SWET GANGA HYDROPOWER & CONSTRUCTION LIMITED
Sankha Park, Dhumbarahi, G.P.O.Box 19737, Kathmandu Nepal
Site Office: Sirise, Ramechhap

TALLO LIKHU JALAVIDHYUT AAYOJANA
(28.1 MW)

MONTHLY PROGRESS REPORT # 50

JUNE, 2022

(18 Jestha to 16 Ashad, 2079)

Prepared By:

TALLO LIKHU JALAVIDHYUT AAYOJANA (28.1 MW)

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	Signature	Date
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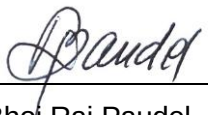
Approved By:		
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1 PROJECT OVERVIEW AND INSTITUTIONAL ARRANGEMENT

Tallo Likhu Jalavidhyut Aayojana is a run-of-river (RoR) hydropower project which utilizes Gross Head 118 m and Design Discharge of 29.75 m^3/s resulting to an installed capacity of 28.1 MW. The entire project area (headworks to powerhouse) is located in Likhu-Tamakoshi Rural Municipality (Saipu, ward no. 2 and Bijulikot ward no. 4) of Ramechhap, Bagmati Province of Nepal. Geographically, the project lies between Longitudes 86˚15'38" E to 86˚13'17" E and Latitudes 27˚25'56" N to 27˚22'47"N. Geologically, the project area belongs to the Lesser Himalayas.

The project's headworks area is accessible via two different road routes. One from Kathmandu-Dhulikhel-Charikot-Nayapul-Dhobi-Sirise (227 km) and another from Kathmandu-Dhulikhel-Khurkot-Manthali-Dhobi-Sirise (170 km).

CONSTRUCTION MANAGEMENT

The Employer/Owner	Swet Ganga Hydropower & Construction Ltd. (SGHCL)
The Engineer/ Consultant	Sanima Hydro and Engineering Pvt. Ltd. (SHEPL)
The Contractor (Civil Construction Works)	High Himalaya Hydro-Bavari Construction J.V.
The Contractor (Hydro-mechanical Works)	Machhapuchhre Metal & Machinery Works (P.) Ltd. (3MW)
The Contractor (Electro-mechanical Works)	Asia Pacific Power-Tech Co. Ltd., China
The Contractor (Transmission-line Works)	Aster Teleservices Nepal Pvt. Ltd.
Pre-construction works, camp facilities, social environment	Direct by the Employer

2 KEY DATES

Table 1: Key dates of major events of the project

Description	Date
Generation License issued by Department Electricity Development (DoED), Ministry of Energy (MoE), Government of Nepal (GoN)	2 Baisakh 2073 (14 April 2016)
	The license period of the project is from
	28 Chaitra 2072 to 27 Chaitra 2108 B. S.
Power Purchase Agreement (PPA) with Nepal Electricity Authority (NEA)	14 Poush 2073 (29 December 2016)
Financial Closure	10 Falgun 2074 (22 February 2018)
Contract of Main Civil Works	5 Chaitra 2074 (19 March 2018)
Contract of Hydro-mechanical Works	9 Poush 2075 (24 December 2018)
Contract of Electro-mechanical Works	18 Bhadra 2076 (4 September 2019)
Contract of Transmission Line Works	8 Shrawan 2077 (23July 2020)
RCOD	15 Mangsir 2078 (1 December 2021)

3 CONTRACT PACKAGES AND IMPLEMENTATION

Main civil construction works	Contract Package 1
Hydro-mechanical works	Contract Package 2
Electro-mechanical works	Contract Package 3
Transmission Line works	Contract Package 4
Pre-construction works, camp facilities, social environment	Direct by the Employer

4 FINANCING

Equity	Promoters	25% of the total Project Cost
Debt	Consortium of Banks	75% of the total Project Cost (Lead Bank: Laxmi Bank Ltd, Member Banks: Kumari Bank Ltd., Hydroelectricity Investment and Development Company Ltd. Century Commercial Bank Ltd., and Prabhu Bank Ltd.)

5 RESOURCES AT SITE

5.1 MANPOWER FROM EMPLOYER AND ENGINEER'S SIDE:

Table 2: Human Resource at site from the Employer and Engineer's side

Description	Number
General Manager	1
Resident Engineer	1
Environment and Social Officer	1
Finance/Admin Officer	1
Civil Engineer	3
Electrical Engineer	2
Mechanical Engineer	1
Engineering Geologist	1
Safety Coordinator	1
Civil Overseer/Sub-overseer	4
Mechanical Overseer	6
Electrical Overseer/Sub-overseer	7
Surveyor	2
Social Mobilizer	3
Admin Assistant	2
Driver	4
Cook	3
Office Helper	4
Construction Helper	5
Store keeper	1
Total:	**53**

5.2 MANPOWER FROM CIVIL CONTRACTOR'S SIDE:

Table 3: Human Resource at site from the Civil Contractor's side

Description	Number
Technical Manpower	19
Financial and Administrative manpower	23
Skilled workers(Machine Operators, Electricians, Heavy Drivers)	25
Semi-Skilled workers(Light Drivers, Civil workers)	24
Unskilled workers(Helpers, Kitchen workers, Pump operators)	22

Description	Number
Security guards	21
Total (A)	**134**
Other Workers (Sub-Contractors)	
DL/Bhimeshwor Construction (Headworks, Seti and Powerhouse)	46
Dreamland construction (Seti Outlet)	17
Gaiya Devi Construction (VB02)	17
Balaji Metal Works (Powerhouse, Main Outlet)	5
Total (B)	**85**
Grand Total (A+B)	**219**

Note: Data as per weekly report provided by the Main Civil Contractor on 30th June 2022.

5.3 MANPOWER FROM HYDRO-MECHANICAL CONTRACTOR'S SIDE:

Table 4: Human Resource at site from the Hydro-Mechanical Contractor's side

Description	Number
Site Project Engineer	1
Site Supervisor	3
Safety Officer	1
Store In-charge	1
Quality Controller	1
Electrician	1
Sand Blasting Operator	1
Hydra Operator	1
Tractor driver	1
Fitter	4
Welder	6
Helper	11
Cook	3
Total	**35**

5.4 EQUIPMENT MOBILIZED BY CIVIL CONTRACTOR

Table 5: Equipment mobilized by the Civil Contractor

S.N.	Equipment Name	Number	S.N.	Equipment Name	Number
1	Generator 62.5KVA	2	24	Pusher leg	37
2	Generator 30KVA	1	25	Blaster (Exploder)	6
3	Generator 125KVA	1	26	Siren	6
4	Generator 25 KVA	1	27	Core Cutting machine	2
5	Generator 160 KVA	3	28	Hand drilling machine	3
6	Generator 250 KVA	2	29	Air compressor	7
7	Air Receiver tank	4	30	Vibrators	8
8	Ohm meter	6	31	Water pump 10"	2
9	Excavator	4	32	Water pump 12"	1
10	Dump Truck	11	33	Water Pump 1.5"	6
11	Transportation Truck	1	34	Water pump 6"	4
12	Backhoe Loader (JCB)	3	35	Grinding machine(4")	6

S.N.	Equipment Name	Number	S.N.	Equipment Name	Number
13	Wheeled loader	4	36	Grinding machine(7”)	1
14	Tractor	3	37	Welding machine	8
15	Light vehicle	6	38	Ply cutter machine (8”/7”)	1
16	Concrete Batching Plant	1	39	Prism with tripod set	5
17	Concrete mixer	10	40	Leveling staff (5m)	4
18	Grouting pump	4	41	Total station (Topcon)	3
19	Concrete pump	3	42	Auto level with tripod set	4
20	Transit mixer	4	43	Shotcrete machine PZ5	3
21	Blower fan set	2	44	Compressive test machine	2
22	Pull out test machine	1	45	Lubricator	43
23	Shotcrete Robot (Jacon)	1	46	Diesel Tank 16000Ltr	3

5.5 EQUIPMENT MOBILIZED BY HYDRO-MECHANICAL CONTRACTOR

Table 6: Equipment mobilized by the Hydro-Mechanical Contractor

S.N.	Equipment	Number
1	Hydraulic Crane	1
2	Excavator	1
3	Tractor	1
4	Diesel Generator (200 KVA)	1
5	Diesel Generator (40 KVA)	1
6	Diesel Generator (12.5 KVA)	1
7	Welding Machine	14
8	Compressor	1
9	Grinding Machine (7”)	14
10	Grinding Machine (4”)	8
11	Master Oven	1
12	Portable Oven	14

5.6 CONSTRUCTION MATERIALS STORED BY CIVIL CONTRACTOR AT SITE:

Table 7: Construction material stored by the Main Civil Contractor

Materials	Unit	Balance Quantity
Diesel	Litres	11,220
Rebar (25mm dia.)	Ton	-
Rebar (20mm dia.)	Ton	2.50
Rebar (16mm dia.)	Ton	-
Rebar (12mm dia.)	Ton	5.00
Cement	Bags	3,130
Plasticizer	Kg	1,400.00
Steel Fibre	Kg	100.00
Micro Silica	Kg	200.00
Accelerator	Kg	250.00

Note: Data as per weekly report provided by the Main Civil Contractor on 30th June 2022.

6 CIVIL CONSTRUCTION WORK PROGRESS

6.1 HEADWORKS

The civil work progress at headworks in June, 2022 is as follows:

1. Base concreting and one side wall concreting of fish ladder has been completed from chainage 0+023 to 0+067.54. Rebar work is ongoing for remaining wall portion.
2. Base concrete has been completed for fish ladder panel 1 (chainage 0+000 to 0+010.70). Rebar installation work is ongoing at the wall portion.

Table 8: Progress at Headworks in June, 2022

S. N.	Description	Unit	Quantity	Remarks
1	C25 concrete	m^3	50.00	
3	1:6 Stone masonry	m^3	30.00	
4	Rebar	Ton	3.50	

Figure 1: View of fish passage

Figure 2: Construction of toe wall at downhill side of headworks staff quarter

6.2 HEADRACE TUNNEL, SYPHON CROSSING AND SURGE SHAFT

- **HRT FROM MAIN INLET PORTAL TO SETI OUTLET PORTAL**

The plum concrete work below the pipe invert of anchor blocks of both main inlet portal and Seti outlet portal have been completed and handed over to the Hydro-mechanical contractor for pipe bend erection.

Table 9: Civil Work progress for the tunnel stretch from Main inlet portal to Seti outlet portal

Lining Type	Face	Design length (m)	Completed length (m)	Remaining (m)
Shotcrete	Face 1	528.32	528.32	-
	Face 2	292.80	292.80	-
	Total	**821.12**	**821.12**	**-**
Wall concrete	Face 1	528.32	528.32	-
	Face 2	292.80	292.80	-
	Total	**821.12**	**821.12**	**-**
Full concrete	Face 1	263.00	263.00	-
	Face 2	602.00	602.00	-
	Total	**865.00**	**865.00**	**-**
Pipe Section	Face 1	37.00	37.00	-
	Face 2	25.00	25.00	-
	Total	**62.00**	**62.00**	**-**

Figure 3: Bend erection of main inlet portal block after plum concrete below pipe invert

Figure 4: Completion of plum concrete below pipe invert and resumption of pipe works at Seti Outlet

- **HRT FROM SETI INLET PORTAL TO POKU OUTLET PORTAL**

  All civil works have been completed at this portion.

- **HRT FROM POKU INLET PORTAL TO MAIN OUTLET PORTAL**

  All civil works have been completed at this portion.

- **SETI CROSSING**

  All civil works have been completed at this portion.

- **POKU CROSSING**

  All civil works have been completed at this portion.

- **SURGE SHAFT, ROCK TRAP AND CONNECTING TUNNEL**

  All civil works have been completed at this portion.

6.3 PENSTOCK, PPV HOUSE, POWERHOUSE AND TAILRACE

- **PENSTOCK ALIGNMENT:**

  Concreting works of the saddle supports from anchor blocks VB01 to VB02 have also been completed. Drainage construction works is ongoing at this area.

- **PPV HOUSE:**

  The construction of the RCC frame of the PPV house has been completed. Installation of the roof truss is ongoing.

- **POWERHOUSE:**

  Painting works have been completed at the outer walls of the powerhouse and ongoing for the internal walls. Floor finish with punning has been carried out at the MIV floor.

- **CONTROL ROOM AND OFFICE BUILDING:**

  Tile works is ongoing at the floor of the office rooms and toilet/bathrooms.

- **TAILRACE:**

  All civil works of the tailrace culvert have been completed.

- **SWITCHYARD:**

  ll civil works of the switchyard have been completed.

Table 10: Progress at Penstock and powerhouse in June, 2022

S.N.	Description	Unit	Quantity (Powerhouse and control building)	Quantity (Penstock alignment)
1	C25 concrete	m^3	-	250.00
2	Re-bar	ton	-	4.00
3	C25 Plum concrete	m^3	-	-

Figure 5: Construction of the Penstock pipe saddle supports from VB01 to VB02 and Anchor Block VB01

Figure 6: View of PPV house

Figure 7: View of powerhouse and Penstock alignment

7 HYDRO-MECHANICAL WORKS

The work progress of hydro-mechanical erection and installation works achieved in June 2022 are listed below:

- Pipe erection at the remaining stretch (previously occupied by the rock crusher) of the headrace pipe is ongoing.
- Pipe erection is ongoing at the main inlet tunnel and Seti outlet tunnel.

Figure 8: Pipe installation at the main inlet portal

Figure 9: Pipe installation at the HRP area previously occupied by the rock crusher

8 ELECTRO-MECHANICAL WORK PROGRESS

The work progress of the electro-mechanical installation works in June 2022 is below:

Unit 1:
- Machine installation and alignment works have been completed.
- Brushless excitation generator installation has been completed.
- Turbine hydraulic pipeline installation is ongoing.

Unit 2:
- Machine installation and alignment works have been completed.
- Brushless excitation generator installation has been completed.

Control room:
- High voltage cable termination works have been completed.
- Control cable laying works have been completed.

Switchyard:
- Installation of main switchyard equipment has been completed.
- Equipment marshal box termination works remaining.

New Khimti Substation:
- Installation of main substation equipment and metering equipment has been completed.
- Cable termination works are ongoing.

PPV house:
- Installation of Penstock Protection Valve is ongoing.

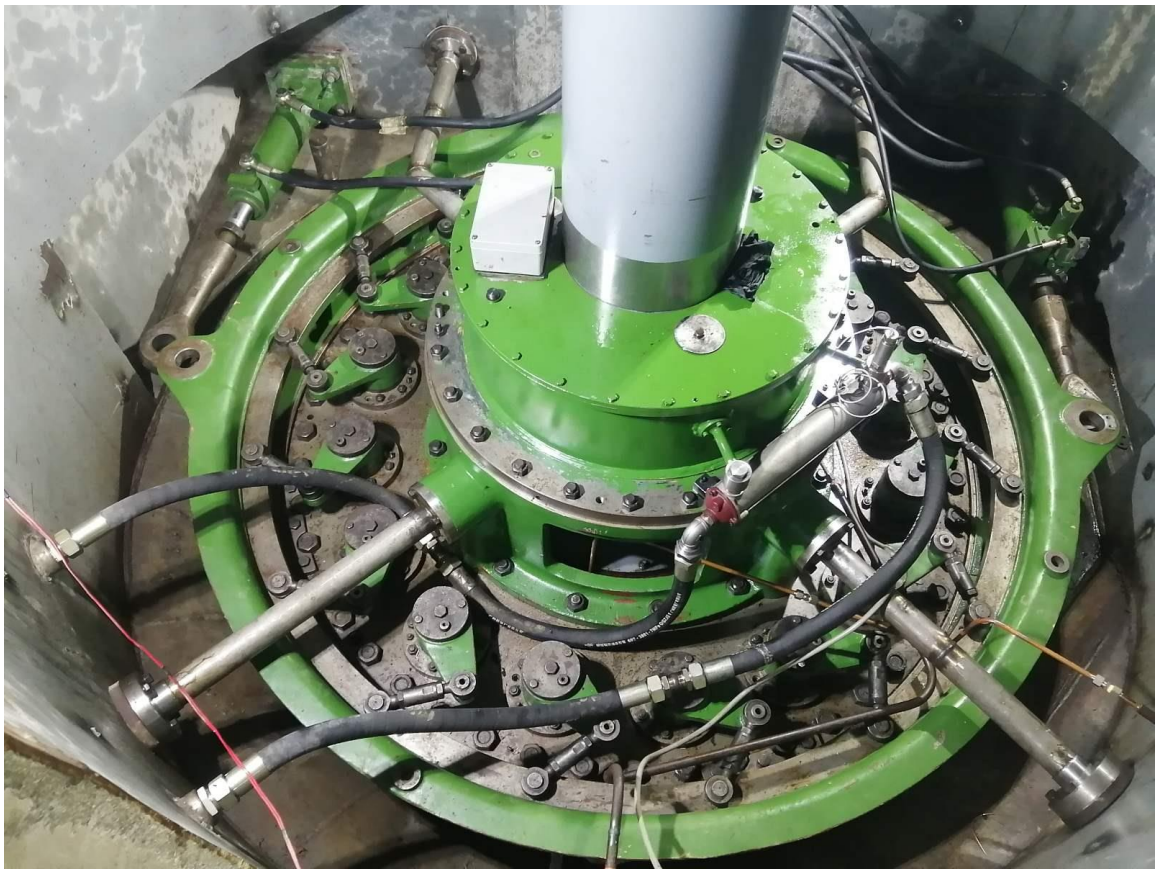

Figure 10: Turbine hydraulic pipelines and cooling pipelines

Figure 11: Pressure measurement piping

Figure 12: Termination work of high voltages cubicle panels

Figure 13: Motor installation works at the PPV house

Figure 14: Brushless excitation system

9 CONSTRUCTION POWER

The 12 km long construction power line has been erected from headworks area to Sangutar in coordination with NEA and the public. The line has been charged from a 6 MVA transformer at Manthali on 16 Mangsir, 2076. The NEA's dedicated line has been made available to all working fronts. Regular monitoring and bush-cutting is ongoing.

10 TRANSMISSION LINE WORKS (132 KV)

The conductor stinging works have been completed for 20.90 km stretch and OPGW cable has been installed for 20.86 km.


Figure 15: Rectification work of Towers

Table 11: Transmission line work progress

S.N	Description of Work	Design quantity	Completed till date	Remaining	Remarks
1	Foundation Excavation	62 Nos.	61 Nos.	1 No.	
2	Foundation concreting	62 Nos.	61 Nos.	1 No.	
3	Tower Erection	62 Nos.	61 Nos.	1 Nos.	
4	ACRS Conductor stringing	22 km	20.90km	1.10 km	
5	OPGW cable stringing	22km	20.86km	1.94 km	

11 PRELIMINARY TESTING DETAILS

Preliminary testing of the intake gates, gravel flushing gates, settling basin inlet gates, settling basin outlet gates and the sediment flushing gates has been carried out by filling of the settling basin up to different heights (25%, 50%, 75% and 100%) with different combinations of inlet/outlet gate openings:

- Intake gates open, Gravel Flushing stop-log closed, Settling basin inlet gates closed (For testing of gravel flushing stop-log and settling basin inlet gate): Minor leakage observed from the gravel flushing. Seal repair started.
- Settling basin inlet gate open, settling basin outlet gate closed, sediment flushing stop-log closed (For testing of settling basin civil structure, settling basin outlet gates and sediment flushing stop-logs): Minor leakage from sediment flushing stop-log and two settling basin outlet gates. Seal repair started.

Figure 16: 50% filling of settling basin

Figure 17: 75% filling of settling basin

12 SOCIAL AND PUBLIC

The major social activities undertaken in June 2022 are:

- The local public issue of the company's equity shares to the affected area have been completed.
- Tree plantation program has been organized by the company at Poku kholsi area.

Figure 18: Local public issue of company shares

Figure 19: Closing of local public issue of company shares

Figure 20: Tree plantation program

13 OCCUPATIONAL SAFETY AND HEALTH (OSH)

In addition to the construction activities, Occupational Safety & Health (OSH) has also been considered as one of the major prospects of the project. The OSH team at site promotes a safe and sound working environment at the working fronts by implementing safety and health standards and safe working procedure through awareness and monitoring. The OSH team ensures preparedness in mishaps and emergencies. Regular meeting with the contractors and workers are conducted for the enhancement of safety culture. The OSH team routinely screens the construction fronts to guarantee safe practice and deter the safety non-compliance.

The company has also hired an external consultant team (SMS Environment and Engineering Pvt. Ltd) for monitoring the safe working environment. The external consultant regularly performs safety audits at site to ensure the consistence of OSH and provide essential restorative methods.

13.1 OSH IMPLEMENTATION BY THE CONTRACTORS

Table 12: OSH implementation by the Civil Contractor

Particular	Description	Remarks
Safety during testing works	Safety signs have been installed at the settling basin during preliminary testing works	
Compliance of PPE at all working fronts	Workers have been provided with appropriate PPE. The use of PPE is well monitored.	
Electrical connection check	The loose electrical connection has been repaired.	

Table 13: OSH implementation by the Hydro-mechanical contractor

Particular	Description	Remarks
PPE	Appropriate PPE has been provided to the welders, fitters, helpers and site supervisors as per work nature.	
Railing installation	Railings have been installed as per design at the settling basin and intake area for safety	Completed

Table 14: OSH implementation by the TL contractor

Particular	Description	Remarks
Toolbox talk and safety briefing	Toolbox talks and safety briefings have been organised regularly before start of work.	Ongoing
Use of drone	Drone has been used for stringing of conductor at relatively unsafe areas.	Ongoing
Use of safety harness	The workers have been provided with safety harness and it is utilized during stringing works.	Ongoing

13.2 TEST RESULTS

No test has been carried out for light, sound and oxygen inside the tunnel as the tunnel construction has been completed.

14 PROGRESS PHOTOGRAPHS

Figure 21: View of Headworks from upstream side

Figure 22: Arial view of settling basin and conveyance tank from downstream side

Figure 23: Top view of powerhouse and switchyard

Figure 24: Clearance of landslide at access road

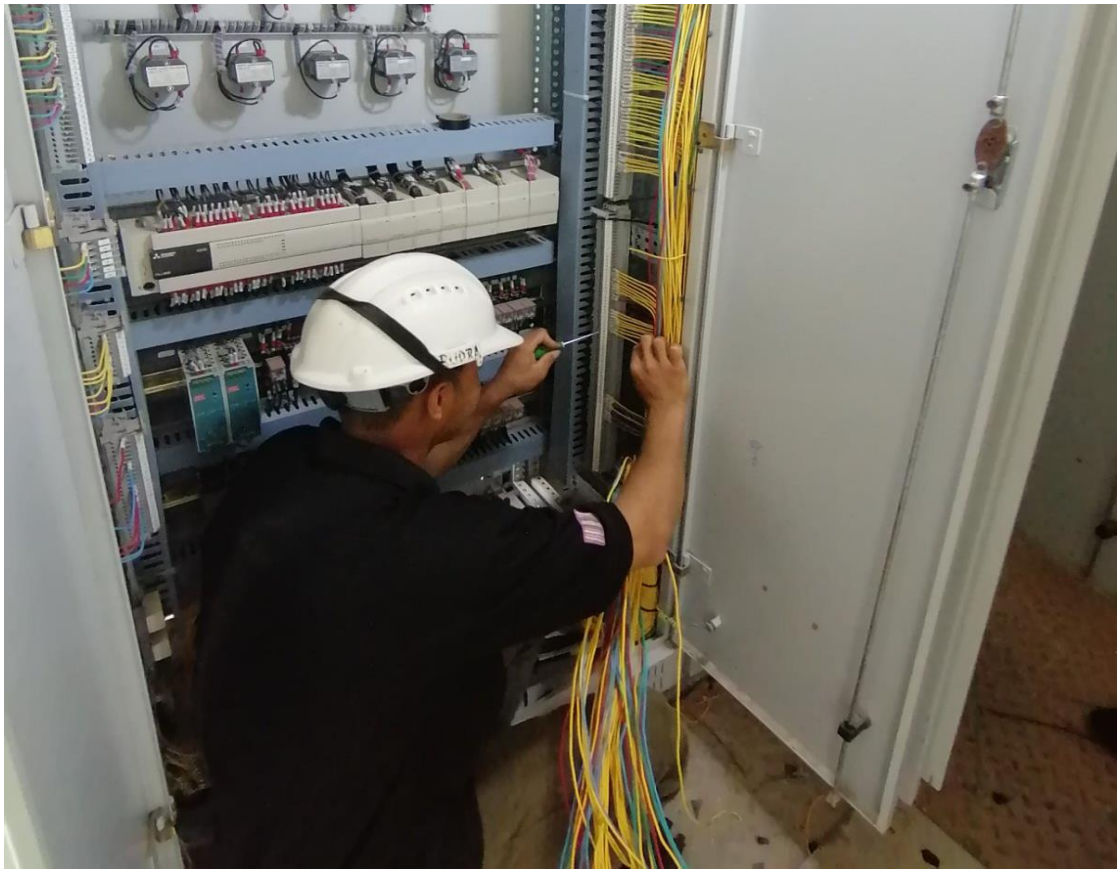

Figure 25: Control panel wiring

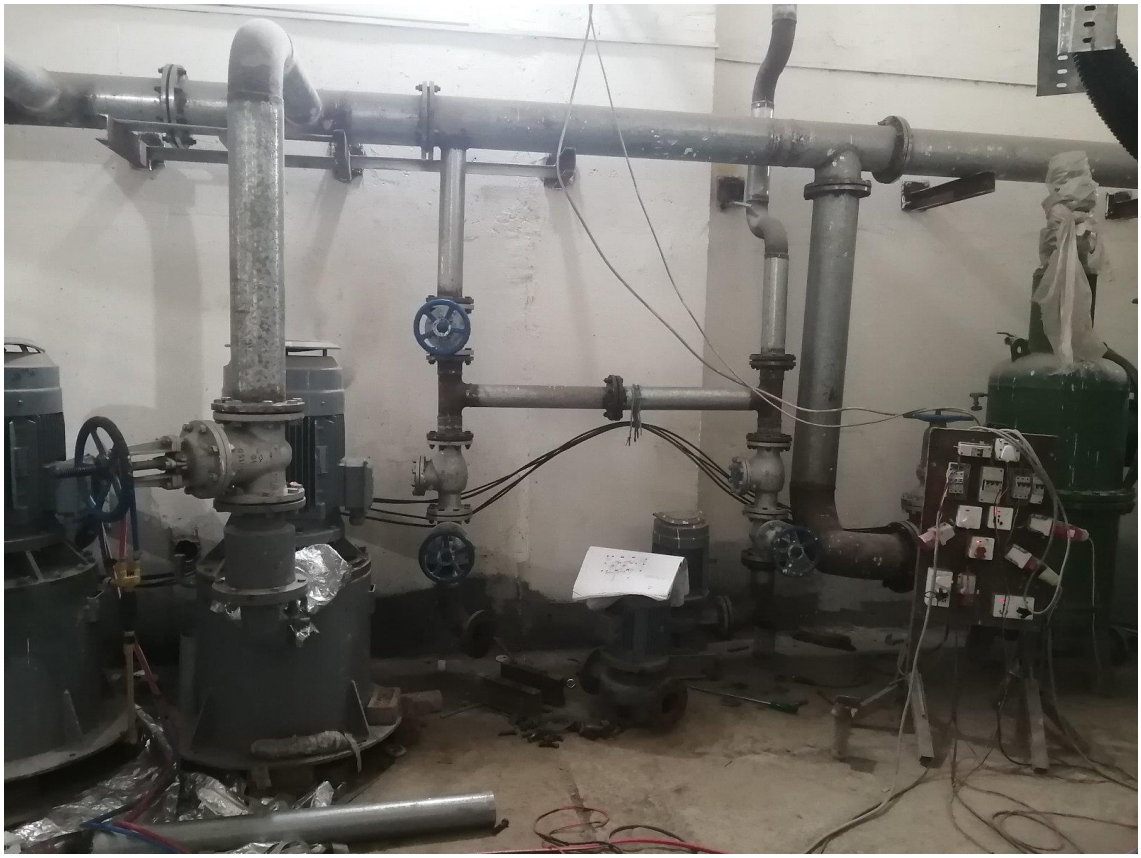

Figure 26: Cooling motor and pipeline installation

Figure 27: RTU connection in generator terminal box

Figure 28: Inspection of connection work by APP representative

Figure 29: Pipe fitting at Penstock slope

Figure 30: Headworks area (Aerial view)

15 PROGRESS CHART