

HIGHLIGHTS OF ACCOMPLISHMENTS FOR 2024

Dams Management Department (DMD)

I. DAMS, RESERVOIRS AND WATERWAYS DIVISION

1. Dam Safety Inspection/Assessment

The dam safety inspection/assessment is implemented semi-annually to ensure the safety/integrity and operability of the dam and other appurtenant structures to impound water needed for domestic water supply, irrigation, power generation and mitigating/minimizing the adverse effect of flooding. These include dam instrumentation monitoring/surveillance to gather technical data which are used for structural safety evaluation and as basis for decision making. The observations, findings and recommendations are reported to the concerned Plant Management/Operators, and compliance with the recommendations is diligently monitored.

Safety inspections/assessments of five (5) NPC managed and operated dams in Luzon namely Ambuklao, Binga, San Roque, Angat and Caliraya Dams and their appurtenant structures were conducted to assess their behavior and condition. DRWD also participated in the conduct of annual safety inspection/assessment of PSALM privatized small hydroelectric plants namely: Amlan in Negros Oriental; Loboc in Bohol; Buhi-Barit in Camarines Sur; and Cawayan in Sorsogon.

2. Deformation Survey of Caliraya and Lumot Dams and Dykes

Deformation surveys are conducted semi-annually to determine/check if there is subsidence/settlement or lateral movement along the crest, upstream and downstream faces of the Caliraya and Lumot Dams and Dykes. The first semi-annual deformation survey was conducted on June 24-28, 2024, and the second deformation survey was conducted on December 4-6, 2024.

The results of the deformation survey gathered from February 2012 to June 2024 showed small (acceptable) movements/displacements along XYZ directions, and results of the distribution analysis particularly in the standard deviation are all within the threshold of less than 0.1. The results indicated no anomalies/abnormalities in the measurement of Movement Survey Monuments (MSMs) and we can therefore conclude that the Caliraya and Lumot Dams and Dykes are in stable condition.

3. Rim Mapping of Ambuklao, Binga and San Roque Reservoirs

Rim mapping aims to: 1) locate mass movement/landslide susceptible zones; and 2) detect possible indications of slope instabilities that may generate impulse waves within the dam reservoirs. The report presents the status/conditions of the reservoir rim.

Rim mapping in Ambuklao Reservoir was conducted in the first semester, dated May 23, 2024. Within the 2nd semester, the rim mappings for Binga and San Roque reservoirs were conducted on October 8 and November 26, 2024, respectively. Results of the rim mappings showed that slope instabilities are mostly shallow and localized. The instabilities were observed to occur in areas with loose soil, exacerbated by constant fluctuations in reservoir elevation and meteorological events. Therefore, the occurrence of a large-scale landslide within the reservoir that could generate impulse waves, is not expected. These impulse waves can cause the overtopping of the dam when it happened when the reservoir level is above the Normal High Water Level.

4. Maintenance Clearing of the Vegetation of Caliraya East & West Dykes and Lumot Dam and Dyke

Maintenance clearing/removal of vegetation at Caliraya East and West Dykes, Lumot Dam and Dyke, including the Caliraya Hydroelectric Power Plant Concrete-Lined Tailrace Canal is being conducted regularly, on a semi-annual basis. This activity normally starts in February and ends on June 30 for the first semester and starts in August for the second semester which ends on December 31. NPC, thru DRWD, hires three (3) job order personnel to do this activity.

This activity is important to be conducted regularly, considering the presence of vegetation can hinder the immediate detection of the possible deficiencies of the dam, including the dyke, which may affect their stability. The MSMs, which are located along the crest, upstream and downstream faces of the dams and dykes, should also be visible and easy to locate to facilitate the conduct of the semi-annual deformation surveys.

5. Dam Instrumentation Monitoring and Data banking

Dam instrumentations are essential in monitoring the structural integrity and safety of the dam. This includes seepage weirs/flow pipes, open standpipe/vibrating wire piezometers and strong motion accelerometer/accelerographs which are all monitored daily. For the Ambuklao, Binga, San Roque and Angat Dams, the dam instruments are being measured by the plant operator. For Angat, the data are submitted to NPC monthly for analysis and data banking. Data for Ambuklao and Binga Dams are being submitted semi-annually, coinciding with the SAIA report preparation. San Roque dam instrumentation data are received by DRWD every other week. For the Caliraya dam, the dam instruments are being measured by NPC personnel including the instruments at Lumot dam and are submitted bi-monthly. In case of unusual/emergency situations such as earthquakes, taking measurements are immediately conducted to determine if there are any effects on the dam structure.

The dam instrumentation historical data are collected and stored. These are analyzed to determine the behavior of the instruments. These data are also compared with the reservoir elevation and the basin rainfall to understand how these factors affect the dam structure.

II. FLOOD FORECASTING & WARNING SYSTEM DIVISION

1. Information and Education Campaign (IEC)

The Information and Education Campaign (IEC) is an annual activity of the Dams Management Department (DMD) that aims to impart important information and increase the level of awareness of the concerned Local Government Units (LGUs) and communities located downstream of DMD-managed dams in Luzon: Ambuklao, Binga, San Roque, Angat and Caliraya Dams. The IEC is conducted in collaboration with other agencies, stakeholders, and plant operators to discuss various topics concerning hydro-meteorological hazards, floods, dam discharge warning operations, water management, dam safety program, and emergency response. It also aims to prepare the Local Government Units and downstream communities to deal with flood-related hazards that may be caused by dam/ reservoir operations.

For CY 2024, a total of seventeen (17) IEC sessions were conducted and completed through face-to-face sessions on the following dates:

Location	No. of Sessions	Inclusive Dates
Caliraya Dam	3	March 20-22, 2024
Angat Dam	7	April 16-19 & 23-25, 2024
San Roque Dam	4	May 14-17, 2024
Ambuklao-Binga Dams	3	June 4-6, 2024





INFORMATION AND EDUCATION CAMPAIGN

CALIRAYA DAM

March 20-22, 2024

"PAGTATAYAK SA ANO LAHAT NG NGA PAMAYARAN SA IBABA NG DAM AY KAPAPANGALAGAN SA BAKTA NG KALAMIDAD"

Conduct of Information and Education Campaign on Caliraya Dam (March 20-22, 2024)

Three (3) IEC sessions were conducted at Lumban and Pagsanjan in the Province of Laguna. Representatives from various collaborating agencies: PAGASA, NPC, CBK-PCL, and the Provincial Government of Laguna served as resource speakers. The said event was attended by various DRRM officers of municipal and barangay levels in the Municipalities of Lumban, Cavinti, and Pagsanjan.





Information and Education Campaign
ANGAT DAM
 April 16-19 & 23-25, 2024
 "PAGTATAYAK NA ANG LAHAT NG MGA PAMAYANAN SA IBABA NG DAM AY
 KAPAPANGALAGAN SA BANTA NG KALAMIDAD"

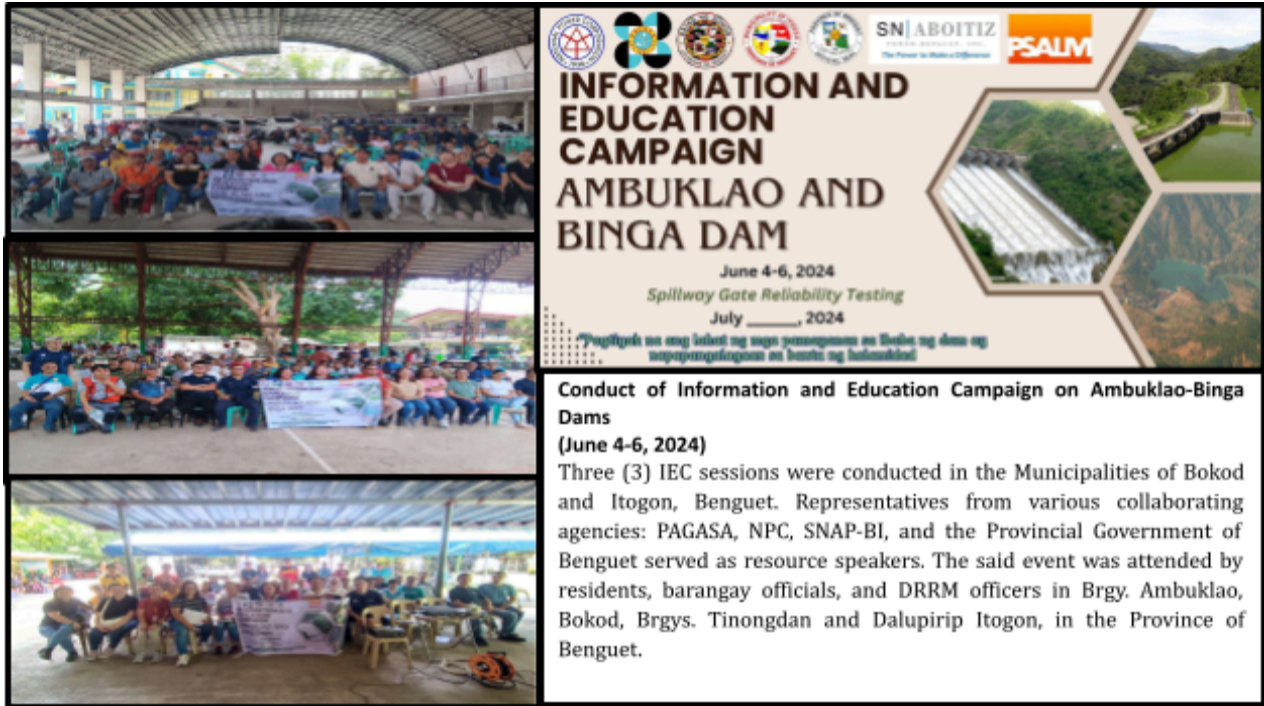
**Conduct of Information and Education Campaign on Angat Dam
 (April 16-19 and 23 – 25, 2024)**
 Seven (7) IEC sessions were conducted at various municipalities: Angat, Norzagaray, Bustos, San Rafael, Baliwag City, Pulilan & Plaridel. Representatives from various collaborating agencies: PAGASA, NPC, MWSS, NIA, and the Provincial Government of Bulacan served as resource speakers. The said event was attended by various DRRM officers in municipal and barangay levels in the Province of Bulacan.





INFORMATION & EDUCATION CAMPAIGN
SAN ROQUE DAM
 (MAY 14-17, 2024)
 "Pagtutayak na ang lahat ng mga pamayanan sa ibaba ng dam ay
 kapapangalagan sa banta ng kalamidad"

**Conduct of Information and Education Campaign on San Roque Dam
 (May 14-17, 2024)**
 Four (4) IEC sessions were conducted at various municipalities: Santo Tomas, Santa Maria, Rosales and Villasis. Representatives from various collaborating agencies: PAGASA, NPC, SRPC, and the Provincial Government of Pangasinan served as resource speakers. The said event was attended by various DRRM officers at municipal and barangay levels in the Province of Pangasinan.



2. Route Familiarization at Caliraya Dam

To enhance the operations of Caliraya Dam, a route familiarization exercise was conducted to ensure the readiness of designated broadcasters from the National Power Corporation and Caliraya-Botocan-Kalayaan Power Company Ltd. in disseminating dam discharge warning messages during potential spilling operations. This activity aims to familiarize broadcasters with the standard procedures for warning dissemination and their specific route assignments. It also aims to establish better coordination by introducing broadcasters to barangay officials along their designated routes, ensuring smooth dissemination of warning messages.

Furthermore, the exercise includes simulations of various scenarios that could arise during actual warning operations to identify gaps in the process and improve the current procedures. These initiatives are carried out in collaboration with the Provincial Disaster Risk Reduction and Management Office (PDRRMO) of Laguna and the Municipal Disaster Risk Reduction and Management Offices (MDRRMOs) of Lumban and Pagsanjan, Laguna.



3. Reliability Testing of Spillway Gates

The annual spillway gates testing is being carried out with the Dam Operators to ensure reliability of the spillway gates during spilling operation. The tests were successfully completed and conducted for the following dams:

Stations	Date
San Roque Dam	April 29 – May 3 & May 20 - 24
Caliraya Dam	May 23
Angat Dam	July 4 & August 8
Ambuklao and Binga Dams	August 13

4. Preventive Maintenance of FFWS Equipment

The periodic preventive maintenance activities are being conducted to avoid or mitigate the consequences of equipment malfunction especially during spilling operations. The quarterly preventive maintenance activities were conducted on the following schedules, as shown in the table below:

Stations	1Q	2Q	3Q	4Q	Remarks
Ambuklao - Binga	Mar. 11-15	May 27-31	Sept. 9-13	Nov. 25-29	Witnessed as per OMA Agreement
San Roque	Feb. 12-29	May 6-24	Aug. 12-30	Nov. 4-29	Completed On-time
Angat	Feb. 1 – Mar. 5	May 2- June 6	Aug. 8 – Sept. 6	Nov. 11 – Dec. 6	Witnessed as per OMA Agreement
Caliraya	Jan. 29 – Feb. 2	May 20-24	Aug 5-9	Dec. 17-27	Completed On-time

Ambuklao-Binga Dams



San Roque Dam



Angat Dam



Caliraya Dam



5. Dam Discharge Warning Operation

The dam discharge warning operation refers to a series of coordinated activities and procedures carried out by NPC in coordination with other dam stakeholders to manage the release of water from the dam including the proper broadcast and dissemination of dam discharge warnings to the general public to ensure dam and public safety and mitigate potential flooding risks. For CY 2024, the Dams Management Department conducted a total of 26 dam discharge warning operations as enumerated as follows:

Location	No. of NPC-Initiated Spilling Operation	Inclusive Dates of Spilling Operations
Angat Dam	1	<ul style="list-style-type: none"> Northeast Monsoon (Dec. 14, 2023 – Jan. 4, 2024)
San Roque Dam	3	<ul style="list-style-type: none"> TC Kristine (Oct. 22-26) TC Nika (Nov. 10-12) TC Pepito (Nov. 15-18)
Ambuklao Dam	11	<ul style="list-style-type: none"> TC Carina (July 21-26, 2024) TC Enteng (Sept. 1-3, 2024) Southwest Monsoon enhanced by TC Yagi {formerly Enteng} (Sept. 5-7, 2024) TC Gener (Sept. 16-17, 2024) TC Julian (Sept. 28- Oct. 1, 2024) TC Kristine (Oct. 22-26, 2024) TC Leon (Oct. 29-30, 2024) TC Marce (Nov. 5-8, 2024) TC Nika (Nov. 10-12, 2024) TC Ofel (Nov. 13-15, 2024) TC Pepito (Nov. 16-18, 2024)
Binga Dam	11	<ul style="list-style-type: none"> TC Carina (July 21-26, 2024) TC Enteng (Sept. 1-3, 2024) Southwest Monsoon enhanced by TC Yagi {formerly Enteng} (Sept. 5-7, 2024) TC Gener (Sept. 16-17, 2024) TC Julian (Sept. 28- Oct. 1, 2024) TC Kristine (Oct. 22-26, 2024) TC Leon (Oct. 29-30, 2024) TC Marce (Nov. 5-8, 2024) TC Nika (Nov. 10-12, 2024) TC Ofel (Nov. 13-15, 2024) TC Pepito (Nov. 16-18, 2024)

Note that for this year, no dam discharge warning operations were conducted at Caliraya Dam.