNIT:**

The States/UTs by and large informed that Executive Engineers, Assistant Engineers, Junior Engineers along with other supporting technical/non-technical staff are posted and made responsible for operation and maintenance of each specified dam, which form the Department's Dam Safety Unit. Some of the States informed that they did not have adequate manpower, hence officers are given additional responsibility of two to three specified dams. Director, NDSA Secretariat reiterated that as per the provisions of the Act, adequate competent level of engineers is required in the Dam Safety Unit for each specified dam. The Head of SDSO shall take up this matter with their respective State/UT Government to ensure that a robust Dam Safety Unit is functional in respect of every specified dam under the Operation and Maintenance Establishment.

**(Action: Head of SDSO of States/UTs, Dam Owners)**

## **4. STATE DAM SAFETY ORGANISATION**

The SDSO of States/UTs presented the activities initiated by them in accordance with the provisions of the Act. Director, NDSA Secretariat conveyed that the dam owners

and SDSO have a huge mandate in front of them to fulfill under the Act for ensuring safety of dams. He conveyed that as per the Act, nothing contained therein shall be construed to absolve an owner of a specified dam of the duties, obligations or liabilities incidental to the construction, operation, maintenance and supervision of the dam or reservoir.

Chairman, NDSA conveyed to the Heads of the State Committee on Dam Safety, State Dam Safety Organisation and dam owners to take all requisite actions and perform all the functions timely as mandated under the Act.

**(Action: Head of SCDS & SDSO of States/UTs, Dam Owners)**

## **5. SAFETY, INSPECTION AND DATA COLLECTION:**

The power point presentation made by States in the Southern Region indicated that 536 dams out of 728 existing specified dams have completed the pre-monsoon inspections as per the distribution given in **Table-1**. It was informed by the SDSO/dam owners that the remaining dams would be inspected soon.

Director, NDSA Secretariat mentioned that all the inspection reports have not been received from SDSO/dam owners in NDSA, which needs to be expedited. It has been observed that some of the dam owners were not carrying out the inspections in the format/as per the checklist as finalized & circulated by CWC for inspections of dams. The States were directed to follow unified procedure for pre and post monsoon inspection of the dams by adopting the format circulated by CWC.

**Table - 1**

| Sl. No. | States/UT                      | Total No. of Large Dams completed<br>(As per NRLD, 2019) | Nos. of Dams Inspected as reported by States |
|---------|--------------------------------|--|--|
| 1       | Andhra Pradesh                 | 149  | 47   |
| 2       | Karnataka                      | 230  | 153  |
| 3       | Kerala                         | 61   | 58   |
| 4       | Tamil Nadu                     | 118  | 118  |
| 5       | Telangana                      | 168  | 160  |
| 6       | Andaman & Nicobar islands (UT) | 2  | 0  |
|         | <b>Total</b>                   | <b>728</b>   | <b>536</b>                                   |

The States/UTs were advised to complete the post monsoon inspections of the specified dams latest by 31<sup>st</sup> Dec 2022 in the CWC format and submit the report to SDSO with a soft copy to NDSA Regional Director, Coimbatore, Member (Technical), NDSA and to NDSA Secretariat, New Delhi. The SDSO shall further examine the report and present a gist of their analysis categorizing the dams in Category I, II & III as per the CWC check list/ format for inspections of dams to NDSA Secretariat.

Director, NDSA Secretariat mentioned that all activities related to Dam Safety, Inspection and Data collection stipulated under chapter VII of the Act need to be complied with by the dam owners/SDSO.

**(Action: Head of SDSO of States/UTs, Dam Owners)**

## **6. ANNUAL REPORT:**

It was decided that all the SDSO's shall prepare and submit the annual report containing the documentation of activities in relation to Dam Safety as per relevant sections of the Act which is to be laid by the State Government in the house of State Legislature. A copy of the same shall be forwarded to the Member (Disaster & Resilience) as well as to NDSA Secretariat, New Delhi. NDSA shall be preparing a Consolidated Annual Report for the entire country for which States shall submit the documentation as and when sought by NDSA.

**(Action: Head of SDSO of States/UTs, Dam Owners)**

## **7. CREATION OF NATIONAL LEVEL DATA BASE OF DAMS:**

CWC had compiled from the States/UTs/dam owners the information on the large dams in India and published as a National Register of Large Dams (NRLD) in Oct 2019. After enactment of the Act, NDSA has asked the States/UTs to update the details on the specified dams.

In order to compile basic information regarding the specified dams, a form is enclosed as **Annexure-II**. The form shall be got filled up by the dam owners, and after examination, the Head of SDSO shall sign and submit the same to the Regional Director, NDSA, Coimbatore, Member (Technical), NDSA, New Delhi as well as to NDSA Secretariat.

**(Action: Head of SDSO of States/UTs, Dam Owners)**

## **8. LOG BOOK:**

Member (Policy & Research), NDSA informed that all SDSOs have to 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 the important events related to dam safety. It was further conveyed that till such time regulations are finalized by NDSA, available CWC guidelines may be followed. During the meeting it was informed that data register is being maintained by some of the States in respect of select specified dams.

**(Action: Head of SDSO of States/UTs, Dam Owners)**

## **9. INSTRUMENTATION, EMERGENCY ACTION PLAN (EAP) AND DISASTER MANAGEMENT, OPERATION AND MAINTENANCE MANUAL:**

Some of the States informed that they were recording the instrumentation data in the functional instruments in the specified dams. However, in the non-instrumented dams, States stated that it is difficult for them to draw instrumentation plan as they did not have the in-house expertise in this field. Also, some of the States informed that they were not in a position to prepare the EAP on their own due to lack of expertise and want of experts. Some of the States informed that they had prepared O&M manual in-house for certain specified dams which are being used to operate the Gates.

Chairman, NDSA urged the Heads of SDSOs and dam owners to take necessary actions and comply with the provisions of the Act. He informed that CWC will shortly publish a Manual on Instrumentation of dams which would be useful to the dam owners and SDSO. It was conveyed to the States/UTs that have formulated the EAP to upload the same on the DHARMA portal to share with the other States/UTs for lateral capacity building in the country. The States were also requested to share the details of the consultants engaged by them for preparation of EAP for benefit of other States/UTs. The States/UTs were informed that CWC has also published the “*Guidelines for Developing Emergency Action Plan for Dams*” under the DRIP I scheme which can be

referred. The same can be accessed through CWC website on the link for DRIP. It was suggested that the existing O&M Manuals at the project sites need to be updated as per the “Guidelines for preparing O&M Manuals for Large Dams” and Rule curves are to be prepared/updated for the specified dams. The States/UTs were informed that the guidelines available on CWC web site are tabulated in **Table-2**.

**(Action: Head of SDSOs/Dam Owners, NDSA Secretariat)**

**Table - 2**

| Guidelines And Manuals   |  |
|--|--|
|  Guidelines for Selecting and Accommodating the Inflow Design Floods for Dams | Doc. No. CDSO_GUD_DS_06_v1.0 June 2021     |
| Operational Procedures for Assessing and Managing Environmental Impacts in Existing Dam Projects   | Doc. No. CDSO_Gud_DS_08_V1.0 November 2020 |
| Guidelines for Classifying the Hazard Potential of Dams  | Doc. No. CDSO_Gud_DS_09_V1.0 November 2020 |
|  Manual for Assessing Hydraulic Safety of Existing Dams - Volume I            | Doc. No. CDSO_MAN_DS_04_v1.0 June 2021     |
|  Manual for Assessing Hydraulic Safety of Existing Dams - Volume II           | Doc. No. CDSO_MAN_DS_04_v1.0 June 2021     |
| Manual for Assessing Structural Safety of Existing Dams  | Doc. No. CDSO_MAN_DS_03 November 2020      |
| Handbook for Assessing and Managing Reservoir Sedimentation  | Doc. No. CDSO_GUD_DS_04_v1.0 February 2019 |
| Inspection Manual for Dam Field Engineers after Seismic Events, Maithon Dam, Damodar Valley Corporation, Jharkhand   | Doc. No. CDSO_MAN_DS_05_v1.0 February 2019 |
| Guidelines for Assessing and Managing Risks Associated with Dams   | Doc. No. CDSO_GUD_DS_10_v1.0 February 2019 |
| Technical Specifications of Hydro-meteorological, Geodetic, Geotechnical and Seismic Instruments   | Doc. No. CDSO_TS_DS_01_v1.0 January 2018   |
| Inspection Manual for Dam Field Engineers After Seismic Events, Ichari Dam, Uttarakhand  | Doc. No. CDSO_MAN_DS_01_v1.0 January 2018  |
| Manual for Rehabilitation of Large Dams  | Doc. No. CDSO_MAN_DS_02_v1.0 January 2016  |
| Guidelines for Safety Inspection of Dams   | Doc. No. CDSO_GUD_DS_07_v1.0 January 2018  |
| Guidelines for Mapping Flood Risks Associated with Dams  | Doc. No. CDSO_GUD_DS_05_v1.0 January 2018  |
| Guidelines for Preparing O&M Manuals for Dams  | Doc. No. CDSO_GUD_DS_03_v1.0 January 2018  |
| Guidelines for Instrumentation of Large Dams   | Doc. No. CDSO_GUD_DS_02_v1.0 January 2018  |
| Guidelines for Developing Emergency Action Plan (EAP) for Dams   | Doc. No. CDSO_GUD_DS_01_v2.0 February 2016 |

## 10. HYDRO-METEOROLOGICAL STATIONS, EARLY WARNING SYSTEM, SEISMOLOGICAL STATIONS:

Some of the States informed that hydro-meteorological stations were established in the vicinity of some of the specified dams and Early Warning System (EWS) for some of the dams. However, other States/dam owners stated they need to install EWS for their dams. SDSOs/dam owners were requested to take appropriate actions for establishing these stations at the earliest as per the provision of the Act.

**(Action: Head of SDSOs/Dam Owners)**

## 11. RISK ASSESSMENT STUDIES, ASSESSMENT OF VULNERABILITY OF DAMS AND HAZARD CLASSIFICATION, COMPREHENSIVE DAM SAFETY EVALUATION:



Director, NDSA Secretariat requested the States/dam owners to present the actions taken by them in regard to risk assessment studies, vulnerability assessment and hazard classification of dams as well as comprehensive dam safety evaluation. Most of the States expressed that these studies have not been conducted for most of their dams, primarily due to lack of system expertise and want of expert individuals/agencies in the desired field for carrying out these studies. Member (Policy & research) informed that the existing Guidelines published by CWC under the DRIP Phase I Scheme could be followed till such time the Regulations are in place. He added that as these studies are to be carried out in a time bound manner as per the Act, expeditious actions need to be taken by SDSO/Dam owners. Member (Technical), NDSA suggested SDSOs/dam owners to immediately prepare a road map for carrying out these studies in respect of their dams and share the details of the independent panel of experts/ organizations which the States/UTs/CPSUs are considering for engaging for carrying out these studies.

**(Action: Head of SDSOs/Dam Owners)**

#### **12.RECORD OF MAJOR DAM FAILURES IN THE STATE/UT:**

NDSA requested SDSO/Dam owners to maintain a record of major dam incidents of each specified dam under their jurisdiction, and make available to NDSA, information as and when sought. The SDSO shall report the event of any dam failure under their jurisdiction to NDSA and any other information sought by NDSA in this regard.

**(Action: Head of SDSOs/Dam Owners)**

#### **13.COORDINATION AND OVERALL SUPERVISION OF REHABILITATION PROGRAMS BEING EXECUTED IN THE STATES THROUGH CENTRALLY OR EXTERNALLY AIDED FUNDING:**

The States of Andhra Pradesh, Karnataka, Kerala and Tamil Nadu made a brief presentation about the activities undertaken in the DRIP-I programme and the ongoing activities under DRIP-II & III Programme. The rehabilitation and improvement works being carried out by them and the stage of award of new works were presented. The States were advised to expedite the activities and make full utilization of the financial allocations made against each of the State.



**(Action: Concerned DRIP Implementing Agencies)**

**14. LIST OF INDIVIDUAL EXPERTS IN DAM SAFETY ENGINEERING IN THE STATE/UTS AND OF AGENCIES FOR INVESTIGATION, DESIGN, CONSTRUCTION AND ALTERATION OF THE SPECIFIED DAMS:**

The Heads of SCDS/SDSO/Dam Owners/CPSUs were requested to provide a list of names with resume of individual Experts (retired/freelancers) and Consultancy agencies in the field of Dam Safety Engineering and related aspects as available with them and also the names of executing agencies which have proven track record of successfully executing dam rehabilitation and related works. NDSA shall generate a country-wide database which should serve as a reference for NDSA and SDSO activities/studies/assignments.

**(Action: Head of SCDS/ SDSOs/Dam Owners/NDSA Secretariat)**

**15. ANY OTHER ITEM WITH THE PERMISSION OF THE CHAIR**

i) The representatives from the States stated that the budgetary allocation under Operation and Maintenance Head of the State Government is very less and emphasized the need for sufficient allotment of funds for regular maintenance of the Dams. They desired that the Central Government need to communicate with the State Government in this regard. Chairman, NDSA assured that a communication from NDSA/MoJS will be sent to the State/UT Governments for earmarking sufficient funds for operation and maintenance of dams.

**(Action: NDSA Secretariat)**

The regional meeting-cum-workshop ended with thanks to the Chair and all the participants.

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**REGIONAL REVIEW MEETING-CUM-WORKSHOP OF SOUTHERN REGION  
STATES/UTs HELD BY THE NATIONAL DAM SAFETY AUTHORITY ON 03.09.2022  
AT COIMBATORE**

List of Participants

- |                         |                                |   |
|-------------------------|--------------------------------|---|
| <b>NDSA</b>             |                                |   |
| 1.                      | Sh J Chandrashekhar Iyer       | Chairman, NDSA & Member (D&R), CWC  |
| 2.                      | Sh S. K. Sibal                 | Member (Technical), NDSA and Chief Engineer (N&W), CWC  |
| 3.                      | Sh Gulshan Raj                 | Member (Policy & Research), NDSA and Chief Engineer, DSO, CWC                                   |
| 4.                      | Sh Vijai Saran                 | Member (Regulation), NDSA and Chief Engineer (E&NE), CWC  |
| 5.                      | Sh Vivek Tripathi              | Member (Disaster & Resilience), NDSA and Chief Engineer, CWC                                    |
| 6.                      | Sh Sarbjit S Bakshi            | Director, NDSA Secretariat and Director, DSD-II, CWC  |
| 7.                      | Sh R Thangamani                | Director, Southern Regional office, NDSA & Director, Monitoring Directorate, CSRO, CWC, Chennai |
| 8.                      | Sh. Panneer Selvam L           | Deputy Director, Monitoring Directorate, CSRO,CWC, Chennai                                      |
| <b>Special Invitees</b> |                                |   |
| 9.                      | Sh T K Sivarajan               | Chief Engineer, CSRO, CWC, Coimbatore   |
| 10.                     | Sh Manoj Kumar                 | Senior Joint Commissioner (Pen. River), DoWR, RD & GR, MoJS                                     |
| <b>Andhra Pradesh</b>   |                                |   |
| 11.                     | Sh. Shri. T.V.N.A.R. Kumar     | Chief Engineer, SDSO- Andhra Pradesh  |
| <b>Karnataka</b>        |                                |   |
| 12.                     | Shri. Krishnamurthy B Kulkarni | Chairman, SCDS- Karnataka   |
| 13.                     | Shri. Syed Ishaq Apsar         | Chief Engineer, SDSO- Karnataka   |
| 14.                     | Shri. H.B. Krishna Rao         | Executive Engineer, DSO, Bengaluru  |
| <b>Kerala</b>           |                                |   |
| 15.                     | Shri.Priyesh R                 | Chief Engineer, IDRB, Kerala  |
| 16.                     | Shri. Joji George Mathew       | Deputy Chief Engineer, KSEBL  |
| 17.                     | Shri. Jayakumar C R            | Assistant Executive Engineer, KSEBL   |
| <b>Tamil Nadu</b>       |                                |   |
| 18.                     | Shri. P. Rajendran             | Chief Engineer, SDSO-Tamil Nadu   |
| 19.                     | Smt. I.Selvapackiam            | SE, SDSO - TN   |
| 20.                     | Smt.V.J.Anu                    | Assistant Executive Engineer, SDSO  |
| 21.                     | Smt. S.Thilagavarthini         | Assistant Engineer, SDSO  |

## Annexure-II

### SALIENT INFORMATION OF EACH SPECIFIED DAM

The following *Salient Information* shall be provided in *HARD COPY* and *SOFT COPY* by each dam owner through *State Dam Safety Organization* on each specified dam under its jurisdiction:

| S.No. | Information  |
|-------|--|
| 1     | <b>Name of the State or UT in which the Dam is Located</b> |
| 2     | <b>Name of the Dam</b>                                     |
| 3     | <b>Full Address of the Dam</b>                             |
|       | Latitude: _____ °N      Longitude: _____ °E                |
| 4     | <b>Name of the Dam Owner</b>                               |
| 5     | <b>Full Address of the Dam Owner</b>                       |
| 6     | <b>Commissioning of the Dam</b>                            |
|       | Date of Commissioning of the Dam : _____                   |
| 7     | <b>Material with which the Dam was Constructed</b>         |
| 8     | <b>Salient Features of the Dam</b>                         |
|       | Height (m) (above deepest foundation level) :              |
|       | Length of the crest (m) :                                  |
|       | Bottom width (m) :   |
|       | Top width (m) :  |
|       | Capacity of the reservoir (in m <sup>3</sup> )             |
|       | (a) Active Storage :                                       |
|       | (b) Dead Storage :   |
|       | Max Flood Discharge (in m <sup>3</sup> )                   |
|       | (a) Design Flood :   |
|       | (b) Observed Flood :                                       |
|       | Specially difficult Foundation problems : Yes or No        |
|       | Unusual Dam Design : Yes or No                             |
| 9     | <b>Inspection Galleries in the Dam</b>                     |
|       | Number :   |
|       | Elevation of Galleries (m) :                               |
|       | Are all Galleries Dry? : Yes or No                         |

|    |  |                                |
|----|--|--------------------------------|
| 10 | <b>Gates</b>   |                                |
|    | Method of Operation of Gates                                       | : <i>Hydraulic or Electric</i> |
|    | Size of each Gate  | :                              |
|    | Number of Gates  | :                              |
|    | Number of Gates in working condition                               | :                              |
| 11 | <b>Operation &amp; Maintenance Manual</b>                          | : Yes or No                    |
|    | Was an <i>Operation &amp; Maintenance Manual</i> prepared?         | : Yes or No                    |
|    | If <b>No</b> , by when is the same likely to be prepared?          |                                |
| 12 | <b>Silting of Reservoir</b>  |                                |
|    | Does the Reservoir get silted?                                     | : Yes or No                    |
|    | If <b>Yes</b> , what percentage of the reservoir capacity is lost? | :                              |
| 13 | <b>Leakage through the Dam Body</b>                                |                                |
|    | Peak Water leakage ( <i>in m<sup>3</sup></i> )                     | :                              |
| 14 | <b>Structural Safety Assessment</b>                                |                                |
|    | Was <i>Structural Safety Assessment</i> performed?                 | : Yes or No                    |
|    | If <b>Yes</b> , was the Dam found to be safe?                      | : Yes or No                    |
|    | If <b>No</b> , was the Dam retrofitted?                            | : Yes or No                    |
|    | If <b>Yes</b> , when was it retrofitted?                           | :                              |
|    | If <b>Yes</b> , what was the retrofit measure adopted?             | :                              |
| 15 | <b>Dam Break Analysis</b>  |                                |
|    | Was <i>Dam Break Analysis</i> performed?                           | : Yes or No                    |
|    | If <b>YES</b> , were <i>Disaster Management Plans</i> prepared?    | : Yes or No                    |
| 16 | <b>Emergency Action Plan</b>                                       |                                |
|    | Was an <i>Emergency Action Plan</i> prepared?                      | : Yes or No                    |
|    | If <b>Yes</b> , was it shared with the SDMA and DDMA?              | : Yes or No                    |