

Environmental Monitoring Report

Semi-annual report
July – December 2021

April 2022

Kyrgyz Republic: Toktogul Rehabilitation Phase 2 Project

Prepared by the Open Joint Stock Company Electric Power Plants, with the assistance of the Project Implementation Consultant Tractebel Engineering - Coyne Et Bellier (France) in association with Endustriel Elektrik Maden LLC (Kyrgyz Republic).

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Abbreviations

| | |
|-----------------------|---|
| ADB | Asian Development Bank |
| ACMMP | Asbestos Containing Material Management Plan |
| CC | Construction Contractor |
| EADB | Eurasian Development Bank |
| EMP | Environmental Management Plan within IEE |
| EHS | Environment, Health and Safety |
| EPP/OJSC EPP | Open Joint Stock Company «Electric Power Plants» |
| ES | Environmental Specialist |
| GE | General Electric |
| GRM | Grievance Redress Mechanism |
| HPP | Hydropower Plant |
| IEE | Initial Environmental Examination |
| IPID | Investment Projects Implementation Department within EPP |
| PIC | Project Implementation Consultant |
| PIU | Project Implementation Unit within EPP for Toktogul HPP Rehabilitation Projects |
| SAEMR | Semi-annual Environmental Monitoring Report |
| SAEPF | State Agency of Environmental Protection and Forestry |
| SSEMP | Site-Specific Environmental Management Plan |
| ZMEC and SM Powertech | Consortium of Zhejiang Machinery and Equipment I/E Co. Ltd and SM Powertech Co. Ltd. |

1. INTRODUCTION

1.1. Preamble

1. This report represents the Semi-Annual Environmental Monitoring Report (SAEMR) for Toktogul Hydropower Plant Rehabilitation Phase 2 Project (Project).
2. This report is the 11th SA EMR for the Project and covers operations conducted from July to December 2021.

1.2. Headline Information

3. The general objective of the rehabilitation works is to improve the technical and operational performances of Toktogul HPP. Considering the strategic importance of Toktogul HPP for the stability of the national and regional grid, there are two main objectives that can be identified:
 - To recover a proper reliability and availability of the plant,
 - To increase the capacity of the power plant.
4. The Initial Environmental Examination (IEE) of the Project with Environmental Management Plan (EMP) was prepared in July 2014 and approved by ADB and then by the State Agency of Environmental Protection and Forestry (SAEPF) on 15 December 2014, the State Environmental Approval No04.01-28/428 dated 15.12.2014 (Annex 1).
5. As originally planned, the Phase 2 required completely rehabilitating/replacing the Units n°2 and n°4 with their auxiliary systems and was divided into the two following lots:
 - Package 1 of Phase 2 concerns the Rehabilitation of Gates & Hydraulic Steel Structures (International competitive bidding, single stage, one envelope).
 - Package 2 of Phase 2 concerns the rehabilitation of the two units 2 and 4 (International competitive bidding, two stages with pre-qualification, and two envelopes) and their auxiliary systems.
6. Decision was made to group in a single phase the rehabilitation of 4 units and to replace the existing units by completely new units with the exception of the main embedded parts, which leads to include the rehabilitation of gates and Hydraulic Steel Structures related to the 4 units in Package 1 as well as the replacement of the 4 units in Package 2. Works of rehabilitation of units 1 and 3 relate to Toktogul HPP Rehabilitation Phase 3 Project. Thus, Toktogul HPP Rehabilitation Phase 2 Project consists of following packages:
 - Package 1 concerns the Rehabilitation of Gates & Hydraulic Steel Structures; and
 - Package 2 concerns the rehabilitation of 4 units and to replace the existing units by completely new units and was divided into two lots:
 - ✓ Lot 1: Rehabilitation of Toktogul powerhouse by replacing 2x300 MW turbine generator unit 2 and 4 and associated auxiliary systems;
 - ✓ Lot 2: Rehabilitation of Toktogul powerhouse by replacing 2x300 MW turbine generator unit 1 and 3 and associated auxiliary systems.
7. The Contract for Package 1 has been awarded to the Consortium of Zhejiang

Machinery and Equipment I/E Co Ltd. and SM Powertech Co, Ltd (ZMEC and SM Powertech), and the Contract Agreement was signed by EPP and the Contractor on 30 May 2019. The design review of Contractor submittals by Project Implementation Consultant (PIC) is on-going. Package 1 works include the rehabilitation and replacement of these components:

- Units intake trash racks;
- Units intake maintenance gates;
- Units intake emergency gates and their hoist;
- Units downstream maintenance stoplogs;
- Units steel penstock;
- Spillway stoplog roller gates;
- Maintenance Bottom Water Outlet gates;
- Emergency Bottom Water Outlet gates and their hoist;
- Service Bottom Water Outlet radial gates and their hoist;
- Bottom Water Outlet steel penstock;
- Dam Gantry crane;
- Bottom Water Outlet Gate chamber crane;
- Unit Downstream Stoplog chamber crane.

8. The Contract for the Package 2 of Phase 2 and Phase 3 has been awarded to the Consortium of the legal entities of GE Hydro France and GE Renewable Switzerland GmbH (GE) and the Contract Agreements were signed by EPP and the Contractor on 9th February 2018. Works of Package 2 include the rehabilitation and replacement of these components:

Lot 1: Unit 2 and Unit 4 and part of the common auxiliaries:

- Turbines;
- Governing Systems;
- Low Pressure Compressed Air System;
- Cooling Water System;
- Drainage and Dewatering System;
- Powerhouse Travelling Cranes;
- Generators;
- Excitation Systems;
- Generator Fire Fighting System;
- Generator Cooling System;
- Generator Neutral Grounding System;
- Unit Control System;
- Unit Monitoring System;
- Unit Protection System;
- Plant Control and Monitoring System and SCADA System;
- Plant Fire Fighting System;
- Plant Lighting System;
- Miscellaneous Auxiliary Transformers;
- Isolated Phase Bus Ducts;
- MV Switchgears;
- 400 V AC Station Distribution System;

- DC System;
- Emergency Diesel Generator;
- Mandatory and recommended spare parts;

Lot 2: Unit 1 and Unit 3 and part of the common auxiliaries:

- Turbines;
- Governing Systems;
- High Pressure Compressed Air System;
- Cooling Water System;
- Generators;
- Excitation Systems;
- Generator Fire Fighting System;
- Generator Cooling System;
- Generator Neutral Grounding System;
- Unit Control System;
- Unit Monitoring System;
- Unit Protection System;
- Isolated Phase Bus Ducts.

9. The design works by the Contractors and design review of Contractors' submittals by PIC are currently under process, while the manufacturing of approved equipment is also on-going.
10. Works for Package 2 at site were started in October 2019. In general, construction works have been implementing with compliance with IIE and all approved plans requirements of construction contractor, i.e. health, safety and environmental measures. Workers are fully provided with PPE.
11. Works for Package 1 at site were started in January 2020. Construction works have been implementing with compliance with IIE and all approved plans requirements of construction contractor, i.e. health, safety and environmental measures. Workers are fully provided with PPE.
12. A case of force majeure due to Covid-19 was declared in February-March 2020 by both Package Contractors. During reporting period, the Contractors updated their health and safety management system so as to implement construction works in compliance with all relevant government regulations and guidelines on Covid-19 prevention and control. The closure of borders as well as ban on international travels, especially in regard to China where the pandemic started and where most equipment is being manufactured, has put a strain on the manufacturing and delivery schedule. After temporarily stopping site works due to Covid-19 pandemic issues, works for both Package 2 and Package 1 at site were recommenced in September-October 2020.
13. Complete rehabilitation of Unit 4, initially scheduled in March 2020 has been postponed to March 2021. Both Packages are active on this rehabilitation with several interfaces. Covid-19 pandemic continues to affect the progress of the site activities.

2. PROJECT DESCRIPTION AND CURRENT ACTIVITIES

2.1. Project Description

14. The Toktogul Dam is a concrete gravity dam, with a height of 215 m, and is equipped with a large hydropower plant of 1200 MW capacity. The Toktogul hydropower plant (HPP) provides 40% of the average Kyrgyz Republic electricity output. The dam's construction began in 1960 and the hydropower plant was put into services in 1975 (Figure 1).
15. The Toktogul HPP plays a major role on Kyrgyz Republic electrical grid and on the Central Asian power system, providing energy and frequency regulator services. It is equipped with 4 vertical Francis units of 300 MW each, and has never been significantly rehabilitated since its commissioning.
16. The Kyrgyz Republic has received a funding from the Asian Development Bank (ADB) and the Eurasian Development Bank (EADB) for the Phase 2 of Toktogul HPP Rehabilitation Project. The executing agency of this project is the Open Joint-Stock Company Electric Power Plants (EPP).
17. Rehabilitation studies and rehabilitation works at Toktogul HPP are divided into 3 phases. Construction activities of Phase 2 Project started in October 2019.



Figure 1. Dam of Toktogul Hydropower plant

2.2. Project Contracts and Management

18. The objective of the executing agency EPP is to improve the technical and operational performance of the Toktogul HPP, and intends to contract the rehabilitation of the Toktogul HPP on an Engineering Procurement and Construction scheme. The Project Implementation Consultant works with the Investment Project Implementation Department (IPID) of EPP.
19. The IPID is one of the EPP's departments specially assigned for implementation of projects funded by international development organizations such as ADB and World Bank (WB), etc.
20. Within IPID, EPP has established a dedicated Project Implementation Unit (PIU) in February 2013 for implementing concerned components of the "Power Sector Rehabilitation Project. Toktogul HPP Rehabilitation Phase 1" and "Toktogul HPP Rehabilitation Phase 2, Phase 3 Projects". IPID administers all

consulting and procurement contracts on behalf of EPP. It is responsible for bid evaluation, contract award, construction supervision, and report to the Government, ADB, and EADB.

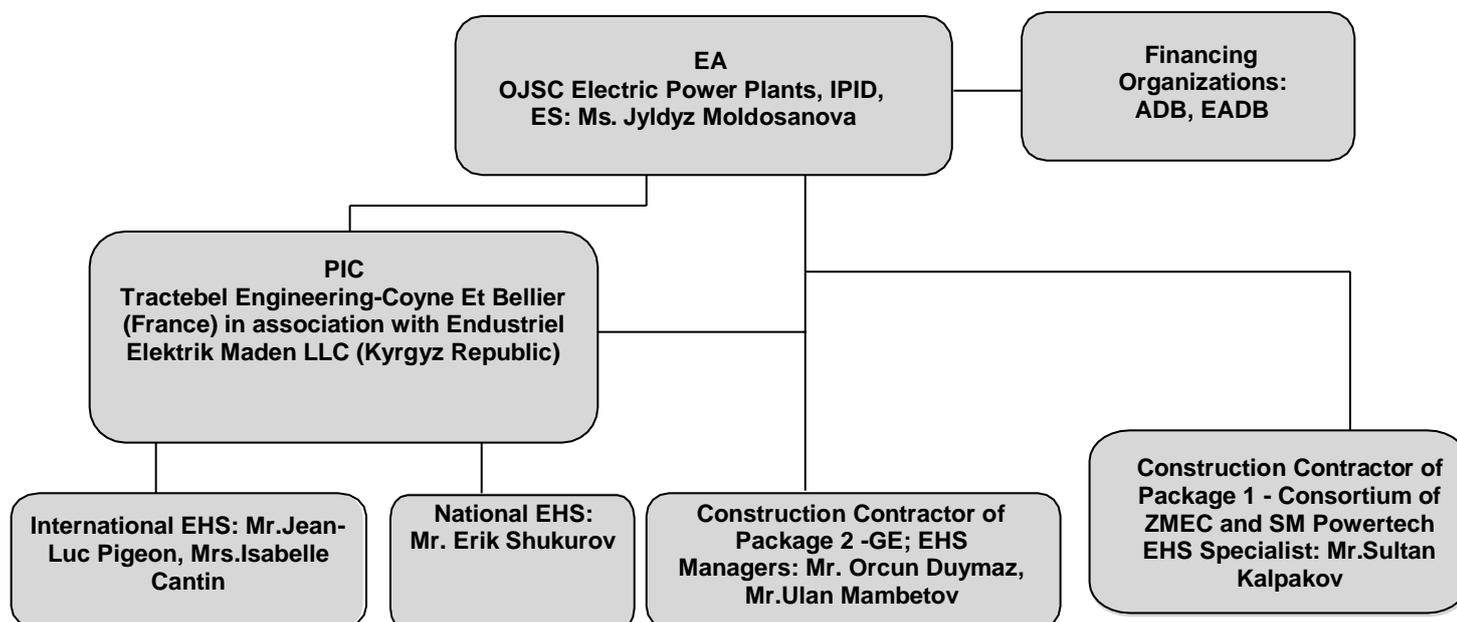
21. The IPID head Mr Isak Khudaiberdiev reports directly to the General Director of EPP. The IPID is the main contact point for working communication between EPP and ADB, and EADB. The IPID coordinates the consultants and contractors. The Head of PIU is Mr. Ulan Kariev (appointed in July 2021) (email: piu2@es.kg) (Toktogul HPP Rehabilitation Project Phase 2 and Phase 3).
22. The IPID, assisted by the PIC, submits necessary project plans, tender evaluation reports, progress reports, applications for withdrawal of funds, and any other required reports to ADB, EADB and the Government.
23. The Environmental Specialist of PIU EPP Toktogul HPP Rehabilitation Project Phases 1,2, and 3 is Ms. Jyldyz Moldosanova (email: piu2@es.kg).
24. PIC of EPP for Toktogul HPP Rehabilitation Phase 2 Project is Tractebel Engineering- Coyne Et Bellier (France) in association with Endustriel Elektrik Maden LLC (Kyrgyz Republic). In this capacity, the national and international team of consultants are assisting EPP as project supervision consultant on the rehabilitation of Toktogul HPP Phase 2 Project. The international key personnel: Project Team Leader is Mr. Marc Dayraut; Technical Team Leader is Mr. Pascal Seret; HSE Experts are Mr. Jean Luc Pigeon and Mrs Isabelle Cantin. The national key staff includes: Deputy Team Leader Mr. Marat Abdykasymov, HSE specialist has been Mr. Erik Shukurov (worked during November 2021-Mid December 2021). Mr Erik Shukurov left the site in December for hospitalization because of health issues not relating to his professional duties. It is important to achieve to stabilize this position in the near future with a bilingual HSE expert trained to international HSE practices. The selection process has been started during December 2021.
25. As indicated above, the International Environmental Specialists of PIC Tractebel are Mr. Jean-Luc Pigeon (email: jean-luc.pigeon@tractebel.engie.com) and Mrs. Isabelle Cantin (email: isabelle.cantin@tractebel.engie.com); national environmental specialist was Mr. Erik Shukurov (email: shukurov.ehss2020@gmail.com).
26. The Construction Contactor of the Contract for the Package 1 of Phase 2 Project is the Consortium of ZMEC and SM Powertech. The Contractor's Environmental Specialist is Mr. Sultan Kalpakov (email: vlad@smpowertech.co.kr).
27. Construction Contactor of the Contract for the Package 2 of Phase 2 Project is the Consortium of the legal entities of GE Hydro France and GE Renewable Switzerland GmbH (GE). GE's HSE Managers at site are Mr. Orcun Duymaz (email: orcun.duymaz@ge.com) and Mr. Ulan Mambetov.

A list of Project Contracts under implementation of Toktogul HPP Rehabilitation Phase 2 Project is given at Table 1.

Table 1: Project Contracts under implementation of Toktogul HPP Rehabilitation Phase 2 Project

| Contracts | Title | Construction Contractors |
|----------------------------------|--|---|
| D-15-30/176 dated 30 May 2019 | Package No. 1: Toktogul Powerhouse Rehabilitation – Design, Supply, Installation, Pre-commissioning and Commissioning | Consortium of Zhejiang Machinery and Equipment I/E Co. Ltd and SM Powertech Co. Ltd |
| D-15-22/68 dated 9 February 2018 | Package No. 2, Lot I: Toktogul Powerhouse Rehabilitation – Design, Supply, Installation, Pre-commissioning and Commissioning (units 2 and 4) | Consortium of GE Hydro France and GE Renewable Switzerland |
| D-15-22/69 dated 9 February 2018 | Package No. 2, Lot II: Toktogul Powerhouse Rehabilitation – Design, Supply, Installation, Pre-commissioning and Commissioning (units 1 and 3) | |

28. Environmental management of the Rehabilitation of Toktogul HPP Phase 2 Project is shown in Scheme 1 below.



Scheme 1: Environmental management of the Rehabilitation of Toktogul HPP Phase 2 Project as of December 2021

29. EPP PIU Environmental specialist has developed the list of main documents to be included into Track Documentation System. This list is attached in **Annex 2**.

2.3. Project Activities during reporting period

30. All works take place within the fenced area of Toktogul HPP. All rehabilitation measures are implemented within the facilities and building constructions of the EPP. Area of Toktogul HPP is secured and no admittance except business.
31. The works have been delayed as the Employer has officially confirmed on the 19th of September 2020 the postponement by one year of the project's schedule.
- repair of damaged stator segments introduced a new delay of 3-4 months
 - installation of the turbine and rotor is almost complete, the rest of the work can only be done after the stator is installed in the crater, expected completion time 2 months.
 - Commissioning work is expected to start in April-May 2022.
 - Unit 4 launch at the end of June - July 2022
32. Activities implemented by **CC SM-ZMEC of package 1** of the Project during the reporting period are summed up below:
- Q3 2021:
- 2 additional Intake Maintenance Gates are under manufacturing in China
 - Diving operations to clean Trashracks of Unit 2's (A & B)
 - Maintenance, Sand blasting and painting of Trashracks of Unit 2 (A & B)
 - Maintenance, Sand blasting and painting of Trashracks of Unit 4 (A & B)
 - Maintenance, Sand blasting and painting of Trashrack of Unit 3 (A)
 - Maintenance of Draft Tube Gates of Unit 2 (A & B)
 - Sand blasting and painting (Sections A & B) of Penstock of Unit 4
 - Sand blasting (100%) and partial painting of aeration pipe "B"
- Q4 2021:
- Anti-corrosion treatment of coupling rods of the maintenance gates
 - Anti-corrosion treatment of the trash rack screen
 - Anti-corrosion treatment of the turbine penstock (lower horizontal part)
 - Rehabilitation of the turbine water filling system
 - Disassembly of hydraulically operated valves, manually operated valves and compensator in the well U-4 of two lines
 - Installation of HPU of the water filling system at the el. 840 m.
 - Cable ducts routing of the water filling system at the el. 840 m.
 - Assembly of high-pressure pipelines from the HPU to the wells of U 1-4 at the el. 840 m.
 - Removal of construction debris from the threshold of the U-3, U-4 by divers
 - Installation of trash rack screen on the threshold of U-3 "A" and U-4 "B"
 - Elimination of remarks on the gantry crane
 - Sandblasting cleaning of bottom outlet maintenance gate
 - Disassembly of scaffolding from U-4 turbine penstock
 - Anti-corrosion treatment of external part of U-4 turbine penstock near

manhole of spiral case

Pictures of Package 1 HSE related works during reporting period are shown in Annex 3.

33. Activities completed by **CC GE** during the reporting period are summed up below (main site activities during the period):

Q3 2021:

- Generator
 - Dismantling of the old rotor
 - Rotor assembly
 - Generator pit refurbishment
 - Rotor rim stacking and Rotor wedges installation
 - Rotor bottom press plate installation
 - Rotor rim Stacking
- Turbine
 - Machining of bottom ring sitting surface
 - HPU installation
 - Installation of draft tube liner lower support
 - Machining of stay ring
 - HPU piping assembly
 - Draft tube cone assembly & Concrete works inside draft tube
 - Bottom ring assembly
 - Sandblasting and Painting of the spiral case and embedded parts
 - Sandblasting & Painting of draft tube
 - Coupling Stay ring flange to headcover
- E BOP
 - Installation of cable trays Cable tray installation on elevation 710/ 713/ 718 / 726/ 751 / vertical gallery 726-751 / battery room
 - Installation of the T52 IPB
 - Installation of the UPS cubicles
 - Installation of control cubicles
 - Installation of main generation cubicle
 - Installation of braking cubicle
 - Installation of excitation cubicles
 - Installation of turbine control cabinets
- M BOP
 - Installation of LPS air piping on elevation 726,718,740
 - Shaft seal piping installation
 - Pressure test of embedded pipes
 - Boss and tapping installation on penstock
 - Welding of cooling water piping on elevation 707, 710, 713 and 721
 - Shaft seal piping
 - Removal of plugs from downstream

Q4 2021:

- Generator
 - Stacking of the rotor rim
 - The geometry of the rotor rim has been measured
 - Welding and cutting of the rotor rim wedge
 - Installation of rotor rim wedge plates

- Installation of generator rotor brake disc segments
- Installation of generator shaft in vertical position
- Transportation of the lower bracket from the GE warehouse
- Unloaded the lower bracket R.B. of machine hall
- Installation of the U-4 generator rotor
- Installation of the excitation busbar of the rotor wires on the shaft extension arm
- Assembly of the rotor poles
- Active steel (iron) stator plates are being assembled
- Assembly of the arms (beams) of the upper bracket is underway
- Installation of support brackets for integrated stator cooling pipeline in generator pit at the elevation 718.50m
- Turbine
 - Preparation to installation of the turbine head cover reinforcing segments
 - Coupling of the turbine shaft with the runner
 - Welding work on the turbine headcover support flange
 - Grinding and welding work on the turbine headcover seals on the top lining plate of the stator
 - Welding work on the holes 40/80 of the lower labyrinth mounting seat
 - Scaffolding installation in spiral case
 - Preparation of the kinematics and component parts of guide vanes
 - Preparations for the installation of the turbine bearing oil coolers
 - Installation of the guide bearing arms
 - Pressure testing of the impulse pipes of the spiral case
 - Inspection of the clearances on the guide vanes
 - Assembly and welding work on HPU control system pipes at the el. 718.50m
 - Assembly and welding of turbine bearing oil cooler pipes
- E-BOP
 - Installation of cable trays
 - Cable routing of cooling system, U-4 protection system, excitation system, compressed air system
 - Installation of cubicles (U-4 control system, monitoring system, excitation system, compressed air system)
 - IPB installation neutral grounding cubicle
 - Installation of cable tray for firefighting system
 - Cable routing of cooling system, U-4 protection system, excitation system, compressed air system
 - Installation of cubicles (U-4 control system, monitoring system, excitation system, compressed air system)
 - IPB installation neutral grounding cubicle
 - Cables routing in transformer room to protect T-4 transformer
 - Installation of new firefighting cable trays around the generator drum
 - Inspection of internal excitation system circuits at the el. 718.50 m;
 - Installation of grounding of HPP building
 - New firefighting cable trays in dispenser room at the el. 760.10 m.
 - Connection of dewatering pump cubicle 04MEU22GA710 at the el. 718.50 m
 - Connection of the TURBINE MARSHALLING BOX 04 MEU 22 GA 410 cubicle at the 718.50 m
 - Connection of the TT-2 marshalling box (current transformer -2) at the el. 718.50 m
 - Installation of new cable trays in room B-15, G-4 at the el. 718.50 m.

- Cables were pulled to the turbine shaft
- New cable trays for firefighting system in AFF system (Automatic Fire Fighting System) room at the el. 760.10m
- Installation of new firefighting cable trays in the cable gallery at the el. 724.50 m.
- M-BOP
 - Argon welding of pipes, flanges, bypass Ø 50mm turbine headcover shaft sealing at the el. 713.00 m
 - Installation and welding work of the water-cooling
 - System pipes and flanges, bypass Ø 300 mm on the existing embedded pipeline No. 61, Ø 426 mm at the el. 710.00
 - Installation of flange Ø 219 mm and welding works on existing embedded pipeline #84 at the el. 713.00 m in the TWS filter room
 - Scaffolding is being installed for dismantling the firefighting system pipes at the el. 760.00 m;
 - Assembly and welding of pipes and flanges of the integrated stator cooler pipe in the generator pit
 - Installation and welding of discharge pipes and flanges, bypass Ø 300 mm of the water-cooling system at elevation 710.00 m.
 - Installation and welding work of pipes and flanges, bypass Ø 300 mm of the water-cooling system at elevation 707.00 m.
 - Installation and welding work of Ø 168 mm pipes, outlets, flanges of the firefighting system in the transformer room T-4 at the el. 726.50 m.
 - Installation and welding work of Ø 80 mm pipes, outlets, flanges of the firefighting system in the MO - T4 room at the el. 718.50 m.
 - Installation of support brackets under the firefighting system piping outside the generator pit U-4 at the el. 718.50 m.
 - Preparation works for installation and welding pipes Ø 168 mm, bypass, flanges of the firefighting system exterior of the generator pit U-4 at the elevation 718.50 m.
 - Installation of support brackets for integrated stator cooling pipeline (collector) in generator pit at the elevation 718.50 m.
 - Installation and welding work of pipes Ø 168.3 mm, bypass, flanges of oil cooler firefighting system of transformer No.4 at the el. 760.10 m.
 - Assembly and welding work of pipes Ø 88,9 mm, flanges of the system of firefighting of oil cooler of transformer No.4 from the elevation 760.10 m to the el. 718.50 m in the vertical cable shaft of Unit 2
 - Assembly and welding work of pipes Ø 88,9 mm, bypass, flanges of oil cooler firefighting system of transformer №4 at the el. 718.50 m.
 - Installation and welding work of pipes Ø 300 mm bypass, flanges No.56a discharge pipe at the el. 718.50 m.

At the end of December 2021, the situation is as follows:

- Transformer bridge crane N°4 installation completed, and test performed.
- Unit 4 dismantling and refurbishment completed.
- Asbestos cleaning works concerning project works of CC GE for 2021 was finalized (started in March 2021 – completed in October 2021). 2 500 kgs of asbestos containing waste was created.
- Unit 4 installation works ongoing, but major impact on the work schedule since half of the stator elements have been damaged due to the long storage at the bonded area in Khorgos.

- The new camp for the accommodation of the PIC Tractebel specialists is completed. The sewerage system installation is ongoing.

34. Pictures of Package 2 HSE related works during reporting period are shown in Annex 3.

2.4 Description of any changes to Project Design

35. No changes to Project Design that impact from HSE point of view.

36. Delay is foreseen however regarding the project progress due to some pending issues that were not solved as well as Covid-19 outbreak. A case of Force Majeure has been declared by both Contractors of Package 1 and Package 2.

37. GE has requested to carry out additional measurements regarding existing stay ring condition in order to update the risk assessment during Unit refurbishment works. The Employer could be led to take measures according to the results of this risk assessment done by GE. The issue is still pending.

38. Last general Schedule provided by GE reports a date of completion on June 2022, so with 6 months of delay despite a postponement of 1 year of the site activities, in February 2020. Due to some issues with the shipment of the parts from China to Kyrgyzstan, three of six segments of stator of generator were delivered corroded. The necessary repair works will postpone the end of Unit 4 commissioning to Q3 of 2022.

2.5 Description of Any Changes to Agreed Construction methods

39. There were no changes to agreed construction methods.

2.6 Manpower on site

40. Accommodation is strictly prohibited on site for Contractors site personnel. Contractors' site personnel live at Kara-Kul which is 4 km away from Toktogul HPP. Construction Contractors' personnel use a staff canteen, toilets of Toktogul HPP building.
41. According to contract requirements a new temporary small camp has been built by GE for the accommodation of GE experts and the PIC Tractebel specialists but it was not in exploitation yet.
42. According to the CC SM-ZMEC daily reports, the amount of personnel present on site per Contractor/Subcontractor during the reporting period is shown in the table below.

Table 2: Minimum /maximum number of personnel for the Package 1

| | Indirect manpower | Direct manpower |
|----------------|-------------------|-----------------|
| July 2021 | 43/42 | 29/28 |
| August 2021 | 42 | 28 |
| September 2021 | 42/38 | 28/24 |
| October 2021 | 38/29 | 24/13 |
| November 2021 | 29/26 | 17/14 |
| December 2021 | 26/21 | 14/12 |

43. According to the **CC GE weekly reports**, the amount of personnel present on site per Contractor/Subcontractors during the reporting period is shown in the Table 3. These numbers are expected to increase during the next reporting period.

Table 3: Minimum /maximum number of personnel for the Package 2

| 2021 | GE | Tajik SGEM | ISIK | INTEGRA | MKS plus | Security | Hydro- Stal Montaj | DIE | VERSHINA (ambulance / doctor) | WWTech |
|-----------|-------|------------|------|---------|----------|----------|--------------------------|------|-------------------------------------|--------|
| July | 26/22 | 161/103 | 1/3 | 6/0 | 0 | 0 | 0 | 6/16 | 2 | 3/0 |
| August | 27/25 | 197/130 | 0 | 0 | 0 | 0 | 0 | 1/0 | 2 | 0 |
| September | 25/24 | 203/201 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 |
| October | 26/25 | 206/190 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 |
| November | 25 | 188/176 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 |
| December | 25/24 | 176/147 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 |

3. ENVIRONMENTAL SAFEGUARD ACTIVITIES

3.1. General description of environmental safeguard activities

44. The Environmental Management of the works related to each Package is documented in different plans which were discussed and validated by PIU for each Package (Annex 2).
45. Workers from both Contractors have been fully provided with PPE and implemented works according to health and safety requirements and regulations.
46. The CC **SM-ZMEC** Construction Manager and the HSE Specialist are conducting daily visual environmental control.
 - Introduction briefing on site is provided daily for all workers.
 - HSE specialists provide trainings and daily briefings.
 - Method Statements and Risk Analysis have been applied according to each activity.
 - Regular EHS controls have been conducted on contractor activities by PIC HSE.
47. Environmental safeguard activities completed by **GE** include the following and are detailed in the following sections:
 - GE Site EHS Manager performed site inspections. He conducted regular inductions to their personnel to sensitize them to housekeeping.
 - Toolbox talks were conducted.
 - All new workers were trained to overall Project EHS rules and specifically to Covid-19 measures.
 - Method Statements and Risk Analysis have been conducted prior to each planned activity.
 - Regular EHS controls have been conducted on contractor activities by PIC HSE.
48. The PIC local HSE specialist, Mr. Erik Shukurov carried out routine EHS inspections and site visits during the reporting period.

3.2. Site Audits

49. It has been difficult to organize regular site visit by International Environmental Specialist of PIC Mr. Jean-Luc Pigeon due to Covid-19 travelling restrictions. He could not come and do site audits during reporting period.
50. There are still some restrictions and quarantines when experts from the different companies need to come back to the country where their offices and family are located. To mitigate this unforeseen and unpredictable situation, the PIC has requested EPP to extend the list of experts giving more flexibility and adaptability to restriction put in place by governments to control the spread of the Covid-19.
51. During reporting period regular site visits were conducted by Environmental

Specialist of PIU/EPP in 2021 (

52. Table 4). Economic activities of the Kyrgyz Republic were implemented in compliance with all relevant government regulations and guidelines on Covid-19 prevention and control.

Table 4. Site visits and audits

| Organization | Purpose | Performed by | Date |
|----------------------|--|----------------------------------|--------------------------|
| PIU EPP | Quarterly site inspection of actual construction sites at Toktogul HPP | EPP: ES Ms Jyldyz Moldosanova | 22-25 September, 2021 |
| PIU EPP | Quarterly site inspection of actual construction sites at Toktogul HPP. Participation in the annual ADB and EADB mission of Projects | EPP: ES Ms Jyldyz Moldosanova | 02-05 November, 2021 |
| CC ZMEC Package 1 | Checking the compliance with safeguard measures | CC: ES Mr. Sultan Kalpakov | On a daily basis |
| CC GE Package 2 | Checking the compliance with safeguard measures | CC: ES Mr. Orcun Duymaz | On a daily basis |

53. During the site audits for environmental monitoring and checking compliance with the HSE requirements, the Environmental Specialist of PIU/EPP checked the work implementation and work areas of CC ZMEC and CC GE. Project works were implemented by the construction contractors according to the occupational health and safety requirements. The required information on Covid-19 protective measures, H&S rules, emergency contact numbers are placed at work areas of CC GE and CC ZMEC (Figure 2, Figure 4, Figure 5, Figure 6). Fire extinguishers are available at work area of CC ZMEC (Figure 3). Work areas are fenced (Figure 7).



Figure 2. First-aid kit, antiseptic and informative board at work area of CC GE (Status in November 2021)



Figure 3. Fire extinguishers are available at work area of CC ZMEC (Status in November 2021)



Figure 4. Health and Safety Informative board at site of CC ZMEC (Status in September 2021)



Figure 5. Antiseptic, masks, first aid kit are available at field office of CC ZMEC (Status in September 2021)

| № | Имя | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | | | |
|----|------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|--------|------|------|------|------|------|------|------|------|------|
| 1 | Алиев А.А. | 36.5 | 36.8 | 37.0 | 37.2 | 37.5 | 37.8 | 38.0 | 38.2 | 38.5 | 38.8 | 39.0 | 39.2 | 39.5 | 39.8 | 40.0 | 40.2 | 40.5 | 40.8 | 41.0 | 41.2 | 41.5 | 41.8 | 42.0 | 42.2 | 42.5 | 42.8 | 43.0 | 43.2 | 43.5 | 43.8 | 44.0 | | |
| 2 | Бектурсул А.А. | 36.2 | 36.5 | 36.8 | 37.0 | 37.2 | 37.5 | 37.8 | 38.0 | 38.2 | 38.5 | 38.8 | 39.0 | 39.2 | 39.5 | 39.8 | 40.0 | 40.2 | 40.5 | 40.8 | 41.0 | 41.2 | 41.5 | 41.8 | 42.0 | 42.2 | 42.5 | 42.8 | 43.0 | 43.2 | 43.5 | 43.8 | 44.0 | |
| 3 | Салиев А.А. | 36.0 | 36.3 | 36.6 | 36.9 | 37.1 | 37.4 | 37.7 | 38.0 | 38.3 | 38.6 | 38.9 | 39.2 | 39.5 | 39.8 | 40.1 | 40.4 | 40.7 | 41.0 | 41.3 | 41.6 | 41.9 | 42.2 | 42.5 | 42.8 | 43.1 | 43.4 | 43.7 | 44.0 | 44.3 | 44.6 | 44.9 | 45.2 | |
| 4 | Турсунбаев А.А. | 35.8 | 36.1 | 36.4 | 36.7 | 37.0 | 37.3 | 37.6 | 37.9 | 38.2 | 38.5 | 38.8 | 39.1 | 39.4 | 39.7 | 40.0 | 40.3 | 40.6 | 40.9 | 41.2 | 41.5 | 41.8 | 42.1 | 42.4 | 42.7 | 43.0 | 43.3 | 43.6 | 43.9 | 44.2 | 44.5 | 44.8 | 45.1 | 45.4 |
| 5 | Умарбаев А.А. | 35.5 | 35.8 | 36.1 | 36.4 | 36.7 | 37.0 | 37.3 | 37.6 | 37.9 | 38.2 | 38.5 | 38.8 | 39.1 | 39.4 | 39.7 | 40.0 | 40.3 | 40.6 | 40.9 | 41.2 | 41.5 | 41.8 | 42.1 | 42.4 | 42.7 | 43.0 | 43.3 | 43.6 | 43.9 | 44.2 | 44.5 | 44.8 | 45.1 |
| 6 | Халиев А.А. | 35.2 | 35.5 | 35.8 | 36.1 | 36.4 | 36.7 | 37.0 | 37.3 | 37.6 | 37.9 | 38.2 | 38.5 | 38.8 | 39.1 | 39.4 | 39.7 | 40.0 | 40.3 | 40.6 | 40.9 | 41.2 | 41.5 | 41.8 | 42.1 | 42.4 | 42.7 | 43.0 | 43.3 | 43.6 | 43.9 | 44.2 | 44.5 | 44.8 |
| 7 | Ибрагимов А.А. | 35.0 | 35.3 | 35.6 | 35.9 | 36.2 | 36.5 | 36.8 | 37.1 | 37.4 | 37.7 | 38.0 | 38.3 | 38.6 | 38.9 | 39.2 | 39.5 | 39.8 | 40.1 | 40.4 | 40.7 | 41.0 | 41.3 | 41.6 | 41.9 | 42.2 | 42.5 | 42.8 | 43.1 | 43.4 | 43.7 | 44.0 | 44.3 | 44.6 |
| 8 | Рахмонов А.А. | 34.8 | 35.1 | 35.4 | 35.7 | 36.0 | 36.3 | 36.6 | 36.9 | 37.2 | 37.5 | 37.8 | 38.1 | 38.4 | 38.7 | 39.0 | 39.3 | 39.6 | 39.9 | 40.2 | 40.5 | 40.8 | 41.1 | 41.4 | 41.7 | 42.0 | 42.3 | 42.6 | 42.9 | 43.2 | 43.5 | 43.8 | 44.1 | 44.4 |
| 9 | Султоналиев А.А. | 34.5 | 34.8 | 35.1 | 35.4 | 35.7 | 36.0 | 36.3 | 36.6 | 36.9 | 37.2 | 37.5 | 37.8 | 38.1 | 38.4 | 38.7 | 39.0 | 39.3 | 39.6 | 39.9 | 40.2 | 40.5 | 40.8 | 41.1 | 41.4 | 41.7 | 42.0 | 42.3 | 42.6 | 42.9 | 43.2 | 43.5 | 43.8 | 44.1 |
| 10 | Турсунбаев А.А. | 34.2 | 34.5 | 34.8 | 35.1 | 35.4 | 35.7 | 36.0 | 36.3 | 36.6 | 36.9 | 37.2 | 37.5 | 37.8 | 38.1 | 38.4 | 38.7 | 39.0 | 39.3 | 39.6 | 39.9 | 40.2 | 40.5 | 40.8 | 41.1 | 41.4 | 41.7 | 42.0 | 42.3 | 42.6 | 42.9 | 43.2 | 43.5 | 43.8 |
| 11 | Умарбаев А.А. | 34.0 | 34.3 | 34.6 | 34.9 | 35.2 | 35.5 | 35.8 | 36.1 | 36.4 | 36.7 | 37.0 | 37.3 | 37.6 | 37.9 | 38.2 | 38.5 | 38.8 | 39.1 | 39.4 | 39.7 | 40.0 | 40.3 | 40.6 | 40.9 | 41.2 | 41.5 | 41.8 | 42.1 | 42.4 | 42.7 | 43.0 | 43.3 | 43.6 |
| 12 | Халиев А.А. | 33.8 | 34.1 | 34.4 | 34.7 | 35.0 | 35.3 | 35.6 | 35.9 | 36.2 | 36.5 | 36.8 | 37.1 | 37.4 | 37.7 | 38.0 | 38.3 | 38.6 | 38.9 | 39.2 | 39.5 | 39.8 | 40.1 | 40.4 | 40.7 | 41.0 | 41.3 | 41.6 | 41.9 | 42.2 | 42.5 | 42.8 | 43.1 | 43.4 |
| 13 | Ибрагимов А.А. | 33.5 | 33.8 | 34.1 | 34.4 | 34.7 | 35.0 | 35.3 | 35.6 | 35.9 | 36.2 | 36.5 | 36.8 | 37.1 | 37.4 | 37.7 | 38.0 | 38.3 | 38.6 | 38.9 | 39.2 | 39.5 | 39.8 | 40.1 | 40.4 | 40.7 | 41.0 | 41.3 | 41.6 | 41.9 | 42.2 | 42.5 | 42.8 | 43.1 |
| 14 | Рахмонов А.А. | 33.2 | 33.5 | 33.8 | 34.1 | 34.4 | 34.7 | 35.0 | 35.3 | 35.6 | 35.9 | 36.2 | 36.5 | 36.8 | 37.1 | 37.4 | 37.7 | 38.0 | 38.3 | 38.6 | 38.9 | 39.2 | 39.5 | 39.8 | 40.1 | 40.4 | 40.7 | 41.0 | 41.3 | 41.6 | 41.9 | 42.2 | 42.5 | 42.8 |
| 15 | Султоналиев А.А. | 33.0 | 33.3 | 33.6 | 33.9 | 34.2 | 34.5 | 34.8 | 35.1 | 35.4 | 35.7 | 36.0 | 36.3 | 36.6 | 36.9 | 37.2 | 37.5 | 37.8 | 38.1 | 38.4 | 38.7 | 39.0 | 39.3 | 39.6 | 39.9 | 40.2 | 40.5 | 40.8 | 41.1 | 41.4 | 41.7 | 42.0 | 42.3 | 42.6 |
| 16 | Турсунбаев А.А. | 32.8 | 33.1 | 33.4 | 33.7 | 34.0 | 34.3 | 34.6 | 34.9 | 35.2 | 35.5 | 35.8 | 36.1 | 36.4 | 36.7 | 37.0 | 37.3 | 37.6 | 37.9 | 38.2 | 38.5 | 38.8 | 39.1 | 39.4 | 39.7 | 40.0 | 40.3 | 40.6 | 40.9 | 41.2 | 41.5 | 41.8 | 42.1 | 42.4 |
| 17 | Умарбаев А.А. | 32.5 | 32.8 | 33.1 | 33.4 | 33.7 | 34.0 | 34.3 | 34.6 | 34.9 | 35.2 | 35.5 | 35.8 | 36.1 | 36.4 | 36.7 | 37.0 | 37.3 | 37.6 | 37.9 | 38.2 | 38.5 | 38.8 | 39.1 | 39.4 | 39.7 | 40.0 | 40.3 | 40.6 | 40.9 | 41.2 | 41.5 | 41.8 | 42.1 |
| 18 | Халиев А.А. | 32.2 | 32.5 | 32.8 | 33.1 | 33.4 | 33.7 | 34.0 | 34.3 | 34.6 | 34.9 | 35.2 | 35.5 | 35.8 | 36.1 | 36.4 | 36.7 | 37.0 | 37.3 | 37.6 | 37.9 | 38.2 | 38.5 | 38.8 | 39.1 | 39.4 | 39.7 | 40.0 | 40.3 | 40.6 | 40.9 | 41.2 | 41.5 | 41.8 |
| 19 | Ибрагимов А.А. | 32.0 | 32.3 | 32.6 | 32.9 | 33.2 | 33.5 | 33.8 | 34.1 | 34.4 | 34.7 | 35.0 | 35.3 | 35.6 | 35.9 | 36.2 | 36.5 | 36.8 | 37.1 | 37.4 | 37.7 | 38.0 | 38.3 | 38.6 | 38.9 | 39.2 | 39.5 | 39.8 | 40.1 | 40.4 | 40.7 | 41.0 | 41.3 | 41.6 |
| 20 | Рахмонов А.А. | 31.8 | 32.1 | 32.4 | 32.7 | 33.0 | 33.3 | 33.6 | 33.9 | 34.2 | 34.5 | 34.8 | 35.1 | 35.4 | 35.7 | 36.0 | 36.3 | 36.6 | 36.9 | 37.2 | 37.5 | 37.8 | 38.1 | 38.4 | 38.7 | 39.0 | 39.3 | 39.6 | 39.9 | 40.2 | 40.5 | 40.8 | 41.1 | 41.4 |
| 21 | Султоналиев А.А. | 31.5 | 31.8 | 32.1 | 32.4 | 32.7 | 33.0 | 33.3 | 33.6 | 33.9 | 34.2 | 34.5 | 34.8 | 35.1 | 35.4 | 35.7 | 36.0 | 36.3 | 36.6 | 36.9 | 37.2 | 37.5 | 37.8 | 38.1 | 38.4 | 38.7 | 39.0 | 39.3 | 39.6 | 39.9 | 40.2 | 40.5 | 40.8 | 41.1 |
| 22 | Турсунбаев А.А. | 31.2 | 31.5 | 31.8 | 32.1 | 32.4 | 32.7 | 33.0 | 33.3 | 33.6 | 33.9 | 34.2 | 34.5 | 34.8 | 35.1 | 35.4 | 35.7 | 36.0 | 36.3 | 36.6 | 36.9 | 37.2 | 37.5 | 37.8 | 38.1 | 38.4 | 38.7 | 39.0 | 39.3 | 39.6 | 39.9 | 40.2 | 40.5 | 40.8 |
| 23 | Умарбаев А.А. | 31.0 | 31.3 | 31.6 | 31.9 | 32.2 | 32.5 | 32.8 | 33.1 | 33.4 | 33.7 | 34.0 | 34.3 | 34.6 | 34.9 | 35.2 | 35.5 | 35.8 | 36.1 | 36.4 | 36.7 | 37.0 | 37.3 | 37.6 | 37.9 | 38.2 | 38.5 | 38.8 | 39.1 | 39.4 | 39.7 | 40.0 | 40.3 | 40.6 |
| 24 | Халиев А.А. | 30.8 | 31.1 | 31.4 | 31.7 | 32.0 | 32.3 | 32.6 | 32.9 | 33.2 | 33.5 | 33.8 | 34.1 | 34.4 | 34.7 | 35.0 | 35.3 | 35.6 | 35.9 | 36.2 | 36.5 | 36.8 | 37.1 | 37.4 | 37.7 | 38.0 | 38.3 | 38.6 | 38.9 | 39.2 | 39.5 | 39.8 | 40.1 | 40.4 |
| 25 | Ибрагимов А.А. | 30.5 | 30.8 | 31.1 | 31.4 | 31.7 | 32.0 | 32.3 | 32.6 | 32.9 | 33.2 | 33.5 | 33.8 | 34.1 | 34.4 | 34.7 | 35.0 | 35.3 | 35.6 | 35.9 | 36.2 | 36.5 | 36.8 | 37.1 | 37.4 | 37.7 | 38.0 | 38.3 | 38.6 | 38.9 | 39.2 | 39.5 | 39.8 | 40.1 |
| 26 | Рахмонов А.А. | 30.2 | 30.5 | 30.8 | 31.1 | 31.4 | 31.7 | 32.0 | 32.3 | 32.6 | 32.9 | 33.2 | 33.5 | 33.8 | 34.1 | 34.4 | 34.7 | 35.0 | 35.3 | 35.6 | 35.9 | 36.2 | 36.5 | 36.8 | 37.1 | 37.4 | 37.7 | 38.0 | 38.3 | 38.6 | 38.9 | 39.2 | 39.5 | 39.8 |
| 27 | Султоналиев А.А. | 30.0 | 30.3 | 30.6 | 30.9 | 31.2 | 31.5 | 31.8 | 32.1 | 32.4 | 32.7 | 33.0 | 33.3 | 33.6 | 33.9 | 34.2 | 34.5 | 34.8 | 35.1 | 35.4 | 35.7 | 36.0 | 36.3 | 36.6 | 36.9 | 37.2 | 37.5 | 37.8 | 38.1 | 38.4 | 38.7 | 39.0 | 39.3 | 39.6 |
| 28 | Турсунбаев А.А. | 29.8 | 30.1 | 30.4 | 30.7 | 31.0 | 31.3 | 31.6 | 31.9 | 32.2 | 32.5 | 32.8 | 33.1 | 33.4 | 33.7 | 34.0 | 34.3 | 34.6 | 34.9 | 35.2 | 35.5 | 35.8 | 36.1 | 36.4 | 36.7 | 37.0 | 37.3 | 37.6 | 37.9 | 38.2 | 38.5 | 38.8 | 39.1 | 39.4 |
| 29 | Умарбаев А.А. | 29.5 | 29.8 | 30.1 | 30.4 | 30.7 | 31.0 | 31.3 | 31.6 | 31.9 | 32.2 | 32.5 | 32.8 | 33.1 | 33.4 | 33.7 | 34.0 | 34.3 | 34.6 | 34.9 | 35.2 | 35.5 | 35.8 | 36.1 | 36.4 | 36.7 | 37.0 | 37.3 | 37.6 | 37.9 | 38.2 | 38.5 | 38.8 | 39.1 |
| 30 | Халиев А.А. | 29.2 | 29.5 | 29.8 | 30.1 | 30.4 | 30.7 | 31.0 | 31.3 | 31.6 | 31.9 | 32.2 | 32.5 | 32.8 | 33.1 | 33.4 | 33.7 | 34.0 | 34.3 | 34.6 | 34.9 | 35.2 | 35.5 | 35.8 | 36.1 | 36.4 | 36.7 | 37.0 | 37.3 | 37.6 | 37.9 | 38.2 | 38.5 | 38.8 |
| 31 | Ибрагимов А.А. | 29.0 | 29.3 | 29.6 | 29.9 | 30.2 | 30.5 | 30.8 | 31.1 | 31.4 | 31.7 | 32.0 | 32.3 | 32.6 | 32.9 | 33.2 | 33.5 | 33.8 | 34.1 | 34.4 | 34.7 | 35.0 | 35.3 | 35.6 | 35.9 | 36.2 | 36.5 | 36.8 | 37.1 | 37.4 | 37.7 | 38.0 | 38.3 | 38.6 |
| 32 | Рахмонов А.А. | 28.8 | 29.1 | 29.4 | 29.7 | 30.0 | 30.3 | 30.6 | 30.9 | 31.2 | 31.5 | 31.8 | 32.1 | 32.4 | 32.7 | 33.0 | 33.3 | 33.6 | 33.9 | 34.2 | 34.5 | 34.8 | 35.1 | 35.4 | 35.7</ | | | | | | | | | |

(Figure 9, Figure 10). CC ZMEC placed 2 composting toilets for working personnel at site area/top of dam which were cleaned up regularly (Figure 8). Medical station and ambulance for CC GE workers are available at site (Figure 11).

55. Timely collection and disposal of household and construction waste of construction contractors were fully implemented. The appropriate agreements were concluded between the Cascade of Toktogul HPPs and the construction contractors for transportation and disposal domestic and construction waste at the official landfill in Kara-Kul. Storage areas on site and outside the Toktogul site were also visited (Toktogul HPPs Cascade storage, site 16, GE storage). Scrap metal and other construction waste available for secondary use were handed over to the Employer/Cascade of Toktogul HPPs and disposed at the storage area of Toktogul HPP (Figure 12, Figure 13).
56. According to the contract the CC GE organized and conducted the STI, STD and HIV/AIDS alleviation program trainings session to the Employer's employees and local community with distribution of information brochures and condoms. PIU staff of the EPP also participated at this training (Figure 15).



Figure 8. Composting toilets of CC ZMEC at work area (Status in September 2021)



Figure 9. Workers of CC GE worked wearing PPE (Status in November 2021)



Figure 10. Workers of CC ZMEC worked wearing PPE (Status in September 2021)



Figure 11. Medical station and ambulance for CC GE workers at site (Status in September 2021)



Figure 12. Scrap metal is at the storage area of Toktogul HPP (Status in November 2022)



Figure 13. Construction waste and scrap metal are at site of CC ZMEC before disposal at the storage area of Toktogul HPP (Status in November 2021)



Figure 14. Wooden packing materials of new equipment were handed over to the Employer for secondary use (Status in September 2021)

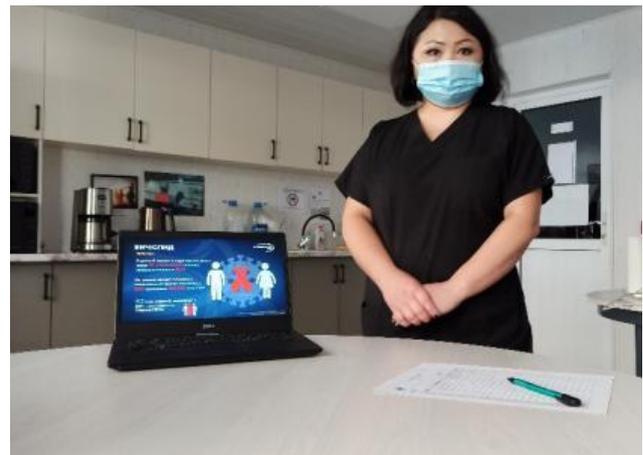


Figure 15. Training on STI, STD, and HIV/AIDS alleviation program conducted by CC GE to the PIU staff (Status in September 2021)

3.3. Issues tracking (Based on Non-Conformance Notices and HSE events)

Package 1 – CC SM-ZMEC

57. An official letter has been sent to the Contractor of Package N°1 regarding the need to improve the storage of the cans of painting and solvents at site in September 2021. The technical arguments proposed by CC ZMEC in their answer were discussed with PIC international expert. It could be seen that storage of cans of paintings were improved at the dam crest, but still second containment was missing, convenient for small quantities (retention tanks).
58. Storage area for cans of paintings located in a tunnel, on the access road to the dam, right bank was checked. It was observed that the cans of paintings and solvents were stored in a container and nearby, within the tunnel, where temperature was monitored and under access control. However, secondary containment was missing. This issue was discussed with CC ZMEC EHS Officer, and will need further development for protection from any spill.



Figure 16: Cans of paintings and solvent storage at Toktogul HPP (Status in December 2021)

59. Empty cans of paintings and solvents which were used for the works are temporarily stored at the dam crest, waiting for handing over to the Cascade of Toktogul HPP. The storage place is temporary but still non convenient as empty cans remain a potential pollution source. They should be stored in dedicated watertight and closed skips. CC ZMEC has requested authorization to hand over these metallic wastes to the Client. EHS Officer of ZMEC is working to solve this issue with direct contacts with Cascade of Toktogul HPPs and it will be solved as much as possible in effective way.



Figure 17: Temporary storage of empty paintings cans of CC ZMEC at site
(Status in December 2021)

60. Abrasive waste coming from abrasive works were stored in big bags and temporary stored in crest tunnel, near dam entrance and the nearby tunnel (Figure 18). According to the appropriate agreement between CC ZMEC and the Cascade of Toktogul HPPs, this waste is displaced to the official landfill in Kara-Kul and transported on a regular base.



Figure 18: Temporary storage of abrasive waste of CC ZMEC at site
(Status in December 2021)

61. No incident/accident was occurred during the reporting period. CC SM-ZMEC did not have any register of EHS event (incident, accident, near miss). It was recommended to start the record of these facts.

Package 2 – CC GE

62. EHS routine inspections were performed with local EHS specialist of PIC. Minor issues related to wastes and site property were observed. PPE were worn by workers, safety signs were present, as well as safety materials.
63. Subcontractor of GE (TajikSGEM) management about EHS was reinforced by GE during the reporting period, and October 2021 was dedicated as special EHS month.
64. EHS audit (quarterly basis) was held in November 2021.
65. Weekly reports established by GE include the following indicators in terms of EHS events for the 6-months period:

Table 5: CC GE EHS indicators

| Indicators | No. from week 26 to week 52 |
|--|-----------------------------|
| Fatality (Level A) | 0 |
| Significant / Major Injury (Level B) | 0 |
| Lost Time Incident | 0 |
| Near Miss | 2 |
| Medical Treatment Case (MTC) | 0 |
| First aid Case (FAC) – Level D | 0 |
| Occupational illness/ disease | 0 |
| Health and Hygiene Inspection | 256 |
| Environmental Incident | 0 |
| Potential Severe Event | 0 |
| Fire/ explosion | 0 |
| Stop Work / Weather | 0 |
| Stop Work / EHS | 170 |
| Warning letter | 2 |
| COVID19 Exposure (officially announced by KG Government) | 54 194 |
| COVID cases | 36 |
| First Aid Case for Customer personnel | 2 |

Source: GE Weekly Reports: Week 2021-52 and Week 2021-26

Level A: Fatality

Level B: Permanently disabling work-related injury or hospitalization

Level C: OSHA or Locally recordable injury/illness or Work-related medical response event that requires assistance from external emergency responders

Level D: First-Aid Case

66. Near Miss – Disruption of the equipment operation. Cable protection damage

According to official Certificate No.21 dated 22 July 2021 of the Commission assigned by the Order of the State inspectorate under the Ministry of Energy and Industry of the KR (MoEI) № 39 dated 13 July 2021 and investigated this near miss: 10th of July 2021 at **15:54** the U-1, T-1, 1-SB-500KV, V1-L554, V1-L509 of Toktogul HPP were shutdown from the differential protection of the main transformer T-1 of THPP. Load shedding was – P=240MW. Load shedding was 240 MW. On the basis of the permission certificate (act) a team of the GE's Subcontractor organization on asbestos removal and cleanup (DIE) was implementing the works. **During cutting of asbestos containing tray by personnel of GE, the control cable in the current circuits of differential protection of T-1 was damaged.** After breakage has been repaired on the control cable 1T-408, re-commissioning took place at 23:30 with voltage increase from null up. On the U-1 there was load a regain of 250 MW, and the Toktogul HPP set load made up ΣP=500MW.

No one was injured as a result of this incident.

On 15:54 on substation “Kara-Balta” by the action of CAO, a shutdown took place on HVL-110KV “Botbaeva-1,2”, HVL-110KV “Ak-Suu”, HVL-110KV “Beshterek”, HVL-110KV “Kainda”, HVL-110KV “HEPP-K1”. They were switched on at 15.59.

On 23:32 on U-1 there was regain of load of 250 MW, the total power output for the two hydro generators was $\Sigma P=500$ MW.

67. **Causes and the responsible party of the disruptions:** The cause of the emergency shutdown was the disturbance of the differential protection current circuits of T-1 transformer from the bottom part of the current transformer 6TT of generator U-1 THPP, due to the cable line breakaway because of the damage in the process of the cable trays’ deinstallation (cutoff with angel grinder) by the personnel of subcontractor of GE (Certificate No.21 dated 22 July 2021).
68. **Operation flaws that were detected by the commission during investigation of the disruptions:** safety violation and lack of appropriate control of works of contracting organization GE; poor preparation of the workplace by the employee of the subcontractor resulting in an emergency shutdown; the workplace for work performance was secured according to the act directly for the contractor with their further work at the fixed area, there is no systematic control of works of the contractor by the Cascade of Toktogul HPPs; work of the contractor with using of angle grinders for live cables; there was no appropriate control of the inspector of GE during the works with using of angle grinders for live cables; using of the angle grinders at asbestos containing area is strictly prohibited due to arise of dust and fiber.
69. The EPP and CC GE had an official correspondence and discussion on this topic. CC GE has revised the Method Statement to prevent the re-occurrence of such incident and conducted health and safety trainings for working personnel.
70. As a result of that near miss and according to the Act/Certificate No.21 dated 22 July 2021 - The amount of the electric power undersupply to the external organizations was 5976 KV/h. (or 15000 KGS/USD 177). This amount of compensation for the damage was demanded to be compensated by CC GE. However, CC GE **rejected** the Employer’s claim (they refer to GCC 30.1). EPP has been working on this.
71. According to the monthly EHS reports of CC GE, Stop the work have been initiated for the following reasons: Lifting operations, missing Permit to Work, work at height, hot works, PPE violations, confined spaces violations.

3.4. Trends

72. No statistics proposed by SM-ZMEC.
73. Taking into account the number of stop the works issued by GE per month (total 170), it can be deducted that it has been quite stable with numbers varying between 30 and 35 per month in July, August, September, November. However, it dropped to 12 in December showing a potential improvement of HSE behaviors. The stop the works occurs from 5 min to maximum 60 mins, as an example if safety belt of the worker is not fixed properly; he is requested to stop the work, fix his belt and then continue his work.

3.5. Unanticipated Environmental Impacts or Risks

74. Covid-19 outbreak has led to health-related risks and shutdown of site activities during Covid-19 cases among work personnel of the contractors. Site Specific Covid-19 Plan, Pandemic Awareness of Employees of CC GE and Health and Safety Plan updated with preventive measures of Covid-19 of CC ZMEC were implemented and reinforced within both construction contractors' personnel (Figure 19, Figure 19). Particular measures are as follows: develop schedules of doctors' duty, continue daily medical check-up of staff at going in and going out of buildings, oblige all staff to report to his/her head when having high temperature, dry cough, short breath, social distancing, wearing mask, sanitary hygiene maintenance, barrier gesture; operating from home office if contacted with a person with positive PCR test of Covid-19; regular disinfection of offices; avoid crowded places; receive available vaccine against Covid-19 but on a voluntary basis .
75. All required protective masks, antiseptic, body temperature measuring instruments, informative boards were available at site by both construction contractors and used by the work staff accordingly. However, Covid-19 positive cases were detected at Project site during reporting period.
76. The following actions were undertaken by GE for each outbreak, acting in accordance with its Site Specific Covid-19 Plan:
- Implement a Covid-19 PCR test of the full DIE team, maximum 6 people during July 2021, GE's personnel and the full team of the subcontractor for installation services OJSC "Tajik SGEM".
 - Decision to isolate the positive cases and the contact persons,
 - The contact persons also are going to the quarantine.
77. In total, 28 COVID positive cases were detected since July 2021 by CC GE. Some local employees did not wear adequately their masks and were reluctant to get vaccinated. All CC GE employees were vaccinated.
78. Package 1 Contractor ZMEC did not have any Covid-19 cases during reporting period.

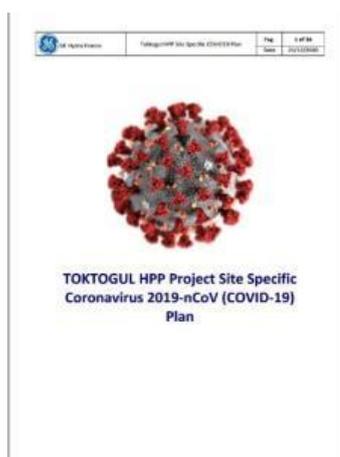


Figure 19. Project Site Specific Covid-19 Plan of CC GE



Figure 20. Health and Safety Plan updated with preventive measures of Covid-19 of CC ZMEC

3.6. Grievance Redress Mechanism

79. ADB's safeguard policies require that any persons, who may undergo under the adverse effects of the Project activities, must be informed in advance about possibilities of making complaints through Grievance Redress Mechanism (GRM), if the Project activity generates any negative impact on their health or create certain inconveniences for their livelihoods. GRM was developed within the scope for preparing the IEE and EMP. This GRM shall be maintained during the whole duration of the Project's implementation. It describes the mechanism how to redress the affected peoples' (AP) grievances in a timely and effective manner.
80. For successful implementation of Toktogul HPP Rehabilitation Phase 2 and 3 Projects funded by ADB, the Employer OJSC EPP issued the Order No.18 dated 28.01.2020 "For Grievance Redress Mechanism" for prompt consideration of grievance and appeals of citizens on the Projects, and according to legislation of the Kyrgyz Republic, ADB Policy Safeguards (2009) and the Policy ADB accountability mechanism (2012.). The Grievance Redress Group and Grievance Redress Mechanism were created.
81. GRM has been fully implemented and managed by PIU. GRM Log Books were arranged. Both Construction Contractors have GRM Log Books at field/offices at sites (Figure 21).
82. From information transmitted by CC GE and CC ZMEC in their reports (including check at site for ZMEC), no complaint has been raised during reporting period, neither by workers nor by the population. GRM log books were filed up appropriately.

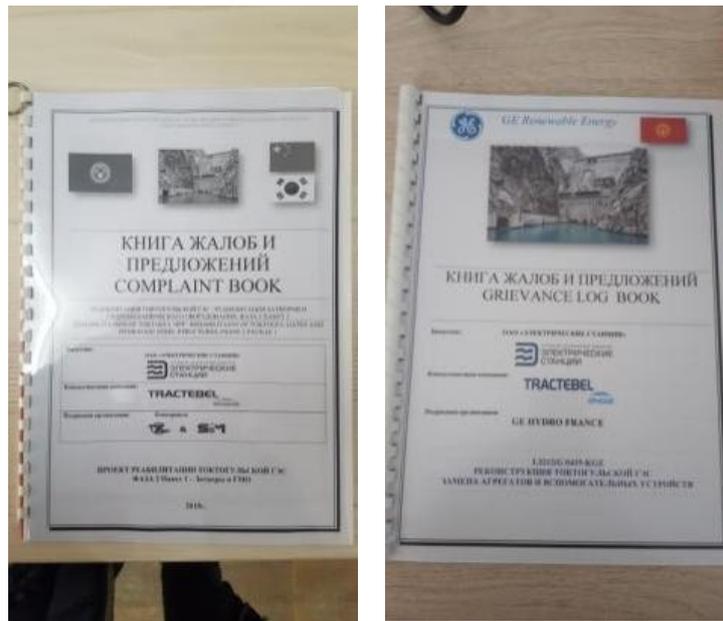


Figure 21. Compliance Books of the Construction Contractors in the field offices

4. RESULTS OF ENVIRONMENTAL MONITORING

4.1. Overview of Monitoring Conducted during Current Period

83. According to IEE/SEMP, it was and it is not planned to measure instrumentally parameters of air, water or noise.
84. IEE/EMP states workers are obliged to wear ear protectors where 85 dB(A) are exceeded (referring to World Bank/IFC General EHS guidelines, 2007). Both contractors provided ear protectors to their work personnel during noise generating activities such as sandblasting works.
85. All works took place within the fenced area and existing buildings of Toktogul HPP with the paramilitary guards. All access roads already existed and are paved. Thus, terrestrial flora and fauna are not affected by the rehabilitation works.
86. Construction works were complied with national HSE regulations, ADB and IFC standards during reporting period.
87. Personnel of both contractors were provided with complete PPE. Construction works were implemented with complying of HSE regulations.
88. All required measures of Covid-19 spread was fully implemented by both contractors and the Employer at site. However, during reporting period officially 28 positive Covid-19 cases were detected among the work personnel of CC GE's and 0 cases among CC ZMEC.

4.2. Trends

89. During the entire construction period and the reporting period, no severe non-conformances have been identified. However, with the progressive increase of staff and activity, additional attention will have to be given to set up higher level for HSE practices. In particular, it is expected from the Contractor to present their method statements including risk analysis and mitigation measures well in advance for any new work, in order to be discussed with PIC EHS specialists.

4.3. Summary of Monitoring Outcomes

90. There was no instrumental monitoring foreseen in IEE of the Project.

4.4. Material Resources Use

91. Monitoring of material resources use such as electricity and water is complex due to the lack of separate counters for Contractors.

4.5. Chemicals

Package 1 – CC SM-ZMEC

92. No poisonous and chemically active' materials are used on site of CC SM-

ZMEC and no facility is needed to store chemicals. These assumptions are subject to comments within paragraph 3.3.

93. Cars are serviced at specialized service stations and refueled at local gas stations by agreement with the Contractors.
94. Used oil is poured over in iron trays and then transferred in a 'prepared area' before transfer to the Employer.
95. The following points to be improved and controlled:
 - Retention/secondary containment below liquid chemicals and compatibility storage conditions.
 - Liquid hazardous materials and waste storage at different areas, and retention.
 - Clear labels and information on the segregation principles of materials to comply with, without any Chemical Safety Data Sheet, retention Liquid materials.
 - No anti spill materials are available at proximity of these storages, but sand. Absorption material was said to be purchased in 2022.

Package 2 – CC GE

96. Chemicals started being stored from October 2020.
97. Secondary containment was provided at site for temporary storage of chemicals.
98. A list of chemicals for generator has been established in October 2020 and SDS were collected in English. But chemicals were not used during reporting period. The chemical inventory is updated on a monthly basis.
99. No chemical spills were occurred (Cumulated environmental incidents = 0). Spills kits are present.
100. The following observations were found out:
 - Chemical management: the chemical register shows the different hazards of each chemical.
 - The dashboards at the chemical's storages display the storage compatibility matrix.
 - Chemicals are stored in closed cabinets on retentions.
 - All oil storages at site has secondary containment.
 - However, it shall be noted the compliance of the storage with the compatibility matrix have not been controlled. And the warehouse was not controlled as well.



Figure 22: Secondary containment below chemicals, spill kit (Status in August 2021)



Figure 23: Storage of new technical oil of CC GE at site (Status in September 2021)

101. One internal audit was conducted by GE in July 2021 and led to the following observations:
- Chemical storage: whereas the chemicals are stored in dedicated cabinets with labelling explaining compatibility matrix, some unidentified chemicals were observed in inadequate containers, and the segregation of chemicals did not seem adequate. Chemicals are over retention and protected.
 - Compressed gas: all bottles should be kept secured and labelled with information in English and Russian.

Recommendations

102. The chemical inventory of each contractor has to be reported to the Employer.
103. All locations of chemical storages and loading / unloading areas shall be identified, and storage conditions have to be confirmed in line with the

specificities of each chemical to prevent spills, fires or explosions.

4.6. Waste Management

Package 1 – CC SM-ZMEC

104. An agreement has been made with Cascade of Toktogul HPPs which is disposing household and construction waste at an official landfill of Kara-Kul (kuperstag, ceramic waste and debris removed from the turbine water intake). Dismantled scrap metal is stored on site No16 before transfer to the Employer (Figure 25). Wooden and metal packaging are reused for work in order to reduce construction waste.
105. Construction waste includes used abrasive slag, wood, armature, pieces of iron, logs, paint cans, dried remaining paint, etc. Construction waste is stored in a designated place of Toktogul HPP, storage area with an asphalt foundation (Figure 24). During reporting period, the update of agreements on transportation and storage of construction waste to the official landfill between the Cascade of Toktogul HPPs and construction contractors were made.
106. Drained used oil storage area was prepared during the 1st Phase of the Project. Oil storage is located on the site 16 of Toktogul HPP, its approximate dimensions are 25x25. It is a covered, well ventilated area with a concrete foundation (Figure 25).
107. During the implementation of the project, household, construction, non-toxic and toxic industrial wastes (anti-corrosion paint, old oil) are generated.
 - Scrap metal is handed over to the Cascade of Toktogul HPP after complete dismantling of the equipment
 - Empty packages are stored at storage area No.16 in the workshop for re-use.
 - Non-toxic construction waste is placed in a warehouse specially designated by the Customer (Base N3) for further sorting by the Customer for reuse.
 - The rest of the construction (including abrasive waste - after full use (estimated at 168 tons for the reporting period) will be disposed of in a landfill (Figure 26). Waste is removed from the site and disposed of in accordance with the appropriate agreement (contract dated 01.07.2017 Nb-d-55-07-18 / 55 between SM Powertech and the Cascade of Toktogul HPPs for the removal of construction waste).



Figure 24. Designated area for construction waste and dismantled equipment at site (Status in July 2021)



Figure 25. Temporary oil storage area No.16 at Toktogul HPP (Status in July 2021)



Figure 26: Temporary storage of abrasive waste (Status in December 2021)

Package 2 – CC GE

108. Domestic wastes were segregated, collected in waste bins and transported to the landfill according to the Agreement with the Employer.
109. Waste was segregated. Used oil was collected in drums and stored in secondary containment. Produced waste such as paint buckets and abrasive sand with lead will be turned over to authorized company for disposal.
110. Medical waste was generated around 30 kg. Medical waste is delivered to central city hospital for disposal according to local legislation.
111. GE HSE management was notified to improve waste management. These issues will be monitored for improvement. The following points were observed:
- Waste management: At least 2 skips were identified for wood and plastic with correct segregation. Used oils are collected in barrels and transferred to the Client.
 - Waste register: GE transmitted the waste register for the reporting period as follows:

Table 6: Waste register of CC GE

| | | |
|------------------|---------|----|
| Domestic waste | 203 290 | kg |
| Metal waste | 51 810 | kg |
| Medical waste | 30 | kg |
| Plastic waste | 5 790 | kg |
| Contaminated PPE | 1 500 | kg |
| Waste cables | 2 520 | kg |
| Waste diesel | 7 100 | kg |
| Waste oil | 8 690 | kg |
| Wood | 155 790 | kg |

Recommendations

112. Waste management and reporting must be improved by both contractors. Waste management was identified by IEE as a key potential negative impact, which is stated by the State Ecological Expertise.
113. The reported information should include:
- Type of Waste (description and classification – e.g. hazardous – non-hazardous);
 - Waste Source – what activity generated the waste and where;
 - Quantity of waste generated;
 - Treatment/disposal route – provide information on quantities of waste reused, recycled and sent to landfill or incineration; and
 - Final disposal sites for waste.

Although both Contractors have waste registers, the status of reporting is still insufficient. Efforts to monitor this activity will be reinforced.

114. PIC team in charge of environmental monitoring of project activities will in particular focus on Waste Management and close work with contractors HSE specialists at site through site inspections and releases of non-conformities, controls of their waste disposal contracts, monthly control of their waste registers and requirement of specific waste management inductions by Contractors to their employees. First steps and results were taken and observed during this reporting period, as both Contractor started waste registering.

4.7. Asbestos

Package 2 – CC GE

115. GE employees are prohibited to work on asbestos removal or asbestos encapsulations operations. The asbestos decontamination subcontractor of GE was a certified French company DIE which implemented asbestos cleaning work at site based on the Asbestos Containing Material Management Plan and Lead Management Plan rev.6 of CC GE (Figure 27).
116. Site visits conducted by PIC local HSE engineer during reporting period led to the following observations (Annex 3).
- Dismantled equipment containing asbestos was stored within Toktogul HPP storage site.
 - Waste containing Asbestos is packed in bags for disposal and stored under a canopy belonging to the Employer.
 - Waste was stored according to SSEMP.

Asbestos containing waste/dismantled parts of equipment/used PPE were put in proper waste bags with the hazard warning signs as required by ACMMP and placed at the dedicated Customer storage area of Toktogul HPP. Bags with asbestos waste were covered by a tarpaulin temporarily (Figure 28).

Waste transfer tracking is shown in Table 7 below.



Figure 27. Asbestos cleaning work at Toktogul HPP project site (Status in September 2021)



Figure 28: Storage of asbestos waste at storage area of Toktogul HPP (Status in November 2021)

Table 7. Waste transfer tracking of CC GE

| Date | Source of Waste | European Waste Codes | Type of Waste | Description of Waste | Type of Container | Quantity | Unit | Waste Receive Site |
|------------|-----------------|----------------------|-----------------|-----------------------|-------------------|----------|------|--------------------|
| 05.04.2021 | Toktogul HPP | 15 01 10 | Hazardous Waste | Asbestos | Sacks | 5 | EA | HPP warehouse |
| 06.04.2021 | Toktogul HPP | 15 01 10 | Hazardous Waste | Contaminated Package | Other | 5 | EA | HPP warehouse |
| 12.04.2021 | Toktogul HPP | 15 01 10 | Hazardous Waste | Contaminated Package | Other | 8 | EA | HPP warehouse |
| 16.04.2021 | Toktogul HPP | 20 01 40 | Hazardous Waste | Asbestos Gasket | Sacks | 400 | KG | HPP warehouse |
| 29.04.2021 | Toktogul HPP | 15 01 10 | Hazardous Waste | Asbestos | Sacks | 15 | EA | HPP warehouse |
| 19.05.2021 | Toktogul HPP | 20 01 40 | Hazardous Waste | Asbestos Gasket | Sacks | 3500 | KG | HPP warehouse |
| 25.05.2021 | Toktogul HPP | 17 04 11 | Hazardous Waste | Asbestos Waste Cable | Sacks | 1550 | KG | HPP warehouse |
| 09.06.2021 | Toktogul HPP | 15 01 10 | Hazardous Waste | Asbestos | Sacks | 16 | EA | HPP warehouse |
| 12.06.2021 | Toktogul HPP | 15 02 02 | Hazardous Waste | Used Contaminated PPE | Sacks | 1350 | KG | HPP warehouse |
| 09.07.2021 | Toktogul HPP | 20 01 40 | Hazardous Waste | Asbestos Gasket | Sacks | 2500 | KG | HPP warehouse |
| 12.08.2021 | Toktogul HPP | 15 01 10 | Hazardous Waste | Asbestos | Sacks | 5 | EA | HPP warehouse |
| 29.08.2021 | Toktogul HPP | 15 02 02 | Hazardous Waste | Used Contaminated PPE | Loose | 1500 | KG | HPP warehouse |

117. Asbestos abatement work for Unit 4 and common equipment has been continued over the reporting period and completed in October 2021. Subcontractor of CC GE DIE demobilized. According to IEE of the Project the asbestos containing waste is to be handed over to the Client. EPP issued an official letter to a local regulating authority to the Department of Disease Prevention and State Sanitary-Epidemiological Surveillance of the Ministry of Health of the KR (Sanitary Department) No.15-11/U-2167 dated 18/11/2021 on asbestos containing waste utilization according to local legislation. The Sanitary Department sent an official reply No.08/2-5-3360 dated 22/12/2021 stating that “According to article 6 of the Law of KR No.89 dated 13.11.2001 “On industrial and consumer waste”, facilities for temporary storage of hazardous waste are determined at the territory of industrial entities, and stationary storage facilities, disposal of hazardous waste are at intended landfill. ***As there is no intended/special landfill for hazardous waste in the country at present, industrial waste is stored at the territory of industrial entities or it could be transported out of the country with regard to the rules of Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal.***” (Annex 4).
118. Based on this, the asbestos containing waste will be stored at the Client storage area until the legal rules are updated according to need and requirements in the country. EPP will keep this issue under control.

4.8. Noise, dust, air quality

119. The nearest community is located at almost 4 km of the site. It is considered the neighboring communities cannot be affected by noise and dust. The construction contractors are obliged to take care that workers wear ear protectors where noise exceeds 85dBA. Ear protections are effectively worn in some situations, but noise is not planned to be monitored by IEE of the Project.

Package 1 – CC SM-ZMEC

120. A short-term effect on the atmospheric air is generated by the contractor's transport and lifting equipment (crane truck and manipulator), which is used to move people and during the delivery, unloading and assembly of equipment at the construction site. The engines work for a short time, at the time of movement and construction work.
121. Dust-free cleaning of surfaces is used with a dust-free abrasive blasting machine. The abrasive is reused in case of spraying at the workplace, since the equipment allows collecting the sprayed abrasive back by means of the built-in "vacuum cleaner" (Figure 29).
122. Need to progress regarding subjects associated to Bottom outlet maintenance gate and aeration of the tunnel. An aeration pipe is necessary when filling a bottom outlet after completion of repair work of the hydromechanical equipment there to release the air accumulated before. Without this aeration pipe, there is the risk to damage to the dam structure and injury to people who are nearby. This point will be further investigated.



Figure 29. PPE of a worker of CC ZMEC for work with blasting machine at site (Status in September 2021)

Package 2 – CC GE

123. During welding to prevent metal fumes and odor, air suction fans are in use by Package 2 contractor.
No sandblasting activity ongoing (GE indicated that for sandblasting activities, specific respiratory system and ear plugs are used by the personnel, sandblasting equipment was selected according to international standards and local regulations regarding the noise level).

4.9. Health and Safety

4.9.1. Community Health and Safety

124. Following recent events between Tajikistan and Kyrgyzstan, a decree was issued by the Cabinet of Ministers of The Kyrgyz Republic No12-p dated 21 May 2021 to restrict movements of Tajik people between the 2 countries and inside Kyrgyzstan. The main subcontractor of Package 2 contractor GE is the Company TAJIK SGEM. Employees of this company are mainly from Tajikistan. The Contractor GE reported that Tadjik's workers of its subcontractor were under situation of stress due to this situation. Package 2 contractor GE was highly concerned regarding the safety of their workers and their ability to continue working for the project and asked for the Employer's support in their regards. Employer's management has confirmed officially and during several presential meetings that this subject was under clarifications with the Government of the country with a request of exception for the workers of the project of "Rehabilitation of Toktogul HPP".
125. Positive answer has been provided to the CC GE. Changes have been made in the above-mentioned Decree through a Decree of the Cabinet of Ministers of the Kyrgyz Republic No.218-p dated 30 September 2021. After issuing letters by EPP and at the request of the Ministry of Energy and Industry of the Kyrgyz Republic, received by Border Service of the State Committee for National Security of the Kyrgyz Republic, citizens of Tajikistan, goods and transports engaged in Toktogul HPP Rehabilitation Projects are allowed to pass.
126. As per the **current reporting period**, the situation has calmed down and is not an issue.

4.9.2. Worker Health and Safety

Package 1 – CC SM-ZMEC

127. HSE Plan was updated to include some Covid-19 specific clauses. Full PPE have been provided to all personnel.
128. Personnel are monitored daily to measure body temperature to prevent the spread of the COVID-19 pandemic. Masks are given to workers; sanitizers are distributed to work areas and field offices.

129. HSE briefing is carried out before starting work and throughout the entire project.
130. The working personnel is briefed on a daily basis on safety measures with issuance of a work permit after the briefing.
131. Working hours are from 8 am to 6 pm. Sunday is a day off. Last three months, two shifts were predominant.
132. Workers have lunch at a local cafe in Karakul. No accommodation at site: Around ten expatriates live in a rented house in Kara-Kul whereas workers were hired among the local population at Kara-Kul.
133. CC ZMEC placed 2 dry toilets for working personnel at site area/top of dam which were cleaned up regularly (Figure 8).
134. A logbook of grievances is available at the office of the HSE manager (Figure 21).
135. First aid kits are available (Figure 5).

Package 2 - CC GE:

136. CC GE site
 - Lighting is adequate.
 - Sanitary and wash hand facilities, cloakrooms are available.
 - General housekeeping is acceptable.
 - Night work is conducted inside the plant.
137. HIV communication campaign has been conducted and was nearly completed in next year.
138. Ambulance and doctor are permanently at site (Figure 11).
139. Accommodation is at Kara-Kul.
140. One internal audit was conducted by GE in July 2021 and led to the following observations:
 - Four subcontractors were present: TajikSGEM for dismantling / installation, DIE for asbestos removal works, Anthesis for Asbestos management control, ISIK for crane refurbishment works.
 - Proper warehouse configuration: the areas are organized and allow proper equipment moves. Safety elements are present.
 - A security service monitors access to the site.
 - Housekeeping of the working sites could be improved.
141. During reporting period in total, 28 COVID positive cases were detected by CC GE. Some local employees did not wear adequately their masks and were reluctant to get vaccinated. All CC GE employees were vaccinated.

4.10. Emergency Response

Package 1 – SM-ZMEC:

142. Information regarding emergency procedures are given in the method statement corresponding to the activity. Training is given before start of work. For example, 6 people explained the workers how to escape from penstock in case of fire (2 elevations for way-out).
143. Emergency planning: 2 muster points are identified at the tunnel and downstairs. One drill was organized in May 2021.

Package 2 – CC GE:

144. Emergency Response Drills were done in November 2021.
145. No chemical spill has been occurred.
146. Spill kits are present at site.
147. To prevent the fire risk, fire blankets and fire extinguishers were in place during welding activities conducted for crane refurbishment. In addition, all welding machines are periodically inspected and calibrated. See Annex 3.
148. The emergency response plan is explained during EHS inductions.
149. There are 3 muster points and one alternative in case of flood.

4.11. Training

Package 1 – CC SM-ZMEC

150. On-site induction training is provided for all workers. HSE Specialists provide trainings and daily briefings which are registered at appropriate logs (Figure 30). Trainings provided were on health and safety rules and requirements and on a daily basis before work starts.



Figure 30. Safety briefing logs of CC ZMEC at field office (Status in September 2021)

Package 2 – CC GE

- 151. Induction on Project HSE rules and pandemic awareness training on Covid-19 have been attended by all project staff and to any new comer.
- 152. Daily housekeeping in place and emphasized to workers during induction. Regular refresh regarding EHS and Covid-19 rules to respect (Figure 31).
- 153. October 2021 was devoted to a special EHS month for subcontractor.

| Action plan Toktogul HPP project | | | | | | |
|----------------------------------|----|--|------------|---------------------------|------------------|--|
| Week | N# | Description | Date | Responsible | Location | |
| Week environment | 1 | Refresher TBT with site employees (Monday at 08.00) - Environment topics | 11.10.2021 | Internal GE&Subcontractor | GE working areas | |
| | 2 | Hazard hunt - environment (Monday at 8:30) Site management | 11.10.2021 | Internal GE&Subcontractor | GE working areas | |
| | 3 | Waste recycling session - TBT for site employees(After TBT Supervisors and Management will lead the activities to show also how waste segregation should be done in preparation of the wastes to be recycled) | 12.10.2021 | Subcontractor | GE working areas | |
| | 4 | Inspection of Chemical containers | 13.10.2021 | Internal GE&Subcontractor | GE working areas | |
| | 5 | Clean up walk site | 14.10.2021 | Internal GE&Subcontractor | GE working areas | |
| | 6 | Clean up walk site offices | 15.10.2021 | Internal GE&Subcontractor | Campsite | |
| Week health | 7 | Refresher TBT with site employees (Monday at 08.00) | 18.10.2021 | Internal GE&Subcontractor | GE working areas | |
| | 8 | Hazard hunt - ergonomic hazards (Monday at 08:30) Site management | 18.10.2021 | Internal GE&Subcontractor | GE working areas | |
| | 9 | Communication of COVID19 safety precautions | 19.10.2021 | Subcontractor | Campsite | |
| | 10 | Ergonomics - awareness training for Supervisors | 20.10.2021 | Subcontractor | GE working areas | |
| | 11 | Ergonomics - workarea inspection by Supervisor right after training | 20.10.2021 | Subcontractor | GE working areas | |
| | 12 | Reviewal of risk assessment of site employees in terms of hazards & risks (Health checks) | 21.10.2021 | Internal GE&Subcontractor | GE working areas | |
| | 13 | Day of walk for Health (no use of work/ personal cars) Site Offices to Powerstation | 22.10.2021 | Internal GE&Subcontractor | GE working areas | |
| Week safety | 14 | Refresher TBT with site employees (Monday at 08:00) | 25.10.2021 | Internal GE&Subcontractor | GE working areas | |
| | 15 | Hazard hunt - safety (Monday at 08:30) Site management | 25.10.2021 | Internal GE&Subcontractor | GE working areas | |
| | 16 | PPE or Life Saving Principles Test (short test for site employees while daily routines) | 26.10.2021 | Subcontractor | GE working areas | |
| | 17 | High Risk Operations Focus - reviewal of LPS and following works | 27.10.2021 | Internal GE&Subcontractor | Site office | |
| | 18 | Plan, Do, Review Group Activity - Morning routines by site personnel and supervisors | 28.10.2021 | Subcontractor | GE working areas | |
| | 19 | Closure meeting TBT - | 29.10.2021 | Internal GE&Subcontractor | GE working areas | |

Figure 31: GE EHS training activities (Status in October 2021)

Recommendations

- 154. It is recommended from each contractor to complete a training matrix for all the staff contracted and subcontracted for all trainings. Attendance sheets shall be signed by the staff. Information reported in weekly and monthly reports shall be more precise.

5. FUNCTIONING OF THE SSEMP

5.1. SSEMP Review

155. Construction Contractors have largely implemented the requirements set out in their SSEMPs. Their activities have increased progressively with all related HSE mitigations.
156. With the Covid-19 pandemic during the reporting period, it was difficult to organize regular audits for the PIC international environmental expert, a local HSE expert worked at site.
157. This activity will continue to be enhanced in the next reporting period and more controls are definitively necessary. PIC consultants register on a dedicated file the progress of the SSEMP for both contractors.
158. The implementation status of each mitigation is being assessed based on the information reported by each contractor and by the PIC specialists. Recommendations are presented in Section 7 on the further controls PIC will have to carry out to ensure a proper implementation of each mitigation for next reporting period.

Package 1 – CC SM-ZMEC

159. Construction Supervisor and HSE Specialist SM-ZMEC performed daily visual inspections of the environment.
160. The general manager is responsible for waste management and a complaints mechanism.
161. In reporting period, the following points were confirmed by the EPP and PIC experts:
 - Three specialists are present within the HSE team.
 - HSE dashboards are present.
 - Method statements frame high risk activities.
 - No HSE incident, non-compliance, nor near miss have been emitted since the beginning of the works.
 - Permits to work are prepared and signed.
 - EHS inductions are completed (register available). Daily EHS toolbox talks are conducted.
 - Only one confined space is identified: the penstock.
 - Sand is available in the working areas to be used as spill kit.
 - Lone work is strictly forbidden.
 - Equipment maintenance: 3 vehicles are used by CC SM-ZMEC and are periodically controlled.
 - Covid-19 protection equipment is sufficient at site.

Package 2 – CC GE

- 162. The HSE team is staffed with a manager and 2 supervisors for GE, and 2 HSE specialists from the subcontractors.
- 163. A doctor is on site with an ambulance and a defibrillator (Since October 2020). Anti Covid-19 equipment is largely available at site.
- 164. The Site HSE Manager conducted site inspections. He regularly gave induction briefings to his staff.
- 165. The indicators for trainings, inspections, toolbox talks and other controls are presented in the table below for the reporting period.

Table 8: GE indicators: EHS actions

| Indicators | No from week 26 to week 52 |
|----------------------------|----------------------------|
| Safety Rewards | 38 |
| Training Hours (Specific) | 0 |
| EHS Inspections | 156 |
| Self-Assessment Compliance | 2 |
| Emergency Drill | 2 |
| Toolbox Talks | 156 |
| Alcohol & Drug Scan | 6600 |

Source: GE Weekly Reports Week 2021-52 and Week 2021-26

- 166. PPR (method statement) and risk analysis are carried out prior to each planned activity.
- 167. Regular HSE monitoring is carried out in relation to the Contractors' activities.
 - Weekly EHS meetings are held.
 - Permits to Work identifying clearly EHS risks and impact are used and the Lockout-Tagout (LOTO) process has been implemented.
 - PPE: Generic and specific PPE are used.
 - Spill management: Spill kits are available. No leaking equipment was observed. Containment is present for hazardous liquid materials.
 - Hazardous activities concern hot works, work at height, scaffolds, electrical works, lifting operations, confined spaces (one only: the Draft tube when the head cover is in place), portable power tools, asbestos, diving.
 - Lone work is strictly forbidden.
 - Equipment maintenance: 6 cars were bought by GE and are weekly controlled.

168. The following documentation was available at site:
- HSE non compliances, incidents, investigation reports and implemented preventive and corrective actions (GENSUITE register)
 - List of Workers (including subcontractors);
 - Chemicals register,
 - Waste register,
 - Training matrix listing all trainings and HSE inductions (GENSUITE tool and EXCEL fie, attendance forms);
 - Internal EHS inspections and audits (2 EHS inspections per day and one quarterly audit was conducted in July 2021 and November 2021. Quarterly audits of Tajik SM and DIE in September 2021),
 - Register of inspections of all engines (Excel file),
 - Log book of grievances from workers and neighboring populations,
 - List of first aiders,
 - Toolbox talks register.
169. GE conducts full quarterly audits of each contractor on six general EHS topics (Work Type Based Questions, Safety Culture, EHS Training, Audit Findings, EHS Incidents, Subcontractor Management). Results of the last audits were regularly communicated to PIC and are as follows for 2 key subcontractors:
- Tajik SGEM: April 2021: Score of 36%, September 2021: Score of 40%. The need for further development and improvement is clear (Figure 32).
 - DIE: April 2021: Score of 76%, September 2021: Score of 62%
 - These results show the low HSE culture of Tajik SGEM and the decrease of HSE performance of DIE.

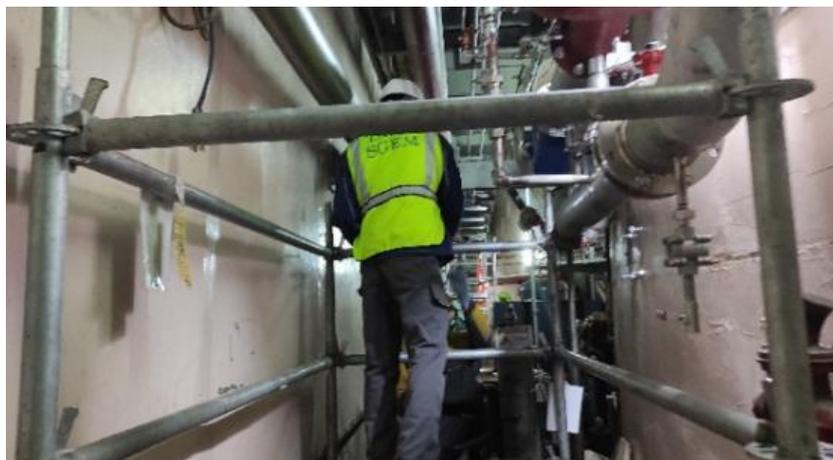


Figure 32: Work on scaffolding by GE's subcontractor Tajik SGEM (Status in December 2021)

170. In addition, one internal audit was conducted by GE in July 2021 and led to the following observations:
- The EHS management is well organized and documented
 - The EHS dashboards are well completed to allow everyone have access to the useful EHS information.
171. The key areas for improvement identified by GE are the following ones and

concern in particular **High Risk Operations (HROs):**

- Some workers were identified as working at height with improper use of harness and lanyards. Safety cable not adequately fixed and no visibility vest by GE's subcontractor TajikSGEM (Figure 33).



Figure 33: A worker of GE's subcontractor Tajik SGEM working at site (Status in December 2021)

- Some workers did not wear properly their PPE, such as glasses and medical masks.
- Housekeeping of the working sites could be improved.
- Some non-conformities were identified for scaffoldings.
- Lack of preparation of a lifting plan before the work and no control of the activity.
- Some workers have risky behaviors (staying under the load or in the line of fire for instance).

The key risk for GE is the low EHS culture of the local subcontractors.

172. Based on available information, the key identified improvement goals are about:

- Waste minimization, segregation, storage, disposal, and reporting, although definite improvement has been noted for Package 2 contractor GE.
- The review of applicable environmental regulations to ensure the compliance of their activities.

6. GOOD PRACTICE AND OPPORTUNITY FOR IMPROVEMENT

6.1. Good Practice

173. Asbestos cleaning work was implemented first time at Toktogul HPP by the international CC GE and was a good practice for local staff of Toktogul HPP. These works were done based on ACMMP of CC GE containing all international requirements and rules.
174. Medical waste was generated around 30 kg. Medical waste is delivered to central city hospital for disposal according to local legislation.

6.2. Opportunities for Improvement

175. As indicated above, the Construction Contractors shall pay careful attention to health and safety issues, especially within the current Covid-19 situation and after. Social distance and masks wearing shall be controlled regularly by each HSE team and shall be applied as per the policy outlined in the Contractors' health and safety plans as well as PIU or national guidelines. This is in particular important in meeting rooms where the contagion risk is higher.
176. The Employer must stay vigilant in the strict respect and application of all the measures defined to avoid contamination and spread of Covid-19.
177. The absence of non-conformities raised by ZMEC on HSE matters is a bad practice and should be subject to improvement.

7. SUMMARY AND RECOMMENDATIONS

178. All works took place within the fenced area and existing buildings of Toktogul HPP with the paramilitary guards and entrance only with passes.
179. The site activities at Toktogul HPP were implemented by both contractors with the mitigations on which they committed in their SSEMPs and Health and safety Plans and with Covid-19 protection measures.
180. No EHS accidents happened at site during reporting period at CC ZMEC site.
181. An emergency shutdown occurred at Toktogul HPP on the 10th of July 2021 at 15:54 during cutting of asbestos containing tray by personnel of GE, the control cable in the current circuits of differential protection of T-1 was damaged. After breakage has been repaired on the control cable 1T-408, re-commissioning took place at 23:30 with voltage increase from null up. Toktogul HPP set load made up $\Sigma P=500\text{MW}$. The reasons of this were safety violation and lack of appropriate control of works of contracting organization GE; poor preparation of the workplace by the employee of the subcontractor DIE.

182. CC GE has revised the Method Statement to prevent the re-occurrence of such incident. As a result of that near miss the amount of the electric power undersupply of EPP/Toktogul HPP to the external organizations was 5976 KV/h (or 15000 KGS/USD 177). This amount of compensation for the damage was demanded to be compensated by CC GE (EPP No.15-15/795 dated 06/10/2021 and No.15-15/957 dated 07/12/2021). However, CC GE rejected the Employer's claim referring to Contract's GCC 30.1 and has not compensated yet (No. HRU-TEN-0787 dated 20/10/2021). EPP has been working on this.
183. The Construction Contractors shall pay careful attention to health and safety issues including Covid-19 protective measures. Workers sometimes did not fully apply protective measures from Covid-19 spread as wearing masks.
184. Each contractor shall continue conduct regular safety inspections and transfer related reports to PIC/PIU. CC SM-ZMEC is kindly requested to resume reporting of regular English/Russian monthly EHS reports to PIC.
185. Handling of hazardous waste with improvement by both contractors. Each Contractor shall detail the preliminary Waste Management Plan which was included in their SSEMPs. First step is to achieve a reliable waste register, as waste register is still insufficient for both contractors: quantities and types of waste delivered, with due dates, are not completely reliable.
186. CC SM-ZMEC is kindly requested to draft and monitor an EHS incident/accident/near miss accident register.
187. Temporary storage areas for metallic waste on the dam crest need to be improved quickly by CC SM-ZMEC. Secondary containment has to be put into practice for paintings and solvents at the dam crest and within storage tunnel.
188. CC GE was instructed to control and train its subcontractor for asbestos cleaning works for strict fulfilling health and safety rules and not to allow any near miss and damage of equipment of the Employer at site in future.

ANNEXES

Annex 1. Approval of the SAEPF on IEE developed for Phase 2 Project

| | | |
|--|---|---|
| <p>КЫРГЫЗ РЕСПУБЛИКАСЫНЫН ОКМӨТҮНӨ КАРАШТУУ КҮРЧАП ТУРГАН ЧӨЙРӨНҮ КОРГОО ЖАНА ТОКОЙ ЧАРБАСЫ МАМЛЕКЕТТИК АГЕНТТИГИ</p> <p>720001, Бишкек ш. Токтогул көч. 228 tel. (996-312) 352727, факс: 353102, 353094 e-mail: nature_kg@mail.ru, ecokg@aknet.kg, www.nature.kg Биримчи кый КРБ, ЖИН: 02001200610051 s/s: 129052238181004, БИК: 129052, Банк: Бишкек филиалы ААК «РСК-Банк» ОКПО: 23994204 0253101 2</p> |  | <p>ГОСУДАРСТВЕННОЕ АГЕНТСТВО ОХРАНЫ ОКРУЖАЮЩЕЙ СРЕДЫ И ЛЕСНОГО ХОЗЯЙСТВА ПРИ ПРАВИТЕЛЬСТВЕ КЫРГЫЗСКОЙ РЕСПУБЛИКИ</p> <p>720001, г. Бишкек, ул. Токтогула, 228 тел. (996-312) 352727, факс: 353102, 353094 e-mail: nature_kg@mail.ru, ecokg@aknet.kg, www.nature.kg Первомайский РОК, ИНН: 02001200610051 p/s: 129052238181004, БИК: 129052 Банк: Бишкекский филиал ОАО «РСК-Банк» ОКПО: 23994204 0253101 2</p> |
| <p>15.12.2014 г. № 04.01.28/428</p> | | |
| <p>Утверждаю заместитель директора Государственного агентства охраны окружающей среды и лесного хозяйства при Правительстве КР А.А. Рустамов «15» декабря 2014 г.</p> | | |
| <p>ЗАКЛЮЧЕНИЕ ГОСУДАРСТВЕННОЙ ЭКОЛОГИЧЕСКОЙ ЭКСПЕРТИЗЫ к Отчету «Предварительная Экологическая Оценка (ПЭО) Реабилитация Токтогульской ГЭС, Фаза 2» Проекта реабилитации Энергетического Сектора. АБР-ТА-8434 (KGZ)</p> | | |
| <p>На рассмотрение в Государственное агентство охраны окружающей среды и лесного хозяйства при Правительстве Кыргызской Республики (далее – ГАООСЛХ) на государственную экологическую экспертизу представлен Отчет «Предварительная Экологическая Оценка (ПЭО) Реабилитация Токтогульской ГЭС, Фаза 2» Проекта реабилитации Энергетического Сектора. АБР-ТА-8434 (KGZ), разработанное компанией «Фикстнер» в 2014 году по заданию АБР и ОАО «Электрические станции».</p> <p>Предварительная Экологическая Оценка (ПЭО) Реабилитация Токтогульской ГЭС, Фаза 2 Проекта реабилитации Энергетического Сектора АБР-ТА-8434 (KGZ) состоит из следующих основных разделов:</p> | | |
| <ol style="list-style-type: none">1. Краткий обзор.2. Политические, Правовые и Административные Рамки.3. Описание Проекта.4. Описание Окружающей Среды.5. Ожидаемые Экологические Последствия и Смягчающие Меры.6. Анализ Альтернатив.7. Раскрытие Информации и Консультации.8. Механизм Рассмотрения Жалоб.9. План Управления Окружающей Средой. | | |
| <p>06108</p> | | |

10. Заключение и Рекомендации.

11. Приложения.

График реализации: Начало строительства будет начато во второй половине 2016 года и продлится до 2020/2021 гг.

Описание Проекта и Возможные Воздействия

В ходе работ на Токтогульской ГЭС предусмотрены следующие мероприятия:

- замена/реабилитация двух турбин;
- замена/реабилитация и модернизация двух генераторов;
- замена двух основных трансформаторов, связанных с двумя турбинами/генераторами;
- замена систем управления агрегатами для двух блоков;
- замена систем защиты блока, в том числе соответствующего трансформатора, шлейфа и ограждения для двух блоков;
- замена блока электрических и механических вспомогательных систем (распределительное устройство МВ и НН, система охлаждения, дренажные и водо-насосные системы и т.д.) для двух блоков (по блокам);
- реабилитация гидравлических стальных конструкций и гидромеханического оборудования на выпуске и ниже по течению;
- реабилитация гидравлических стальных сооружений и гидромеханического оборудования (напорных водоводов, донных выпускных отверстий, кранов и т.д.).

Проект реабилитации Токтогульской ГЭС является уникальным проектом и жизненно важным звеном по регулированию частоты напряжения системы трансмиссии на 500 кВ, соединяющий страны Центральной Азии. Мощности ГЭС были хорошо построены, но многие компоненты в данное время нуждается замене для поддержания генерирующей целостности. Следовательно, не существует никакой другой реальной альтернативы, кроме той, которая заключается в последовательной замене изношенного оборудования, и соответствующей поддержке строительных конструкций и установленного оборудования.

Согласно Оценке, следующие возможные воздействия на окружающую среду могут быть связаны с перечисленными реабилитационными мероприятиями:

- возможным отключением электроэнергии в ходе строительства;
- утилизацией старого масла (около 180 тонн, не содержащих ПХД, согласно проведенного анализа);
- вопросами соблюдения техники безопасности и здравоохранения во время строительства;
- увеличением движения грузовиков в период строительства через населенные пункты; транспортировкой тяжелого оборудования, строительных материалов и отходов;
- утилизацией железа / стали (почти 4 тысячи тонн), и других отходов;

- строительными отходами, образовавшимися в результате строительных работ, и некоторых бытовых отходов, образовавшимися в результате жизнедеятельности рабочих.

В рамках ПЭО предусмотрено выявление воздействий предлагаемого проекта на окружающую среду, и определение соответствующих превентивных действий и мер по их смягчению для предотвращения, минимизации или исключения ожидаемых неблагоприятных воздействий. Потенциальное экологическое воздействие от реализации проекта будет носить локальный и временный характер. Для смягчения воздействия на окружающую среду разработан План Управления Окружающей Средой (ПУОС), где предусмотрены сбор, хранение и реализация металлолома, а также повторное использование масла из оборудования, подлежащего замене и др.

В период подготовки Отчета проведены общественные консультации и встречи с общественностью г.Каракуль Джалал-Абадской области, где рассмотрены, в основном, вопросы по проблемам отходов и как с ним справиться. В итоге все поддержали необходимости реабилитационных мер, предусмотренные Проектом АБР по реабилитацию Токтогульской ГЭС.

Рассмотрев представленные материалы, Государственное агентство охраны окружающей среды и лесного хозяйства при Правительстве Кыргызской Республики выносит положительное заключения государственной экологической экспертизы к Отчету «Предварительная Экологическая Оценка (ПЭО) Реабилитация Токтогульской ГЭС, Фаза 2» Проекта реабилитации Энергетического Сектора. АБР-ТА-8434 (KGZ).

При этом необходимо:

- в период реализации проекта ОАО «Электрические станции» обеспечить своевременное представление отчетов в установленной форме по вопросам охраны окружающей среды и оплаты нормативных платежей за загрязнения окружающей среды в Джалал-Абадское территориальное управления ГАООСЛХ.

- перед началом работ необходимо уведомить Джалал-Абадское ТУ ГАООСЛХ.

В случае невыполнения заключения государственной экологической экспертизы и проведения работ не по проектным решениям, заключение автоматически теряет силу.

Председатель экспертной комиссии,
начальник управления государственной
экологической экспертизы и природопользования
(УГЭЭП)

Жумабеков К.К.

Члены экспертной комиссии:

Начальник Отдела УГЭЭП

Рыспеков А.А.

Главный специалист УГЭЭП

Сарыбаев И.М.

Informal Translation

Approval of the SAEPF on IEE developed for the Project Phase 2.

STATE AGENCY OF ENVIRONMENT PROTECTION AND FORESTRY UNDER THE
GOVERNMENT OF THE KYRGYZ REPUBLIC

December 15, 2014, No.04-01-28/428

I approve

Deputy Director of the State Agency on Environment Protection
and Forestry under the KR Government
/seal affixed/ signed/ A.A. Rustamov

December 15, 2014

**APPROVAL
OF THE STATE ENVIRONMENTAL EXPERT REVIEW**

to the Report “Initial Environmental Examination (IEE), Rehabilitation
of Toktogul HPP, Phase 2” of the Energetic Sector Rehabilitation
Project ADB-TA-8434 (KGZ)

The Report “Initial Environmental Examination (IEE), Rehabilitation of Toktogul HPP, Phase 2” of the Energetic Sector Rehabilitation Project AБP-TA-8434 (KGZ) developed by Fichtner in 2014 on request of ADB and “Electric Power Plants” OJSC was submitted to the State Agency on Environment Protection and Forestry under the Government of the Kyrgyz Republic to carry out state environmental expert review.

The Initial Environmental Examination (IEE) of the Rehabilitation of Toktogul HPP, Phase 2” of the Power Sector Rehabilitation Project ADB-TA-8434 (KGZ) consists of the following major sections:

1. Summary
2. Political, Legal and Administrative Frameworks
3. Description of the Project
4. Description of Environment
5. Expected environmental impacts and mitigation measures
6. Analysis of alternatives
7. Disclosure of information and consultation
8. Grievance Redress Mechanism
9. Environment Management Plan
10. Conclusion and Recommendations
11. Annexes

Implementation schedule: The construction shall start in second half of 2016 and last until 2020/2021.

Description of the Project and possible impacts:

The following activities will be carried out in the course of works at Toktogul HPP:

- replacement/rehabilitation of two turbines;
- replacement/rehabilitation and upgrading of two generators;
- replacement of two main transformers associated with two turbines / generators;
- replacement of unit control systems for two units;
- replacement of unit protection systems, including relevant transformer, loop and fencing for two units;
- replacement of a unit of electrical and mechanical auxiliary systems (MV and LV switchgears, cooling system, drainage and water-pumping systems, etc.) for two units (for units);
- rehabilitation of hydraulic steel structures and hydromechanical equipment at the outlet and downstream;
- rehabilitation of hydraulic steel structures and hydromechanical equipment (pressure conduits, bottom outlets, taps, etc.).

Toktogul HPP Rehabilitation Project is a unique project and a vital link for regulation of voltage frequency of 500 kV transmission systems, which connects the Central Asian countries. Capacity of HPP was well built, but many components should be currently replaced to maintain generating integrity. Consequently, there is no other realistic alternative but one that suggests consistent replacement of worn-out equipment and relevant maintenance of engineering structures and installed equipment.

According to Examination, the following possible impacts on the environment may be associated with rehabilitation activities listed above:

- possible power outage during construction;
- disposal of old oil (about 180 tons that do not contain PCBs according to conducted analysis);
- issues of occupational health and safety compliance during construction;
- increase in truck movements through settlements during construction period; transportation of heavy equipment, building materials and debris;
- disposal of iron / steel (almost 4000 tons) and other wastes;
- construction debris generated because of construction work, and some domestic waste generated because of daily living activities of workers.

As a part of IEE it is provided for to identify proposed Project impacts on the environment and to plan appropriate preventive actions and mitigation measures to prevent, minimize or eliminate expected adverse effects. Potential environmental impact of the Project will be of local and temporary nature. To mitigate the impact on the environment, there is developed Environmental Management Plan (EMP), which provides for collection, storage and sale of scrap metal and re-use the oil from equipment to be replaced etc..

Public consultations and public meetings were conducted in Karakul Town of Jalal-Abad oblast when the Report was being prepared. Participants of those consultations and meetings mainly considered waste related matters and methods of coping with them. Eventually everybody came to conclusion that rehabilitation measures provided by the ADB Project on rehabilitation of Toktogul HPP were necessary.

Having considered submitted materials, the State Agency on Environment Protection and Forestry under the Government of the Kyrgyz Republic issues positive opinion on the State Environmental Expert Review to the Report “Initial Environmental Examination (IEE), Rehabilitation of Toktogul HPP, Phase 2” of the Energetic Sector Rehabilitation Project ADB- TA-8434 (KGZ).

At the same time it is required that:

- “Electric Power Plants” OJSC must ensure that reports on environment protection are timely submitted and statutory payments for environmental pollution are timely paid to the Jalal-Abad Territorial Department of SAEPF during implementation of the Project.
- Jalal-Abad Territorial Department of SAEPF must be notified before beginning of work.

If the conclusion of the State Environmental Expert Review is not complied with and if works are not executed according to design decisions, the conclusion shall automatically become void.

Chairman of Experts Commission,
Head of Department of the State Environmental
Expert Review and Environmental Management
(DSEEREM)

/signed/
K.K. Jumabekov

Members of Experts Commission: Head of the Division of DSEEREM

/signed/

A.A. Ryspekov

Chief Specialist of DSEEREM

/signed/

I.M. Sarybaev

Annex 2. The list of main documents on Environmental Safeguard Toktogul HPP Rehabilitation Phase 2 Project as of December 2021

| No | Document title | Prepared by | Date of approval |
|-----------------------------|---|--|--|
| Basic Documentation: | | | |
| 1. | IEE / Initial Environmental Examination KGZ: Toktogul HPP Rehabilitation Phase 2 Project | Project Implementation Consultant/PIC Fichtner | July 2014 https://www.adb.org/sites/default/files/project-document/81731/46348-003-iee-01.pdf |
| 2. | Conclusion of the State environmental expert review on IEE developed for the Project Phase 2. | State Agency of Environmental Protection and Forestry of the Kyrgyz Republic | December 2014 |
| Reports: | | | |
| 3. | Semi-annual Environmental Monitoring Report covering July-December 2016 developed for Toktogul HPP Rehabilitation Project Phase 2 | OJSC Electric Power Plants with the assistance of PIC Tractebel | January 2017 https://www.adb.org/sites/default/files/project-document/225671/46348-003-emr-01.pdf |
| 4. | Semi-annual Environmental Monitoring Report covering January – June 2017 developed for Toktogul HPP Rehabilitation Project Phase 2 | OJSC Electric Power Plants with the assistance of PIC Tractebel | July 2017 https://www.adb.org/sites/default/files/project-documents/46348/46348-003-emr-en.pdf |
| 5. | Semi-annual Environmental Monitoring Report covering July - December 2017 developed for Toktogul HPP Rehabilitation Project Phase 2 | OJSC Electric Power Plants with the assistance of PIC Tractebel | July 2017 https://www.adb.org/sites/default/files/project-documents/46348/46348-003-emr-en_0.pdf |
| 6. | Semi-annual Environmental Monitoring Report covering January – June 2018 developed for Toktogul HPP Rehabilitation Project Phase 2 | OJSC Electric Power Plants with the assistance of PIC Tractebel | July 2018 https://www.adb.org/sites/default/files/project-documents/46348/46348-003-emr-en_1.pdf |
| 7. | Semi-annual Environmental Monitoring Report covering July - December 2018 developed for Toktogul HPP Rehabilitation Project Phase 2 | OJSC Electric Power Plants with the assistance of PIC Tractebel | February 2019 https://www.adb.org/sites/default/files/project-documents/46348/46348-003-emr-en_2.pdf |
| 8. | Semi-annual Environmental Monitoring Report covering January – June 2019 developed for Toktogul HPP Rehabilitation Project Phase 2 | OJSC Electric Power Plants with the assistance of PIC Tractebel | August 2019 https://www.adb.org/sites/default/files/project-documents/46348/46348-003-emr-en_3.pdf |

| | | | |
|------------------------------|---|---|---|
| 9. | Semi-annual Environmental Monitoring Report covering July - December 2019 developed for Toktogul HPP Rehabilitation Project Phase 2 | OJSC Electric Power Plants with the assistance of PIC Tractebel | December 2019 https://www.adb.org/sites/default/files/project-documents/46348/46348-003-emr-en_4.pdf |
| 10. | Semi-annual Environmental Monitoring Report covering January – June 2020 developed for Toktogul HPP Rehabilitation Project Phase 2 | OJSC Electric Power Plants with the assistance of PIC Tractebel | September 2020 https://www.adb.org/sites/default/files/project-documents/46348/46348-003-emr-en_5.pdf |
| 11. | Semi-annual Environmental Monitoring Report covering July – December 2020 developed for Toktogul HPP Rehabilitation Project Phase 2 | OJSC Electric Power Plants with the assistance of PIC Tractebel | February 2021 https://www.adb.org/sites/default/files/project-documents/46348/46348-003-emr-en_6.pdf |
| 12. | Semi-annual Environmental Monitoring Report covering January-June 2021 developed for Toktogul HPP Rehabilitation Project Phase 2 | OJSC Electric Power Plants with the assistance of PIC Tractebel | September 2021 https://www.adb.org/sites/default/files/project-documents/46348/46348-003-emr-en_7.pdf |
| 13 | Semi-annual Environmental Monitoring Report covering July-December 2021 developed for Toktogul HPP Rehabilitation Project Phase 2 | OJSC Electric Power Plants with the assistance of PIC Tractebel | Present report |
| Other documentations: | | | |
| 14. | Sample results (Asbestos Risk Assessment Survey. Rehabilitation of Toktogul HPP Phase 2 Project) | PIC Tractebel | December 2016 |
| 15. | Asbestos Management Plan (Rehabilitation of Toktogul HPP Phase 2 Project) | PIC Tractebel | December 2016 |
| 16. | Asbestos Survey Report (Rehabilitation of Toktogul HPP Package 2 Phase 2 Project) | CC GE | April 2019 |
| 17. | Site Specific Environmental Management Plan Rev 6 (SSEMP) (Rehabilitation of Toktogul HPP Package 2 Phase 2 Project) | CC GE | December 2019 |
| 18. | Health and Safety Plan Rev 1 (Rehabilitation of Toktogul HPP Package 2 Phase 2 Project) | CC GE | November 2019 |
| 19. | Asbestos Containing Material Management Plan (ACMMP) Rev 6 (Rehabilitation of Toktogul HPP Package 2 Phase 2 Project) | CC GE | May 2021 |

| | | | |
|-----|--|--------------------------|---------------|
| 20. | Overhead crane area cleaning method statement Rev 2 (Rehabilitation of Toktogul HPP Package 2 Phase 2 Project) | CC GE | October 2019 |
| 21 | Project Emergency Response Plan Rev C | CC GE | December 2020 |
| 22 | Transportation Management Plan | CC-GE | Not approved |
| 23. | Site Specific Environmental Management Plan Rev F (SSEMP) (Rehabilitation of Toktogul HPP Package 1 Phase 2 Project) | CC ZMEC and SM Powertech | December 2019 |
| 24. | Health and Safety Plan Rev C (Rehabilitation of Toktogul HPP Package 1 Phase 2 Project) Including Covid-19 procedure | CC ZMEC and SM Powertech | August 2020 |
| 25 | Project Emergency Response Plan Rev D | CC ZMEC and SM Powertech | February 2020 |
| 26 | Project Site Specific COVID-19 Plan Rev5 | CC GE | December 2020 |

Annex 3. Photo records of HSE related works for Package 2 CC GE and Package 1 CC ZMEC



Figure 34. A new temporary camp for PIC Tractebel specialists and GE employees in Kara-Kul (Status in December 2021)



Figure 35. General view of the stator of unit 4 of Toktogul HPP at GE site (Status in December 2021)



Figure 36. A new stator assembly of Unit 4 of Toktogul HPP at GE site (Status in December 2021)



Figure 37: Waste segregation by CC GE at site (Status in December 2021)



Figure 38. Storage of paintings without containment at CC ZMEC site (Status in December 2021)



Figure 39: Temporary storage of abrasive waste within tunnel at CC ZMEC site (Status in December 2021)



Figure 40: EHS equipment within working areas of CC ZMEC (Status in December 2021)



Annex 4. An official letter of the Department of Disease Prevention and State Sanitary Epidemiological Surveillance of the Ministry of Health of the KR about asbestos disposal

КЫРГЫЗ РЕСПУБЛИКАСЫНЫН
САЛАМАТТЫК САКТОО
МИНИСТРЛИГИ

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БИК 440001



МИНИСТЕРСТВО ЗДРАВООХРАНЕНИЯ
КЫРГЫЗСКОЙ РЕСПУБЛИКИ

Департамент профилактики
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БИК 440001



22.11.21 № 08/3-5-3360
На № _____ от _____

Открытое акционерное общество
«Электрические станции»

На № 15-11/11-2167
от 18.11.21 г.

Департамент профилактики заболеваний и госсанэпиднадзора
Министерства здравоохранения Кыргызской Республики, рассмотрев письмо
сообщает.

Вопросы образования, сбора, хранения, использования,
обезвреживания, транспортирования и захоронения отходов производства и
потребления, а также государственное управление, надзор и контроля в
области обращения с отходами, регулируется Законом Кыргызской
Республики от 13 ноября 2001 года № 89 «Об отходах производства и
потребления». Так же постановлением Правительства Кыргызской
Республики от 15 января 2010 года № 9 «Об утверждении классификатора
опасных отходов и методических рекомендаций по определению класса
опасности отходов» утвержден Классификатор опасных отходов, где
согласно наименованию отходов в п.17 вошли отходы строительства и
разрушения, загрязненные асбестами. Следует отметить, что
асбестосодержащие отходы относятся к опасным видам отходов. Статьей 10
вышеназванного Закона и постановлением Правительства Кыргызской
Республики от 28.12.2015 года № 885 «Об утверждении Порядка обращения с
опасными отходами на территории Кыргызской Республики» утвержден
порядок обращения с опасными отходами на территории Кыргызской
Республики, который предназначен для юридических и физических лиц,
деятельность которых связана с процессами обращения с опасными
отходами.

Определение количества опасных отходов на объектах временного
хранения и складирования производится в соответствии с Порядком
обращения с отходами производства и потребления в Кыргызской
Республике, утвержденным постановлением Правительства Кыргызской
Республики от 5 августа 2015 года № 559.

Необходимо отметить, что СанПиН 2.2.3.013-03 «Работа с асбестом и асбестосодержащими материалами», имеет рекомендательный характер, и согласно действующих нормативных правовых актов порядок обращения отходов, включая их утилизацию, не требует согласования с органами госсаннадзора. В настоящее время согласно структуры Кабинета Министров Кыргызской Республики, вопросы обращения отходов, включая хранения и утилизацию, возложены на Министерство природных ресурсов, экологии и технического надзора Кыргызской Республики.

Так же согласно ст.6 Закона Кыргызской Республики от 13.11.2001 года № 89 «Об отходах производства и потребления» определены объекты временного хранения и складирования опасных отходов на территории промышленного предприятия и объекты стационарного складирования и захоронения опасных отходов (полигоны). Так как в республике отсутствует полигон для захоронения опасных отходов, в настоящее время отходы на промышленных предприятиях хранятся на территории самого предприятия или при соблюдении требований Базельской Конвенции о контроле за трансграничной перевозкой опасных отходов и их удалением, могут быть вывезены за пределы республики.

Директор



С.А. Абдыкадыров

Исп. Сарыева Г.А.
323215

Informal translation

Ministry of Health of the Kyrgyz Republic
Department of Disease Prevention and State Sanitary-Epidemiological Surveillance

Date: 22.12.2021

No.08/2-5-3360

OJSC Electric Power Plants

Ref. No.15-11/U-2167 dated 18.11.2021

After considering of your letter, The Department of Disease Prevention and State Sanitary-Epidemiological Surveillance of the Ministry of Health of the Kyrgyz Republic (KR) informs the following.

Issues of formation, collection, storage, using, disposal, transportation of industrial and consumer waste, and also the state management, supervision and control of waste management is regulated by the Law of the KR No.89 dated 13 November 2001 “On industrial and consumer waste”. A Classifier of hazardous waste was approved by the Governmental Regulation No.9 dated 15 January 2010 “On approval of hazardous waste classifier and guidelines for determining of waste hazard class”, and according to name of waste, waste of construction and destruction decontaminated with asbestos was included in paragraph 17. It should be noted, asbestos containing waste is classified as hazardous waste. In accordance with paragraph 10 of above-mentioned Law and Governmental Regulation No.885 dated 28.12.2015 “On approval of procedure of handling hazardous waste at the territory of the Kyrgyz Republic”, the procedure of handling hazardous waste in the Kyrgyz Republic was approved, which is intended for legal entities and individuals whose activities related to hazardous waste.

Determination of amount of waste at temporary storage is made according to the Procedure of handling industrial and consumer waste in the Kyrgyz Republic approved by the Governmental regulation of the Kyrgyz Republic No.559 dated 5 August 2015.

It should be mentioned, The Sanitary Norms and Rules 2.2.3.013-03 “Work with asbestos and asbestos containing materials” is in the form of recommendation and according to current legislative acts, a procedure of handling waste including its utilization, does not require an agreement with the state surveillance authorities. At present and according to a structure of Cabinet of Ministers, waste issues including storage and utilization are transferred to the Ministry of natural resources, ecology and technical supervision of KR.

Also, according to article 6 of the Law of KR No.89 dated 13.11.2001 “On industrial and consumer waste”, facilities for temporary storage of hazardous waste are determined at the territory of industrial entities, and stationary storage facilities, disposal of hazardous waste are at intended landfill. As there is no intended/special landfill for hazardous waste in the country, at present industrial waste is stored at the territory of industrial entities or it could be transported out of the country with regard to the rules of Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their disposal.

Director

/signed/

S.A.Abdykadyrov