



GOVERNMENT OF ODISHA
DEPARTMENT OF WATER RESOURCES

ANNUAL REPORT 2017-18

UPPER KOLAB HEAD WORKS DIVISION
KOLABNAGAR

Executive Engineer
Upper Kolab Head Works Division
Kolabnagar

SALIENT FEATURES OF UPPER KOLAB PROJECT

GENERAL DATA

1.	District	Koraput
2.	Tahasil	Jeypore, Borigumma, Kotpad, Kundra
3.	River	Kolab
4.	Location of Head works	16 Km. upstream of Jeypore Town
5.	Name of River/Basin	Kolab
6.	Longitude	82.36 East
7.	Latitude	19.10 North

HYDROLOGICAL DATA OF MAIN DAM

1.	Catchment area	1630 Sqkm.
2.	Rainfall in command	
(a)	Maximum annual rainfall	1560 mm
(b)	Minimum annual rainfall	980 mm
(c)	Mean annual rainfall	1270 mm
(d)	80% chance annual rainfall	1016 mm
3.	Annual runoff (Average)	1704 M.Cum
4.	Reservoir	
a)	Storage (in Mcum)	

	As per original project report (1975)	Revised as per CWC , New Delhi(2011)
Gross storage capacity	1215	1073.95
Dead storage	280	214.76
Live storage	935	859.19

b) Elevations Original/Revised
(Upper Kolab System)

i.	Maximum water level	858.00 M
ii.	Full reservoir level	858.00 M
iii.	Lowest Reservoir level	837.00 M
iv.	Dead storage level	844.00 M
v.	River bed level	837.00 M

5. Dam &Spillway

Length 646.00 M.

Maximum height	55.00 M.
Overflow Length	169.20 M.
No. & size of gates	11Nos.X (12.20 X 12.20)M. Radial type
Spillway crest level	845.800 M.
Original Design Flood (as per project report)	10020 Cumecs
Revised Design Flood (as per CWC, New Delhi)	12569 Cumecs

6. Dyke

Length	526.00 M.
Maximum height	7.00 M.

WATER CONDUCTOR SYSTEM

1. MAIN TUNNEL INTAKE

i. Diameter –	6.00 M finished horse shoe type
ii. Top Level of Platform -	847.000 M
iii. No. of trash rack bays -	7 Nos.
iv. Intake bed level	827.800M
v. Tunnel central line level -	830.800 M
vi. Bell Mouth Top level	837.000 M

2. SURGE TANK

i. Surge Tank (simple type)	15.00 M dia depth 145.00 M
ii. Bottom Level of Surge tank	765.500 M
iii. Top Level of surge tank	910.00M
iv. Minimum Surge level	812.00M
v. Maximum Surge level	880.00M

3. PENSTOCK TUNNEL

i. Nos. & Length	2 Nos. & 391 M respectively
ii. Diameter	5 M finished steel lined

4. PENSTOCK

i. Nos. & Length	4 nos. & 537 M respectively
ii. Diameter	3.50 M

5. POWER HOUSE

i.	No. of units	4units of 80 MW each
ii.	Service bay floor level	598.500M
iii.	Generator Floor level	593.700 M
iv.	Deepest foundation level	576.450M
v.	Maximum Tail water level	595.200 M
vi.	Minimum Tail water level	587.680 M
vii	Turbines Vertical Shaft	Francis Type (428.6 rpm) 92000 KW capacity
viii	Generator	80 MW at 0.9 pf 50 cycles , 3 Phase star connected normal speed 428.6 rpm
ix	Rated net head & design net head	261.730M
x	Firm output at 100 % load factor	95 MW
xi	Bed width of tail race channel	25.00 M
xii	Length of tail race channel	900M

SATIGUDA DAM

TBL	597.200 M
MWL	595.200 M
FRL	593.500 M
DSL	587.680 M
Spillway Crest Level	591.800 M
Total length of Dam	1144.150 M
Water spread area at FRL	56.70 Ha.
No. of gates in spillway	03
Maximum Discharge in spillway	434 Cumecs
Inflow Design Flood (Revised Hydrology)	479 Cumecs
Maximum Outflow (Revised Hydrology)	413.510 Cumecs
D/S cistern level	575.000 M
B.L. of Exit channel	580.360 M
Live Pondage of reservoir	1519.000 T.Cum
Gross Pondage of reservoir	1746.000 T. Cum
Gallery in spillway section	1.50 X 2.10 M
Length of gallery	61.50 M
Top width of dam	8.00 M
Maximum Height of Dam	16.84 M (Homogeneous)
<u>H.R.of J.M.C.</u>	
Gates	6 Nos. X 2.75 M X 2.75 M Service side 6 Nos. X 2.75 M X 2.75 M Emergency side
Sill Level of Gates	584.600 M
J.M.C. Bed Width (on D/S of H.R)	8.50 M
F.S.L.	587.300 M
B.L	583.300 M

F.S.D.	4.00 M
Full Supply Discharge	98.100 Cumecs
<u>H.R.of Padmapur Distributory</u>	
Gates	2 Nos. X 1.50 M X 1.00 M Service side 2 Nos. X 1.50 MX 1.00 M Emergency side
Bed Width of canal	6.00 M
F.S.L.	587.100 M
B.L.	586.300 M
F.S.D.	0.80 M
Full Supply Discharge	2.70 Cumec

CANAL SYSTEM

a) Canal lengths

Name of canal	Length (In Km.)
Jeypore Main Canal	17.85
Branch Canal	5.136
Distributories	64.188
Minors	71.829
Sub-Minors	<u>86.50</u>
Total length	245.503

(b) Area in (Ha.)

Culturable Command Area

1 Jeypore main canal	2371.91Ha
2 Padmapur Distributarysystem	1455.745Ha
3.D.B.C System	6795.776Ha
Total	10623.431Ha

Intensity of Irrigation	100% in Khariff 83 % in Rabi
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U.K.H.W.DIVISION AT A GLANCE

The head quarter of this division is located at Kolabnagar and is responsible for the operation and maintenance of Main Dam, Satiguda Dam, water conductor system and some of the portions of distribution system .

Total length of Jeypore Main Canal of U.K.P is 58.83 km. & ayacut area is 44500 Ha. Out of this Upper Kolab Head works division comprises jurisdiction Jeypore Main Canal from 00 to R.D 17.854 km. With 5 nos of distributaries and it's off taking channels.

Out of the total ayacut area this Upper Kolab Head Works Division, Kolabnagar has an ayacut area of **10623.431 Ha.** having the following jurisdiction and below mentioned system features for operation & maintenance.

1. Upper Kolab Gravity Dam and its components like gate system, Intake structure, Surge shaft and transmission tunnel.
2. Satiguda earth dam for the balancing reservoir for irrigation and water supply to Jeypore Town.
3. Jeypore Main Canal from R.D. 00 to 17.850 Km along with its off- takings canals.
4. Padmapur Distributary system from RD 00 to 12.660 km. along with its off-taking canals.
5. Maintenance of three different colonies at Kolabnagar and part of LA&RO colony at Koraput.

Capacity Enhancement of Satiguda reservoir

It is highly essential to enhance the capacity of Satiguda reservoir in order to meet the irrigation demand during the critical periods. As the gross storage capacity of the reservoir is only 1.710 MCum at FRL condition and there is fluctuation of generation schedule and subsequent water level, the irrigation demand for the present ayacut potential of 44500 Ha. can not be met out of the reservoir. During the peak hours of the power generation, it is frequently needed for forced spilling of water through the spillway and also causes an empty reservoir, if the power generation would not be made for a mere 8 hours or so.

The depletion of the reservoir because of the less storage capacity and requirement of canal discharge, often cause much hue and cry and damage the standing crops during the irrigation seasons, especially at the tail ends. Also due to the falling reservoir level it is not possible to make the water supply to Jeypore Town and to the Irrigation colony at Bariniput. The local farmers and people of jeypore town often demand for the regular way of water discharge.

So, a proposal for the capacity enhancement has been submitted to Engineer-in – Chief, Water Resources vide Lr. No. 1484(WE) / Dt- 10-3-2015 to put forth before the TAC for kind consideration. Accordingly, a high level meeting was convened by the Engineer-in-chief- cum- Special Secretary to Govt., DOWR on Dt- 28-4-2015 to evaluate the necessity of capacity enhancement. Now, the matter is under active consideration of Chief Engineer, PPF, Bhubaneswar.

1. Revival of Gates for Intake structure of Tunnel

The gates for the head race tunnel intake of the project are not functional because of the missing motors and hoisting mechanism. Efforts are now being initiated for the restoration of all the sluice valves for smooth operation of the intake gates and surge shaft gates in the transmission system or to close the tunnel at the time of exigency like natural disaster or anti-social activities.

In this regard, a high level team inspected the sites and accordingly the work has been awarded to M/S O.C.C amounting to **Rs.5,25,71,389/-** for the restoration works of all the defunct gates at Intake and Gate Shaft of water conductor system under Agreement No 09F2/2016-17 with date of commencement and stipulated date of completion as 22.10.2016 & 21.2.2018 respectively

The up-to-date Expenditure incurred as on 31.3.2018 is Rs1,53,44,954/-

KHARIFF & RABI IRRIGATION PROGRAMMED & ACHIEVEMENT

Ayacut Area in Ha

Name of Block	Khariff Irrigation 2017 (Ha)		Rabi Irrigation 2017-18 (Ha)		Khariff Irrigation 2018 (Ha)
	Programmed	Achievement	Programmed	Achievement	Programmed
Jeypore	10623.431	10202.546	9571.923.00	9571.923	10607.201

STATUS OF PANIPANCHAYAT

- 1) No.of Panipanchayats constituted under U.K.H.W. Division = 25
- 2) Nos. . of Distributory committees = 02
- 3) The Election for Dhanpur Branch Canal Distributory Committee has been completed on 04.10.2016
- 4) The Election for Padmapur Distributory Committee has been completed on 18.8.2017.
- 5) Election for Appex Committee held on 14.9.2017

WORK STATUS:-.

STATUS OF ALLOTTMENT Vs. EXPENDITURE ON WORKS DURING 2017-18 (ENDING 31.3.2018)					
U.K.HEAD WORKS DIVISION, KOLABNAGAR					
Amount in thousand rupees					
SI NO	Name of the Sub Head	Amount of allotment	Expenditure upto end of 03/2018	% Expenditure incurred	Remarks
1	20-2700-12-101-0239-21033-000-0-1-0--MAINTENANCE WORK	23800	21946.49	92.21	2
2	20-2700-12-101-0239-21073-000-0-1-0--SPL.REPAIR	4600	4599.980	100.00	
3	20-2700-12-101-0239-21072-000-0-1-0—SPI REPAIR FOR GATE WORKS	1767	1767	100.00	
4	20-2700-12-101-0239-21003-000-0-1-0-Electricity Consumption	3000	3000	100.00	
5	20-2700-12-101-0239-21111-000-0-1-0--MAINTENANCEOF RES.BLDGS.	550	518.637	94.30	
6	20-2700-12-101-0239-21112-000-0-1-0--MAINTENANCE OF NON-RES.BLDGS.	800	737.592	89.98	
7	20-2700-12-101-0239-32006-000-0-1-0--M&E	200	194.284	67.43	
8	20-2700-12-101-0239-31003-000-0-1-0--T&P	500	474.938	41.77	
9	20-2700-12-101-0239-08001-397-0-1-0--M&V	600	322.45	50.46	
10	20-2700-80-800-1848-21033-000-0-1-0--MAINTENANCE OF CRITICAL WORKS	25000	25000	100.00	
11	20-2700-80-800-1730-21028-000-0-1-0-- MAINTENANCE of Roads	3400	3400	100.00	

12	DRIP WORKS (U.K.DAM & SATIGUDA DAM)	35900	35886.446	99.962	
	GRAND TOTAL	100117	97847.817	97.733	

1 MAINTENANCE WORKS FOR CANAL:

Out of the allotment placed under Maintenance work and Special repair, a number of restoration works like removal of silt, structural repair, canal bank strengthening, repair to service roads were executed, as a result irrigation water reached safely to the tail ends of canals.

2. WORKS TAKEN UP UNDER CRITICAL MAINTENANCE GRANT:

The list of the works taken up out of the allotment placed under critical maintenance grant are reflected below.

Sl no	Name of work	Agreement No	Expenditure incurred by 31.3.2018
1	Repair & renovation of Flood cell of UK Dam.	56p1/16-17)	726783.00
2	Construction of 2 nos of stalls near Dam top & Terraced Garden No IV	55p1/16-17	645572.00
3	Supply & installation of LED street light fittings at approach road to gallery of U.K.Dam	19p1/17-18	655288.00
4	Development of Bed including maintenance to Terraced Garden No.II at right side of U.K. Dam.	21p1/16-17	254672.00
5	Development of Bed including maintenance to Terraced Garden No.IV at right side of U.K. Dam.	31p1/16-17	302871.00
6	Installation of submersible pump at Intake well	10p1/17-18	206872.00
7	Renovation of Spillway operation room and office buildings at Satiguda Dam .	36p1/17-18	305288.00
8	Construction of Souchalay (for Gents and ladies) at Picnic spot of UKDam.	41p1/17-18	270353.00
9	Supplying and installation of LED street light fittings from Bhutnagar chowk to main gate of UK Dam.	12p1/17-18	1685878.00
10	Improvement of road along the hill side drain from 3rd garden to main gate at picnic spot of UKDam.	42p1/17-18	70399.00
11	Repair and const.of pathway around the tank near flood cell buildig of UK Dam.	39p1/17-18	503112.00
12	Painting and petty repairs to left side protection works from main gate to Dam top at UK Dam.	34p1/17-18	635724.00
13	Improvement of garden and childrens park at right side end of Satiguda Dam at U.K.Dam	24p1/17-18	733793.00
14	Renovation of outfall drain at RD 840 m of Satiguda Dam, UKP including protection works.	06p1/17-18	866704.00
15	Construction of Pucca drain & slope protection works in between RD 1.50 KM to 2.00 KM of Road from Ghatgumar Chowk to Dhaudapadar	20p1/17-18	1184507.00
16	Providing steel handrailing to steps from Dam top to Gallery at left side of U.K.Dam	33p1/17-18	1104433.00

17	Repair of steps, Pathway and gauge chamber and providing G.I. Handrailing to steps leading to gauge chamber of U.K. Dam	35p1/17-18	226472.00
18	Improvement to U.K.H.W. Sub Division office at U.K. Dam	40p1/17-18	323057.00
19	Improvement of lighting arrangement along the road from entrance of U.K. Dam to Dam top.	43p1/17-18	417848.00
20	Slope Protection work including improvement to canal bank from RD 3.00Km to 3.100Km & 2.34km to 2.43KM of Anta Distributary.	16p1/17-18	910479.000
21	Providing protection work at R.D 7200 to 7400m of Dhanpur Distributary.	03p1/17-18	904478.000
22	Slope protection work from R.D 17.65 km to 17.85 K.M of Jeypore Main Canal. (working RD 17.65km to 17.789km)	29p1/17-18	1709247.00
23	Repair to HR of Anta Distributary at RD 5.136 Km of Dhanpur branch canal with slope protection work.	17p1/17-18	478075.00
24	Repair to CDno 2 at RD 630M of Girigaon Distributary including bank connection from RD 480m to 630 M .	14p1/17-18	312215.00
25	Construction of compound wall along the boundary on the down stream side of Satiguda Dam from Left end to Sati River including village road crossing bridge over Padmapur Disty .	50p1/17-18	282497.00
26	Supply & installation of LED street light fittings from Bhutanagar Chowk to Main Gate of UK Dam (RD 6.50 Km to 8.00 Km)	53p1/17-18	1237913.00
27	Protection of canal bank from RD 1340 mtr. To 1355 m and RD 1782 m to RD 1938 mtr. Of Targei Minor of Dhanpur Disty .	57p1/2017-18	520139.00

3. LIST OF WORKS TAKEN UP UNDER 20-2700 Maintenance of Roads .:

Sl no	Name of work	Agreement No	Expenditure incurred by 31.3.2018
1	Improvement & strengthening of left side bank service road from RD 1.50 Km to tail of Dhanapur Branch Canal (working RD 2.907 Km to 3.71 Km) Agt No.	33P1/2016-17	Rs 966021
2	Improvement to service road of Jayanagar Minor from RD 160 to 2000m.	2p1/2017-18	Rs 1063824/-
3	Improvement to Service road of Anta Distributary from RD 3.590Km to 5.800Km.	1p1/2017-18	Rs 885037
4	Improvement to service road of Sankaudi Minor from RD 3.55Km to 5.300Km.	30P1/2017-18	Rs 360900/-

Dam Rehabilitation and Improvement Project (DRIP) :

There is a comprehensive action plan for rehabilitation of U.K. Main dam & Satiguda Dam , duly approved by CPMU (a subsidiary unit of CWC) and funded by World Bank. For The project cost of rehabilitation for Upper Kolab Main Dam and Satiguda Dam originally **Rs.1230.00** and **Rs.310.61 Lakhs** respectively. The revised cost as per approved for both U.K.Dam and Satiguda Dam are **Rs 1208.00** and **Rs 352.00 Lakhs** respectively. All major distress conditions like leakage control, slope protection on down-stream side flanks , lighting to dam top, installation of real time flood forecasting, instrumentation, automatic gauge reading , security measures, improvement of communications, etc. have been included to overcome the difficulties faced during day to day operation & maintenance and also to have a modernized monitoring system at the time of exigency.

. The up-to-date status of all the works under this scheme are mentioned below

(Rs in Lakhs)

Name of Dam	P.S.T. approved amount	Revised cost approved	Total amount of agreement	Expenditure incurred during 2015-16	Expenditure incurred during 2016-17	Expenditure incurred during 2017-18	Cumulative Expenditure by 31.3.2018
U.K.DAM	1230.00	1208.00	1205.70	93.65	739.391	358.864	1191.905
SATIGUDA DAM	310.61	352.00	317.82	220.20	86.235	0	306.435
Total	1540.61	1560.00	1523.52	313.85	825.626	358.864	1498.34
							99.996%

6. LIST OF WORKS TAKEN UP UNDER 20-4701-37081- DRIP DURING 2017-18

Sl no	Name of work	Agreement No	Expenditure incurred by 31.3.2018
1	Beautification of Garen at U.K.Dam under DRIP	04-NCB/15-16	664899/-/-
2	Treatment to Upstream and Downstream faces with PICC mortar/High strength fiber reinforced repair mortar or equivalent non shrink mortar & grouting works to eradicate the distress condition of Dam body wall of UK Dam under DRIP(Civil work-package)	08-NCB/15-16	10894016/-
3	Improvement to road communication network ,improvement of drainage system and constn. of compound wall/fencing along the boundary of UK Dam Kolabnagar under DRIP.	09-NCB/15-16	7042611/-

4	Down stream protection works on left and right side of Spill channel of IUK Dam with const. of guard walls and stone packing works under DRI	10-NCB/15-16	12141287/-
5	Construction of Watch Tower at Vulnerable locations, renovation of old damaged parapets, providing hand rails on steps inside drainage gallery and other ancillary works of IUK Dam under DRIP.	11-NCB/15-16	4837398/-
6	Repair and Renovation to Radial Crest gate, gantry crane and hoisting arrangement of UK Dam under DRIP.	12-NCB/15-16	306235/-
	Total		35886446/-

QUALITY CONTROL OBSERVATIONS

For Important works the following quality control activities being conducted.

1. The important ongoing works of this division are being inspected by the officers entrusted by the Quality Control Division, Bariniput. The observations pointed out by the officers of the Quality control Division time to time are being attended & rectified regularly.
2. The observations of higher officers such as S.Q.M. including Chief Construction Engineer are also being complied.
3. Required test for concrete, soil, sand & water content etc are being conducted from time to time as per the stipulations. Other test for materials such as cement, steel, reinforcement, aggregate & cement are also being carried out at the Quality Control lab, Jeypore, Khatiguda & Sunabeda.

[Signature]
05/06/2016
Executive Engineer,
U.K. Head Works Division