

# Environmental Monitoring Report

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2019 1<sup>st</sup> Semestral Report  
July 2019

## ARM: Power Transmission and Rehabilitation Project

Prepared by the Closed Joint Stock Company Electro Power Systems Operator (EPSO) for the Republic of Armenia and the Asian Development Bank (ADB).

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## Abbreviations

ADB	Asian Development Bank
ADSS	All Dielectric Self Supporting
AP	Affected People
BU DC	Back UP Dispatch Center
CC	Construction Contractor
CJSC	Closed Joint Stock Company
DIN	Deutsches Institut für Normung (German Institute for Normatives)
EHS	Environmental, Health & Safety
EHSS	Environmental, Health & Safety Specialist
EHSMS	Environment, Health and Safety Management System
EIA	Environmental Impact Assessment
EMF	Electric and Magnetic Fields
EMP	Environmental Management Plan
EMR	Environmental Monitoring Report
EMS	Electro Mechanical Systems
EPSO	Electro Power System Operator
FOC	Fiber Optic Cables
HPP	Hydro Power Plant
HSMS	Health and Safety Management System
HVEN	High Voltage Electric Networks
IA	Implementation Agency
IEC	International Electrotechnical Commission
IEE	Initial Environmental Examination
IFI	International Financial Institutions
kV	kilovolt
LLC	Limited Liability Company
LOTO	Lock-out Tag-out
LTI	Lost Time Incident
MEHSMR	Monthly Environmental, Health & Safety Monitoring Report

MSDS	Material Safety Data Sheet
NCN	Non-Conformance Notices
NCL	Non-Conformance Level
NGO	Non-Governmental Organization
NPP	Nuclear Power Plant
OHL	Overhead Transmission Line
OLTE	Optic Line Terminal Equipment
OPAC	Optical Attached Cable
OPGW	Optical Ground Wire
PIA	Project Implementation Agency
PIC	Project Implementation Consultant
PIU	Project Implementation Unit
PPE	Personal Protective Equipment
RA	Republic of Armenia (Armenia)
R/C	Reinforced Cement/Concrete
RoW	Right of Way
SAEMR	Semi-Annual Environmental Monitoring Report
SCADA	Supervisory Control and Data Acquisition
SEMP	Site Specific Environmental, Social and Health & Safety Management Plan
SNCO	State Non-Commercial Organization
TE	Telecommunication Equipment
TNMS	Telecommunication Network Management System
ToR	Terms of References
TSM	Technical Coordination Meeting
US EPA	United States Environmental Protection Agency,
VO	Variation Order
WHO	World Health Organization

# **1 INTRODUCTION**

## **1.1 Preamble**

The present Environmental Monitoring Report (EMR) summarizes the Environmental, Health & Safety status of project supervision 6 months, for the period of January-June 2019 by EPSO CJSC.

The report contains the following sections:

Part I. Introduction

Part II. Project description and current activities

Part III. Environmental Safeguard activities

Part IV. Results of environmental monitoring

Part V. Functioning of the Site Specific Environmental Management Plan (SEMP)

Part VI. Good practice and opportunity for improvement

Part VII. Summary and recommendations, and

Annexes

The main accomplishments of assignment for the January-June 2019 period were:

Monitoring of SEMP implementation throughout the site visits, site inspection and document review.

Regular meetings (monthly Technical Coordination/TCM and monthly Environmental, Health & Safety/EHS Meetings) organized by Consultant with Client and Contractor staff.

Review of Contractor's Monthly EHS monitoring reports (MEHSMR) was carried out by Consultant (*see example of MEHSMR annex 1*).

Site Specific Environmental Management Plan implementation details, fact findings and project further EHS execution was been discussed and agreed during the monthly Technical Coordination Meetings/TCMs, EHS working meetings and site inspection/audit visits with Consultant and ADB representatives.

## **1.2 Headline Information**

Under the Extension and Upgrade of the SCADA/EMS Sub-Project within the framework of "Power Transmission Rehabilitation Project", the following construction activities were implemented during the reporting period (January-June, 2019):

- Construction works on OPGW "Sevan" transmission line (from Sevan HPP to Hrazdan HPP substation) were commenced on January 09, 2019 and finalized on April 01.
- Construction works on OPGW "Gyumri" transmission line (from Vanadzor-2 substation to Gyumri-2 substation) were commenced on April 09, 2019 and are ongoing.

- Back-Up Dispatch Center (BU DC) construction works started on September 20, 2018 and are ongoing.

*Maps of active working locations for reporting period are presented in Annex 2.*



## **2 PROJECT DESCRIPTION AND CURRENT ACTIVITIES**

### **2.1 Project Description**

The Project area covers 5 regions (Shirak, Lori, Gegharkunik, Kotayk and Syunik) of the Republic of Armenia and Yerevan.

This Project is foreseen to complement the Supervisory Control and Data Acquisition (SCADA) system in Armenia's national grid by ADB funding. Thus, during the Project implementation the Contractor shall

- supply and install of new Fibre Optic Cables (FOC), deployed as follows:
  - (i) OPGW (Optical Ground Wire) – at all around 211.5km length along 220 and 110 kV OHL the existing earth wires shall be replaced by an OPGW;
  - (ii) ADSS (All Dielectric Self Supporting) - at an around 1.5km ADSS optical fibre cable shall be installed;
  - (iii) OPAC (Optical Attached Cable), laid in underground trenches/cableways – at around 13.0 km additional OPAC or Underground Optical Cables shall be installed;
  - (iv) Fibre Optic Line Terminal Equipment (OLTE),
- supply and install of Telecommunication Equipment (TE) such as SDH Add-and-Drop-Multiplexers, PDH multiplexers to collect low rate traffic, other network components,
- supply and install of telephone systems with digital PBX (IP-PBX) and subscribers' equipment,
- supply and install of telecommunication power supply equipment and equipment racks,
- supply and install of Telecommunication Network Management System (TNMS),
- construction of New Back Up Dispatch Centre (BU DC) at the address: 50 Admiral Isakov Avenue, Yerevan.

According to the Initial Environmental Assessment (IEE) the Project was considered as a Category B Project and not requiring an Environmental Impact Assessment (EIA).

The Project is not requiring acquisition of land. All construction activities of the BU DC are take place within the properties of the existing facilities belonging to ENA.

The replacement of the usual earth wires by optical ground wires is take place at existing overhead lines using existing access roads.

The replacement of the earth wires is done not needing access to each single tower with trucks and the earth wires is not touch the ground during replacement.

The replacement of the existing earth wire by OPGW is done in a way that access with small trucks will be necessary only to angle towers.

All other towers in between is approachable only by footpath. The re-stringing works are not interfering with objects or terrain between the section towers.

In general, the main rehabilitation measures in the frame of Project activities will cover replacement and extension of electrical equipment, OPGW and OPAC, as well construction works of a new BU DC.

## **2.2 Project Contracts and Management**

The following Organizations are involved in this Project implementation as follows:

- 1. Lender - Asian Development Bank (ADB)*
- 2. Borrower - High Voltage Electric Networks (HVEN) and Electro Power System Operator (EPSO) CJSCs*
- 3. Consultant - Project Implementation Consultant (PIC): Tractebel Engineering GmbH, CESI S.P.A. and AMERIA Consultant Joint Venture (Lahmeyer International GmbH/CESI S.P.A. /Ameria CJSC Consortium)*
- 4. PIU - EPSO Program Implementation Unit*
- 5. Contractor - Redinet CJSC and Siemens Aktiengesellschaft, Österreich Contractor Consortium*

EPSO as responsible IA for the two parts of the project recruited a Project Implementation Consultant. The national and international team assist EPSO as project supervision consultant on the rehabilitation Project. The Consultant also provides capacity building training to EPSO staff for project management, EHS supervision, operation and maintenance for the Project. Consultant assignment also includes the update of the environmental management and monitoring plans (EMPs) and detail environmental mitigation measures, if changes in the design or additional works occur.

Within this Project two separate Specific Environmental Management Plans (SEMPs) have been developed by Contractor and reviewed by Consultant: one for the replacement of the ground wires by optical ground wires and second for the construction of BU DC. The EMPs contain mitigation and monitoring measures for the construction and for the operational phases. The Contractor is an entity responsible for the implementation of the SEMPs. Contractor's Environmental, Health and Safety Specialist (EHSS) is responsible for developing, implementing and monitoring the SEMP procedures. Contractor staff is responsible for managing the SEMP.

Contractor as part of SEMP Implementation is responsible for preparing monthly EHS/Safeguard Monitoring Reports including the progress of the implementation of the Environmental Management Plan (EMP). These reports are submitted to EPSO and PIC for review and recommendations. Final versions of these reports shall be distributed to all involved departments. The reports shall contain all discrepancies from the EMP and list all EHS relevant incidents and accidents, registered grievances and grievance redress report (if any) that occur during the implementation of the project.

Based on these reports and on own construction site inspections/audits the Consultant (PIC) together with EPSO prepare semi-annual environmental monitoring reports (SAEMR) and submit them to ADB.

The environmental costs for upgrading of the SCADA system will add up to about 99,000 USD. BU DC construction was included in the upgraded Project TA 8198 - ARM: Power Transmission Rehabilitation Project (46416-001) as Variation Order (VO) and didn't raised/exceed loan amount.

The following personnel are involved to conduct EHS management/supervision and Monitoring requirements of the Project:

**1. Lender/ADB** – Mr. Duncan A. Lang, Environmental specialist in Central and West Asia; Asian Development Bank: [dlang@adb.org](mailto:dlang@adb.org) , Ms. Armine Yedigaryan, National Environmental safeguards consultant-Armenia; A-8663 REG: Sustainable Environmental Management of Projects in Central and West Asia; Asian Development Bank, Armenia Resident Mission; Address: 10 V. Sargsyan st. Piazza Grande Business Center/3rd floor[ Telephone: 010-54-63-70/71/72/73 ext. 103; e-mail: [ayedigaryan.consultant@adb.org](mailto:ayedigaryan.consultant@adb.org)

**2. Borrower/EPSCO CJSC** – Mr. Mnatsakan Mnatsakanyan, General Director EPSCO CJSC, Project Manager; Address: 27, Abovyan Str., 0009 Yerevan, Republic of Armenia[ Telephone: +37410 52 47 25; e-mail: [office@energyoperator.am](mailto:office@energyoperator.am)

**3. Consultant (PIC)/ Tractebel Engineering GmbH, CESI S.P.A. and AMERIA Consultant Joint Venture** – Mr. Armen Bodoyan, EHS expert; Address: 54/3 Arshakuniats avenue, apt. 17, Yerevan-0061; Telephone: +37495 45 04 45, e-mail: [armbod@yahoo.fr](mailto:armbod@yahoo.fr)

**4. PIU - EPSCO Program Implementation Unit** – Mr. Eduard Fatyan, Project EHS Responsible; Address: 27, Abovyan Str., 0009 Yerevan, Republic of Armenia; Telephone: +37498 70 98 77; e-mail: [eduardfatyan@yandex.com](mailto:eduardfatyan@yandex.com)

**5. Contractor/ Redinet/Siemens Consortium** - Tigran Oganezov, EHS Specialist; Address: 24/7–24/8 Azatutyan Ave., Yerevan 0014, Armenia; Telephone: +37491 00 20 11; e-mail: [toganezov@yahoo.com](mailto:toganezov@yahoo.com)

## 2.3 Project Activities During Current Reporting Period

Under the Extension and Upgrade of the SCADA/EMS Sub-Project within the framework of “Power Transmission Rehabilitation Project”, the following construction activities were implemented during the reporting period (January-June, 2019): Monthly construction activities are presented in annex 2.

- Construction works on OPGW “Sevan” transmission line (from Sevan HPP to Hrazdan HPP substation) were commenced on January 09, 2019 and finalized on April 01.
- Construction works on OPGW “Gyumri” transmission line (from Vanadzor-2 substation to Gyumri-2 substation) were commenced on April 09, 2019 and are ongoing.
- Back-Up Dispatch Center (BU DC) construction works started on September 20, 2018 and are ongoing.

*Semi-annual distribution of activities for January-June 2019 period are presented below in Table 1:*

Photos and checklist are presented in annex 1 included in Monthly EHS Monitoring Reports (MEHSMR – PDF format)

**Table 1: Type of construction works implemented during the January - June 2019 period**

Type of works	Section	Status of works
<b>Sevan 110kV OPGW</b>		
OPGW preparation	Section 1 from 104	Finished
OPGW uprolling	Section 1 from 104	Finished
OPGW fixing	Section 1 from 104	Finished
<b>Gyumri 220kV OPGW</b>		
OPGW preparation	Section from 90-247	Finished
OPGW uprolling	Section from 90-247	Finished
OPGW fixing	Section from 90-247	Finished
<b>Back-Up Center</b>		
Main building	Foundation work	Finished
	Basement's Walls	Finished
	Basement's R/C Constructions/	Finished
	Basement's R/C Slabs/	Finished
	First floor's Walls	Finished
	First floor's R/C	Finished

	Lighting in the Central Dispatch Center	Finished
	Roofing	Finished
	Inner walls stonework	Finished
	Water supply and sanitation	Finished
	Doors and windows installation	Finished
	Exterior cosmetic works	Finished
	Plumbing / Electrical Installation	Finished
	Interior Cosmetic, Plastering works	Finished
	Installation of heating, cooling and air conditioning systems of building	To be continued in July
Headwall with Fence and outdoor	Soiling works	Finished
	Foundation work	Finished
	R/C Constructions/	To be continued in July
	Backfilling, compacting of soil	To be continued in July
	Wall stacking	To be continued in July
	Tread milling	To be continued in July
	Covering by basalt plate in bottom	Finished
	Covering by basalt plate on the top	Finished
	Backfilling, compacting of soil	To be continued in July

	Water supply and sewerage system construction	To be continued in July
	Manufacturing and installation of gates	To be continued in July
Substation	R/C Constructions	Finished
	External walls /	Finished
	Water supply and sanitation	Finished
	Roofing	Finished
	Inner walls stonework	Finished
	Construction of underground cable troughs Substation-Building	Finished
	Doors and windows installation	Finished
	Electrical Installation	To be continued in July
	Interior Cosmetic, Plastering works	To be continued in July
	Exterior cosmetic works	To be continued in July
	Construction of underground cable troughs Substation Building	Finished
Additional square	Foundation work	Finished
	R/C Constructions	To be continued in July
	External walls	To be continued in July
	Electrical Installation	To be continued in July
	Water supply and sanitation	To be continued in July

	Interior Cosmetic, Plastering works	To be continued in July
	Exterior cosmetic works	To be continued in July
	Construction of underground cable troughs Substation Building	To be continued in July

Below Table 2 presenting the semi-annual maximum and minimum average number of workers and anticipated changes in staff on all active construction sites: Back-Up DC; Sevan 110kV OPGW and Gumri 220kV OPGW.

Monthly maximum and minimum numbers of workers worked and anticipated changes in staff on all active construction sites are presented in annex 3.

**Table 2: Number of workers for January-June 2019 period**

Construction site	Workin period	Number of workers in January		Anticipated changes in staff in January-April
		Minimum (average/month)	Maximum (average/month)	
Sevan 110kV OPGW	January-April	15 person	18 person	The average number of workers increased - 3
Gumri 220kV OPGW	April-June	13,3 person	20 person	The average number of workers increased - 7
BU DC	January-June	17.6 person	21 person	The average number of workers increased - 3

## 2.4 Description of Any Changes to Project Design

No changes.

## 2.5 Description of Any Changes to Agreed Construction methods

No changes.

### 3 ENVIRONMENTAL SAFEGUARD ACTIVITIES

#### 3.1 General Description of Environmental Safeguard Activities

Contractor's Environmental team implemented the following environmental safeguard works during the reporting period.

- a. Consultant EHS expert organized and conducted regular monthly EHS meetings
- b. Consultant and Contractor EHS team organized and conducted environmental monitoring and inspection visits to construction sites.
- c. Consultant and Contractor EHS team organized and conducted EHS trainings and tool box meetings
- d. Contractor EHS team drafted and submitted to the Consultant Monthly EHS reports
- e. Consultant EHS expert and Contractor EHS team identified and documented EHS Non-Conformances
- f. Contractor developed and implemented relevant Mitigation Measures where appropriate, under Consultant EHS expert supervision.
- g. Posters with project information contacts and how the community inhabitants may apply in case of the complaints, suggestions or questions arise during the construction process, are posted at Contractor's mobile house. Complaints register was available in mobile houses in the construction sites.

Below in table 3 presented the list of Environmental activities and documents submitted for the January-June 2019 reporting period

**Table 3. List of monthly EHS activities and documents for January-June 2019 period**

Month	Environmental safeguard activities	EHS documentations
January	<ul style="list-style-type: none"><li>- Consultant EHS expert and Contractor EHS team Monthly EHS meeting held on 14th of January</li><li>- Site EHS regular monitoring visits conducted on 11th (BU DC) and 24<sup>th</sup> (Sevan 110 kv) of January, 2019</li><li>- BU DC site EHS randomly site inspection visit was conducted on 15th of January, 2019.</li></ul>	<ul style="list-style-type: none"><li>- Monthly Environmental, Health and Safety report for December was submitted to Consultant on 10 of January 2019.</li><li>- EHS Checklist, Non-Conformances and required Mitigation measures documents carried out for BU DC and Sevan 110kv active sites (to be included in January Monthly EHS Monitoring Report)</li></ul>
February	<ul style="list-style-type: none"><li>- Consultant EHS expert and Contractor EHS team Monthly EHS meeting held on 5th of February</li><li>- Site EHS regular monitoring visits conducted on 22nd (BU DC) and 26<sup>th</sup> (Sevan 110 kv) of February, 2019</li></ul>	<ul style="list-style-type: none"><li>- Monthly Environmental, Health and Safety report for January was submitted to Consultant on 2 of February 2019</li><li>- EHS Checklist, Non-Conformances and required Mitigation measures documents carried out for BU DC and Sevan 110kv active sites (to be included in February Monthly EHS Monitoring</li></ul>



		Report)
March	<ul style="list-style-type: none"> <li>- Consultant EHS expert and Contractor EHS team Monthly EHS meeting held on 7th of March</li> <li>- Site EHS regular monitoring visits conducted on 19th (Sevan 110kv) and 29th (BU DC) of March</li> </ul>	<ul style="list-style-type: none"> <li>- Monthly Environmental, Health and Safety report for February was submitted to Consultant on 5 of March 2019.</li> <li>- EHS Checklist, None-Conformances and required Mitigation measures documents carried out for BU DC and Sevan 110kv active sites (to be included in March Monthly EHS Monitoring Report)</li> </ul>
April	<ul style="list-style-type: none"> <li>- Consultant EHS expert and Contractor EHS team Monthly EHS meeting held on 9th of April</li> <li>- Site EHS regular monitoring visits conducted on 19th (BU DC) and 30th (Gyumri 220 kv) of April</li> </ul>	<ul style="list-style-type: none"> <li>- Monthly Environmental, Health and Safety report for March was submitted to Consultant on 15 of April 2019.</li> <li>- EHS Checklist, None-Conformances and required Mitigation measures documents carried out for BU DC and Gyumri 220kv active sites (to be included in April Monthly EHS Monitoring Report)</li> </ul>
May	<ul style="list-style-type: none"> <li>- Consultant EHS expert and Contractor EHS team Monthly EHS meeting held on 10th of May</li> <li>- Site EHS regular monitoring visits conducted on 11th (BU DC) and 21st (Gyumri 220 kv) of May</li> <li>- BU DC site EHS randomly site inspection visit was conducted on 30th of May, 2019.</li> </ul>	<ul style="list-style-type: none"> <li>- Monthly Environmental, Health and Safety report for April was submitted to Consultant on 7 of May 2019.</li> <li>- EHS Checklist, None-Conformances and required Mitigation measures documents carried out for BU DC and Gyumri 220kv active sites (to be included in May Monthly EHS Monitoring Report)</li> </ul>
June	<ul style="list-style-type: none"> <li>- Consultant EHS expert and Contractor EHS team Monthly EHS meeting held on 7th of June</li> <li>- Site EHS regular monitoring visits conducted on 13-14th (Gyumri 220 kv) and 15th (BU DC) of June</li> <li>- BU DC site EHS randomly site inspection visit was conducted on 25th of June, 2019</li> <li>- Gyumri 220 kv OPGW site EHS randomly site inspection visit was conducted on 28-29th of June, 2019</li> </ul>	<ul style="list-style-type: none"> <li>- Monthly Environmental, Health and Safety report for May was submitted to Consultant on 5 of June 2019.</li> <li>- EHS Checklist, None-Conformances and required Mitigation measures documents carried out for BU DC and Gyumri 220kv active sites (to be included in June Monthly EHS Monitoring Report)</li> </ul>

### 3.2 Site Audits

During the January-June 2019 reporting period any Formal Audit was not undertaken by PIU and ADB staff.

The following site Inspection (regular/announced and randomly) and monitoring visits (see table 4) were conducted by Contractor and Consultant EHS staffs (Consultant EHS expert, Contractor E&S and H&S Specialists):

**Table 4. Sites inspection and monitoring visits by Consultant and Contractor EHS staff**

Date of visit	Site location	Participant Name	Purpose of visit	Significant Findings	Reference
11th January	BU DC	<u>Consultant</u> EHS Expert: Armen Bodoyan <u>Contractor - Redinet LLC</u> Environmental Specialist: Tigran Oganezov Health and Safety Specialist: Mesrop Mesropyan	Regular/announced site inspection and monitoring visit	No major EHS findings	See Annex 1 MER Jan 2019.pdf
15th January	BU DC	<u>Consultant</u> EHS Expert: Armen Bodoyan <u>Contractor - Redinet LLC</u> Environmental Specialist: Tigran Oganezov Health and Safety Specialist: Mesrop Mesropyan	Randomly site inspection visit	No major EHS findings	See Annex 1 MER Jan 2019.pdf
24th January	Sevan 110kv tower N49-52	<u>Consultant</u> EHS Expert: Armen Bodoyan <u>Contractor - Redinet LLC</u> construction foreman: Karen Aghababyan Environmental Specialist: Tigran Oganezov Health and Safety Specialist: Mesrop Mesropyan	Regular/announced site inspection and monitoring visit	No major EHS findings	See Annex 1 MER Jan 2019.pdf
22nd February	BU DC	<u>Consultant</u> EHS Expert: Armen Bodoyan <u>Contractor - Redinet LLC</u> Environmental Specialist: Tigran Oganezov Health and Safety Specialist: Mesrop Mesropyan	Regular/announced site inspection and monitoring visit	No major EHS findings	See Annex 1 MER Feb 2019.pdf
26 February	Sevan 110kv tower N89-93	<u>Consultant</u> EHS Expert: Armen Bodoyan <u>Contractor - Redinet LLC</u> construction foreman: Karen Aghababyan Environmental Specialist: Tigran Oganezov Health and Safety Specialist: Mesrop Mesropyan	Regular/announced site inspection and monitoring visit	No major EHS findings	See Annex 1 MER Feb 2019.pdf

19th March	Sevan 110kv tower N89-93	<u>Consultant</u> <i>EHS Expert:</i> Armen Bodoyan <i>Contractor - Redinet LLC</i> <i>Project manager:</i> Artak Gabrielyan <i>construction foreman:</i> Karen Aghababyan <i>Environmental Specialist:</i> Tigran Oganezov <i>Health and Safety Specialist:</i> Mesrop Mesropyan	Regular/announced site inspection and monitoring visit	No major EHS findings	See Annex 1 MER March 2019.pdf
29th March	BU DC	<u>Consultant</u> <i>EHS Expert:</i> Armen Bodoyan <i>Contractor - Redinet LLC</i> <i>Project manager:</i> Artak Gabrielyan <i>Environmental Specialist:</i> Tigran Oganezov <i>Health and Safety Specialist:</i> Mesrop Mesropyan	Regular/announced site inspection and monitoring visit	No major EHS findings	See Annex 1 MER March 2019.pdf
19th April	BU DC	<u>Consultant</u> <i>EHS Expert:</i> Armen Bodoyan <i>Contractor - Redinet LLC</i> <i>Environmental Specialist:</i> Tigran Oganezov	Regular/announced site inspection and monitoring visit	No major EHS findings	See Annex 1 MER April 2019.pdf
30th April	Gyumri 220kv	<u>Consultant</u> <i>EHS Expert:</i> Armen Bodoyan <i>Contractor - Redinet LLC</i> <i>Project manager:</i> Artak Gabrielyan <i>construction foreman:</i> Karen Aghababyan <i>Environmental Specialist:</i> Tigran Oganezov	Regular/announced site inspection and monitoring visit	No major EHS findings	See Annex 1 MER April 2019.pdf
11th May	BU DC	<u>Consultant</u> <i>EHS Expert:</i> Armen Bodoyan <i>Contractor - Redinet LLC</i> <i>Environmental Specialist:</i> Tigran Oganezov	Regular/announced site inspection and monitoring visit	No major EHS findings	See Annex 1 MER May 2019.pdf
21st May	Gyumri 220kv	<u>Consultant</u> <i>EHS Expert:</i> Armen Bodoyan <i>Contractor - Redinet LLC</i> <i>construction foreman:</i> Karen Aghababyan <i>Environmental Specialist:</i> Tigran Oganezov	Regular/announced site inspection and monitoring visit	No major EHS findings	See Annex 1 MER May 2019.pdf
30th May	BU DC	<u>Consultant</u> <i>EHS Expert:</i> Armen Bodoyan <i>Contractor - Redinet LLC</i> <i>Environmental Specialist:</i> Tigran Oganezov	Randomly site inspection visit	No major EHS findings	See Annex 1 MER May 2019.pdf
13-14th June	Gyumri 220kv	<u>Consultant</u> <i>EHS Expert:</i> Armen Bodoyan <i>Contractor - Redinet LLC</i> <i>construction foreman:</i> Karen Aghababyan <i>Environmental Specialist:</i> Tigran Oganezov	Regular/announced site inspection and monitoring visit	No major EHS findings	See Annex 1 MER June 2019.pdf
15th June	BU DC	<u>Consultant</u> <i>EHS Expert:</i> Armen Bodoyan <i>Contractor - Redinet LLC</i> <i>Environmental Specialist:</i>	Regular/announced site inspection and monitoring visit	No major EHS findings	See Annex 1 MER June 2019.pdf

25th June	BU DC	<u>Consultant</u> EHS Expert: Armen Bodoyan Contractor - Redinet LLC Environmental Specialist:	Randomly site inspection visit	No major EHS findings	See Annex 1 MER June 2019.pdf
28-29th June	Gyumri 220kv	<u>Consultant</u> EHS Expert: Armen Bodoyan <u>Contractor - Redinet LLC</u> construction foreman: Karen Aghababyan Environmental Specialist: Tigran Oganezov	Randomly site inspection visit	No major EHS findings	See Annex 1 MER June 2019.pdf

*It is important to note that during the January-June 2019 reporting period and during the whole project implementation period any Formal Audit was not undertaken, only regular/announced and randomly active site EHS inspections have been conducted by Consultant and Contractor EHS staff. Based on the previous and actual good EHS performance of the Contractor, documented in semi-annual EHS monitoring reports, submitted previously to the Client and to ADB, it was evaluated (estimated) by consultant that there was and is no necessity to undertake or to require formal EHS Audit for the Project whole implementation period. From the other hand, there was and is no any prerequisite from the Lender (ADB) side as well for any formal EHS Audit.*

### 3.3 Issues Tracking (Based on Non-Conformance Notices)

During the reporting period Consultant and Contractor Environmental Health and Safety team organized and conducted environmental monitoring and Health and Safety inspection visits to construction sites. Inspections and monitoring activities were done according and based on the IEE and Site Specific Environmental Management Plan (SEMP) requirements. A site visits inspection checklists, corrective actions plan were filled in and were provided to the Consultant team as an EHS Compliance & Monitoring reports. The participants of site inspection and monitoring visits reviewed the existing Environmental and HS situation on site and discussed the possible environmental and HS issues which could occur or exist during the construction works, regularly checked related EHS documentations presence in active work sites, health and safety, environmental compliance during the works process.

Below, in Table 5, general typology of identified EHS discrepancies and undertaken corrective actions are provided for the reporting period January-June 2019.

**Table 5: Typology of identified EHS discrepancies, Status and Corrective actions undertaken**

N	EHS discrepancies	Non-Conformance level	Number of issues Total for project	Status and Corrective action
1.	None appropriate/damaged safety signs and safety fencing around the construction site, safety barricades of pits and structure.	Minor	8	<b>Corrected.</b> Previously observed damaged tape fences and missing signs fully restored. All new pits are fenced
2.	PPEs/ safety boots, helmet, gloves missing for newly hired employees	Minor	18	<b>Corrected.</b> Provide all workers with appropriate PPEs/ safety boots, helmets, gloves etc. as required
3.	Few unsafe/unstable stairs have been identified	Minor	5	<b>Corrected.</b> provide stable stairs were required
4.	None Proper Insulation of el. wires connections and LOTO system with non-appropriate signs	Minor	3	<b>Corrected.</b> Proper insulation of el. wires connections were required. Proper LOTO system and signs installation.
5.	None appropriate storage area and MSDSs for chemicals	Minor	2	<b>Corrected.</b> Provide appropriate Chemicals storage area and relevant MSDSs.
6.	Protection of armature reinforcement edges was missing	Minor	2	<b>Corrected.</b> Appropriate wooden or plastic protection caps of armature edges must be provided
7.	Scaffolding without proper back protection rails	Minor	1	<b>Corrected.</b> Proper back protection rails must be installed
8.	Poor housekeeping and construction waste dispersion all around the construction site	Minor	36	<b>Corrected.</b> Daily housekeeping must be organized and proper and timely removal of construction solid waste must be done twice/day at least
9.	Medical check-up docs were not present at site they must be kept in construction site permanently	Minor	1	<b>Corrected.</b> Workers Medical check-up docs will be kept on site.
10.	Traces of the not properly discharged concrete wash water were observed.	Minor	3	<b>Corrected.</b> Previously observed traces of the not properly

	Concrete were mixed in the not proper way (on the ground without isolated layer).			discharged concrete must be removed as construction waste and area cleaned. Concrete must be mixed on the metallic isolated layer
11.	None proper stored construction materials	Minor	6	<b>Corrected.</b> Construction materials must be properly stored in order do not create tripping, falling hazards

Below in Table 6, summary of Issues Tracking Activity for January-June 2019 reporting period by active sites and for the whole project are presented:

**Table 6. Summary of Issues Tracking Activity for January-June 2019**

	BU DC	Sevan 110kV OPGW	Gyumri 220kV OPGW	Total for the Project
Total Number of Issues for Project	35	25 (*)	25 (*)	85
Number of Open Issues	3	0	0	3
Number of Closed Issues	32	25	25	82
Percentage Closed	91.4%	100%	100%	96.5%
Issues Opened This Reporting Period	35	0	0	85
Issues Closed This Reporting Period	32	25	25	82

(\*) negligible issues closed immediately in sites

### 3.3.1 Grievance redress mechanism (GRM)

Posters with project information contacts and how the community inhabitants may apply in case of the complaints, suggestions or questions arise during the construction process, are posted at Contractor's mobile house. Complaints register - books were available in mobile houses in the construction site. In the reporting period complaints were not received.

## 3.4 Trends

Good improvement of compliance of SEMP requirements was demonstrated in compare with previous months (See table7)

**Table 7. Trends of issues for the period from January 2019 to June 2019**

Monthly Report	Total No of Issues	% issues Closed	% issues closed late
January	15	77	23
February	3	67	33
March	4	50	50
April	3	33	67
May	6	33	67
June	7	57	43

*Excellent performance of compliance of SEMP requirements was demonstrated in comparison with previous quarter (see table 8)*

**Table 8. Trends of issues for the period from Q1-2018 to Q2-2019**

Quarterly Report	Total No of Issues	% issues Closed	% issues closed late
Q1- 2018	126	83	17
Q2-2019	85	96,5	3,5

*In the reporting period non-compliance notices were not issued by the Consultant, all identified discrepancies have been evaluated as «minor» or «negligible» and corrected immediately or in required deadlines by consultant EHS expert.*

### **3.5 Unanticipated Environmental Impacts or Risks**

*During the reporting period (January-June, 2019) the unanticipated environmental impacts and risks were not identified.*

## **4 RESULTS OF ENVIRONMENTAL MONITORING**

### **4.1 Overview of Monitoring Conducted during Current Period**

Instrumental monitoring was not carried out during reporting period, since the works causing noise, vibration and dust were not implemented in OPGW installation sites, as well as all construction works (BU DC) during reporting month were implemented far from existing roads and inhabitation places (the closest receptors (private houses in west and north, residential buildings in east and M5, avenue Isakov in south) are far from the construction site at least 0.5km, at the same time the construction site have stone fence with 3.5m height. The buildings of ArmAtom next to the construction site are abandoned and there is no any activities in these 2 buildings), all construction works were commenced at 09:00 am and complete at 6:00pm. Technical inspection (noise level, vibration, air emission authorized level) of trucks/machinery were checked and certified by specialized organization before they were engaged and visually monitored by Contractor's Environmental, Health and Safety specialist during the site inspections. Traffic of machinery was organized within existing roads.

### **4.2 Trends**

During the reporting period (January-June, 2019) and whole project implementation period no major excess of noise level, vibration and air emission observed.

### **4.3 Summary of Monitoring outcomes**

Based on visual monitoring satisfactory results conducted by Contractor's EHS staff as it was defined by IEE and SEMP and measures taken by Contractor like

- semi-annual inspection of machinery/trucks,
  - limitation of working hours from 9:00am to 6:00pm,
  - daily examination of equipment and mechanisms,
  - dust suppression measures by water spreading where needed
- etc.

and monthly inspections by Consultant EHS expert, it was considered that there is no necessity to undertake additional instrumental monitoring measures. As it was mentioned above, the Instrumental monitoring was not recommended, since the works causing noise, vibration and dust were not implemented in OPGW installation sites, as well as all construction works (BU DC) during reporting month were implemented far from existing roads and inhabitation places (the closest receptors (private houses in west and north, residential buildings in east and M5/avenue Isakov in south) are far from the construction site at least 0.5km, at the same time the construction site have stone fence with 3.5m height. The buildings of ArmAtom next to the construction site are abandoned and there is



no any activities in these 2 buildings), all construction works were commenced at 09:00 am and complete at 6:00pm.

During the reporting period (January-June, 2019) period excess of noise level, vibration and air emission were not observed.

#### **4.4 Material Resources Utilisation**

##### **4.4.1 Current Period**

N/A

##### **4.4.2 Cumulative Resource Utilisation**

N/A

#### **4.5 Waste Management**

The following waste was generated and/ or removed during the reporting period:

Construction waste generated as a result of demolition of old grounding wires is temporary collected in the Redinet LLC base in Yerevan before being handed over to HVEN. All used/empty coils of Fiber Optic Cables and dismantled/changed old equipment temporary collected (1 week) in the Redinet LLC base in Yerevan before being handed over to EPSO. During the reporting period Contractor were dismantled, transported to the storage area of HVEN CJSC and handed over to HVEN CJSC South branch 19,450 kg of grounding wire, 103 pieces of insulators and 174 pieces of damper (Act on handling attached in the Annex 5).

Solid waste (garbage) was collected in bins specially installed at construction site near mobile house, than was transported to the Redinet LLC base in Yerevan and transported to the Nubarashen dump site by Sanitek LLC (according to the contract between Redinet LLC and Sanitek LLC) and by Kanaker-Zeytun Administrative district (according to the Payment invoice for 2018-2019 years).

No hazardous wastes, no dangerous wastes were generated during the Project implementation.

The sites were handled over under the condition of further obligatory cleaning and improvement.

##### **4.5.1 Current Period**

During reporting period Contractor were dismantled, transported to the storage area of HVEN CJSC and handed over to HVEN CJSC South branch 19450 kg of grounding wire, 103 pieces of insulators and 174 pieces of damper (Act on handling attached in the Annex 5).

##### **4.5.2 Cumulative Waste Generation**

N/A

## **4.6 Health and Safety**

No incidents/accidents (LTI, MTI, Near Misses) occurred during the reporting period, Contractor staff has exceptional achievement with «Zero EHS Incident/accident» achievement started from the beginning/start of the project.

All Contractor's workers and staff were provided with and using job-specific PPEs. All mechanisms and tools (set of hand tools, hand winch, counterweights, vibration dampener etc.) which were used by workers during reporting period were inspected and safe.

Appropriate Health and safety inductions were implemented during construction works in BU DC construction, Sevan 110kV OPGW and Gyumri 220kV OPGW installation sites. The foremen of mentioned construction sites were instructed to keep the HS induction journals in the mobile houses in construction sites.

The workers were provided by sanitary-hygienic necessities within camp area; mealtime and winter rest facilities, washing and drinking water.

Contractor was hired the doctor to organize proper medical check-up.

### **4.6.1 Community Health and Safety**

No incidents/accidents occurred during the reporting period and during the whole project implementation.

### **4.6.2 Worker Safety and Health**

No incidents/accidents (LTI, MTI, Near Misses) occurred during the reporting period, Contractor staff has exceptional achievement with «Zero EHS Incident/accident» achievement started from the beginning/start of the project.

All Contractor's workers and staff were provided with and using job-specific PPE. All mechanisms and tools (set of hand tools, hand winch, counterweights, vibration dampener etc.) which were used by workers during reporting month were inspected and safe.

Appropriate Health and safety inductions were implemented during construction works in BU DC, Sevan 110kV and Gyumri 220kV OPGW installation sites. The foremen of mentioned construction sites were instructed to keep the HS induction journals in the mobile houses in construction sites.

The workers were provided by sanitary-hygienic necessities within camp area; mealtime and winter rest facilities, washing and drinking water.

Electrical supplies switch over permit made during reporting period in Sevan 110kV and Gyumri 220kV transmission line the frame of under the responsibility of EPSO and HVEN according to the Contractor's request (see examples of permit in annex 6).

Necessary amount of road signs for other sections of road already prepared and collected in the mobile house area and will be installed before commencement of works as needed.

### **Traffic management**

All construction works during reporting period construction traffic was organized not to interfere with public traffic, not to block the public and pedestrian roads, as well as the entrance into properties, small businesses.

All construction works were commenced at 09.00 am and complete at 6.00pm.

Traffic of machinery was organized within RoW. New alternative/temporary roads for machinery and trucks traffic were not constructed during reporting period.

Driving and technical inspection licenses trucks/machinery were checked by Contractor's Environmental, Health and Safety specialist and Consultant EHS expert before they were hired.

During the reporting period public roads were not blocked and road traffic was not interrupted.

## **4.7 Training**

### **Public hearings, awareness raising, information disclosure**

To fully comply with the ADB's policy and contractual requirements on Public Consultation and Information Disclosure the public hearing with participation of affected people (ArmAtom CJSC representatives and residents of the buildings and houses situated nearby the BU DC Construction site) has been organized on 26 of October 2018 in ArmAtom CJSC conference room (Admiral Isakov 50/2). Public consultation and information disclosure sessions were conducted in affected communities before the start of works of Sevan 110kV and Gyumri 220kV OPGW installation works on 11th and 15th of January (Geghamavan, Varser and Ddmashen, Zovaber communities) and on 12th and 19th of April (Vahramaberd, Marmashen, Djadjur and Mets Parni, Sarahart, Ardjut) for affected communities to introduce Project details, to disclose Project related EHS risks and mitigation measures to be implemented. Representatives from nearby communities (mentioned above), RA Road Policy, and Mazpetarans (from Kotayk, Gegharkunik, Shirak and Lori local self governmental bodies) where participated. The aim of public hearing was to provide timely disclosure of relevant and adequate information that is understandable and accessible to affected people and other stakeholder to present the project implementation issues, risks (electricity switch over, likely harm to the harvest, access of trucks and machinery to the towers by existing roads etc.) and mitigation measures.

During the meeting the upcoming OPGW installation works, environmental, social concerns and proposed mitigation measures were made available to the public, the relevant authorities and other interested parties. It was noted that surveys showed that the potential negative/adverse impacts of the Project will be temporary and «minor» and/or «negligible» and will be mitigated and minimized

up to the «No Impact» through measures specified by the Site Specific Environmental Management Plan (SEMP).

### **Staff trainings**

Contractor organized and implemented environmental, H&S initial training for the engineering staff, foremen and workers who work on BU DC Construction, Sevan 110kV and Gyumri 220kV OPGW installation active sites at the start of specific works and on regular (monthly, bimonthly or quarterly) bases. Additional EHS training for the engineering staff, foremen and workers of Contractor was conducted for each newly hired staff. Register of training kept in each active construction site (see example in annex 7.)

The following EHS trainings have been conducted during reporting period:

- ✓ Emergency preparedness and plan (25 minutes)
- ✓ Risk of work, work safety standards (working on-height, scaffolding safety, fall protection, falling, tripping hazards, working near HV power lines, electrical safety, safety of drivers and machinery operators), and proper use of PPE's (20-45 minutes/each)
- ✓ Environmental impacts of the construction works (20 minutes)
- ✓ Mitigation and preventive measures of environmental impacts (biodiversity, soil and air pollution, waste management, 45 minutes)
- ✓ Protection from the poison snakes and scorpions bites (20 minutes)
- ✓ Fire Protection (25 minutes)

Additional staff trainings on extreme hot weather condition work safety were required by Consultant EHS expert. The training will be conducted during the first days of July.

Daily EHS tool box meetings held in each active construction site for each type of work to be conducted during the workday.

## **5 FUNCTIONING OF THE SEMP**

### **5.1 SEMP Review**

During the reporting and for whole project implementation period the Contractor was able to implement fully the requirements set out in the IEE and SEMP. There was no any area where the contractor has not been able to implement EHS mitigation or monitoring measures.

There were not needed to change, reduce or remove the mitigation measures set out in the SEMP.

The SEMP is well implemented and effective.

## **6 GOOD PRACTICE AND OPPORTUNITY FOR IMPROVEMENT**

### **6.1 Good Practice**

There was not recorded any case with good practice during reporting period, all routine construction works were implemented according to the SEMP requirements.

### **6.2 Opportunities for Improvement**

N/A.

## **7 SUMMARY AND RECOMMENDATIONS**

### **7.1 Summary**

The following EHS activities based on IEE and SEMP documents were planned and implemented during the January-June 2019 reporting period:

- ✓ Daily supervision of environmental, health and safety activity during construction process by Construction Site managers;
- ✓ Regular monitoring visits and reporting on environmental safeguards by Contractor's Environmental, Health and Safety Specialists;
- ✓ Organize environmental, health and safety corrective action based on Consultant Monitoring reports and supervisors verbal instructions;
- ✓ Consultation to IA and Consultant on any environmental issues if needed.
- ✓ Monthly reporting on EHS safeguards by Contractor.

During the reporting period Contractor's Environmental, Health and Safety team with Consultant's EHS expert conducted monitoring visits to the Project construction sites to monitor implementation of all mitigation measures of mentioned in the SEMP. During the monitoring visits some discrepancies were observed, some of them were corrected during the work process, and another's were corrected within required deadlines. Discrepancies mainly concerned to the daily housekeeping, fencing of the hazardous areas and PPE. 96.5 % of observed issues were corrected during reported period.

Instrumental monitoring was not carried out during reporting period, since the works causing noise, vibration and dust during reporting period were implemented far from existing roads and inhabitation places.

In the reporting period non-compliance notices were not received from the Consultant.

All construction works in the frame of the Project were implemented in accordance with IEE and SEMP requirements.

### **7.2 Recommendations**

During the reporting period Contractor and Consultant had not any recommendations for changes to the Environmental Safeguarding process for the project.

## 8 ANNEXES

### ***Annex 1: Example of Monthly EHS Monthly Report submitted by Contractor***



MER\_Jan 2019.pdf



MER\_Feb 2019.pdf



MER\_March 2019.pdf



MER\_April 2019.pdf



MER\_May 2019.pdf



MER\_June 2019.pdf

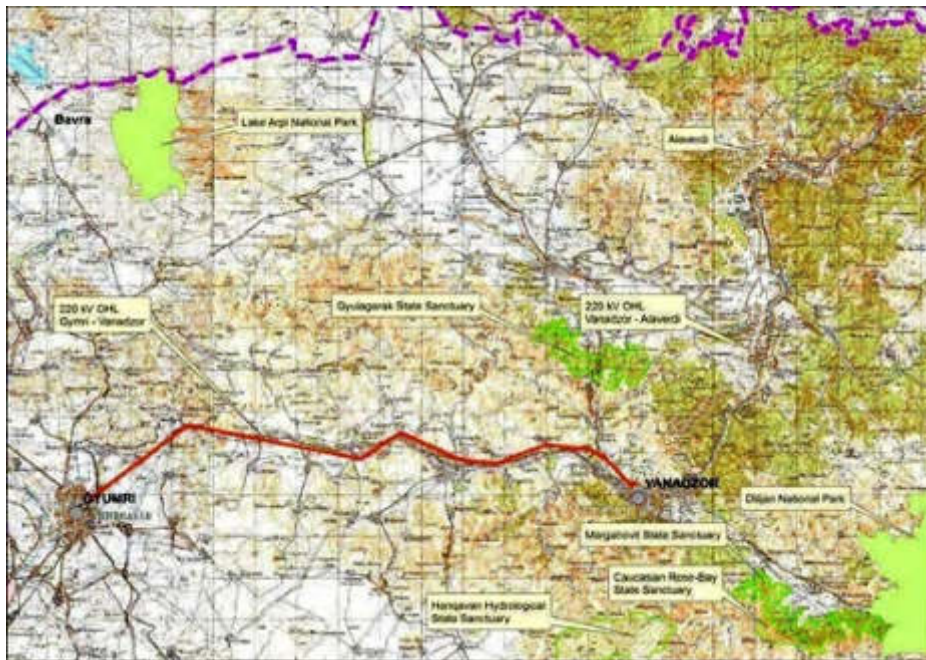


***Annex 2: Maps of active working locations for January-June 2019 period***

Map 1: OHL Hrazdan – Sevan



Map 2: OHL corridor Gyumri – Vanadzor



Map 3: Back Up DC Location



***Annex 3: Monthly distribution of activities in active working location for January-June 2019 period***

**Table 1:** Type of construction works implemented during the January 2019

Type of works	Section	Status of works
<b>Sevan 110kV OPGW</b>		
OPGW preparation	Section 2 from 22-53	To be continued in February
	Section 3 from 53-68	Finished
	Section 4 from 68-89	To be continued in February
	Section 5 from 89-104	To be continued in February
OPGW uprolling	Section 3 from 53-68	Finished
OPGW fixing	Section 3 from 53-68	To be continued in February
<b>Back-Up Center</b>		
Main building	Foundation work	To be continued in February
	Basement's Walls	To be continued in February
	Basement's R/C Construction's/	To be continued in February
	Basement's R/C Slabs/	To be continued in February
	First floor's Walls	To be continued in February

	First floor's R/C	To be continued in February
Headwall with Fence and outdoor	Foundation work	To be continued in February
	R/C Constructions/	To be continued in February
	Backfilling, compacting of soil	To be continued in February
Substation	R/C Constructions	To be continued in February
	External walls /	To be continued in February
	Water supply and sanitation	To be continued in February

**Table 2:** Type of construction works implemented during the February 2019

Type of works	Section	Status of works
<b>Sevan 110kV OPGW</b>		
OPGW preparation	Section 1 from 1-22	To be continued in March
	Section 4 from 68-89	To be continued in March
	Section 5 from 89-104	To be continued in March
OPGW uprolling	Section 1 from 1-22	To be continued in March
	Section 1 from 22-53	To be continued in March

	Section 4 from 68-89	To be continued in March
	Section 5 from 89-104	To be continued in March
<b>Back-Up Center</b>		
Main building	Lighting in the Central Dispatch Center	To be continued in March
	First floor's R/C Slabs/	Finished
	Roofing	To be continued in March
	Inner walls stonework	To be continued in March
	Water supply and sanitation	To be continued in March
	First floor's Walls	Finished
	First floor's R/C	Finished
Headwall with Fence and outdoor	Foundation work	To be continued in March
	R/C Constructions/	To be continued in March
	Backfilling, compacting of soil	To be continued in March
Substation	R/C Constructions	To be continued in March
	External walls /	To be continued in March

	Water supply and sanitation	To be continued in March
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**Table 3:** Type of construction works implemented during the March 2019

Type of works	Section	Status of works
<b>Sevan 110kV OPGW</b>		
OPGW preparation	Section 1 from 1-22	To be continued in March
	Section 4 from 68-89	To be continued in March
	Section 5 from 89-104	To be continued in March
OPGW uprolling	Section 1 from 1-22	To be continued in March
	Section 1 from 22-53	To be continued in March
	Section 4 from 68-89	To be continued in March
	Section 5 from 89-104	To be continued in March
<b>Back-Up Center</b>		
Main building	Lighting in the Central Dispatch Center	To be continued in March
	First floor's R/C Slabs/	Finished
	Roofing	To be continued in March

	Inner walls stonework	To be continued in March
	Water supply and sanitation	To be continued in March
	First floor's Walls	Finished
	First floor's R/C	Finished
Headwall with Fence and outdoor	Foundation work	To be continued in March
	R/C Constructions/	To be continued in March
	Backfilling, compacting of soil	To be continued in March
Substation	R/C Constructions	To be continued in March
	External walls /	To be continued in March
	Water supply and sanitation	To be continued in March

**Table 4:** Type of construction works implemented during the April 2019

Type of works	Section	Status of works
<b>Sevan 110kV OPGW</b>		
OPGW preparation	Section 3 from 53-68	Finished
OPGW fixing	Section 3 from 53-68	Finished
	Section 5 from 89-106	Finished
<b>Gyumri 220kV OPGW</b>		
OPGW preparation	Section from 167-192	To be continued in May

OPGW uprolling	Section from 167-190	To be continued in May
OPGW fixing	Section from 184-192	To be continued in May
<b>Back-Up Center</b>		
Main building	Roofing	To be continued in May
	Inner walls stonework	To be continued in May
	Doors and windows installation	To be continued in May
	Exterior cosmetic works	Finished
	Plumbing / Electrical Installation	To be continued in May
	Interior Cosmetic, Plastering works	To be continued in May
	Water supply and sanitation	To be continued in May
Headwall with Fence and outdoor	Soiling works	Finished
	Foundation work	Finished
	R/C Constructions	Finished
	Wall stacking	To be continued in May
	Tread milling	To be continued in May
	Covering by basalt plate in bottom	To be continued in May
	Covering by basalt plate on the top	To be continued in May
Substation	Roofing	Finished
	Doors and windows installation	Finished
Additional square	Foundation work	Finished
	R/C Constructions	To be continued in May
	External walls	To be continued in May
	Electrical Installation	To be continued in May
	Water supply and sanitation	To be continued in May
	Interior Cosmetic, Plastering works	To be continued in May



	Exterior cosmetic works	To be continued in May
	Construction of underground cable troughs Substation Building	To be continued in May

**Table 5:** Type of construction works implemented during the May 2019

Type of works	Section	Status of works
<b>Gyumri 220kV OPGW</b>		
OPGW preparation	Section from 152-167	Finished
	Section from 218-233	Finished
OPGW uprolling	Section from 167-218	Finished
OPGW fixing	Section from 152 - 233	To be continued in June
<b>Back-Up Center</b>		
Main building	Roofing	Finished
	Inner walls stonework	Finished
	Doors and windows installation	To be continued in June
	Exterior cosmetic works	Finished
	Plumbing / Electrical Installation	To be continued in June
	Interior Cosmetic, Plastering works	To be continued in June
	Water supply and sanitation	To be continued in June
	Installation of heating, cooling and air conditioning systems of building	To be continued in June
Headwall with Fence and outdoor	Wall stacking	Finished
	Tread milling	To be continued in June
	Covering by basalt plate in bottom	To be continued in June

	Covering by basalt plate on the top	To be continued in June
Additional square	R/C Constructions	Finished
	External walls	Finished
	Electrical Installation	To be continued in June
	Water supply and sanitation	To be continued in June
	Interior Cosmetic, Plastering works	To be continued in June
	Exterior cosmetic works	To be continued in June
	Construction of underground cable troughs Substation Building	To be continued in June

**Table 6:** Type of construction works implemented during the June 2019

Type of works	Section	Status of works
<b>Gyumri 220kV OPGW</b>		
OPGW preparation	Section from 90-247	Finished
OPGW uprolling	Section from 167-218	Finished
<b>Back-Up Center</b>		
Main building	Doors and windows installation	To be continued in July
	Plumbing / Electrical Installation	To be continued in July
	Interior Cosmetic, Plastering works	To be continued in July
	Water supply and sanitation	To be continued in July
	Installation of heating, cooling and air conditioning systems of building	To be continued in July
Headwall with Fence and outdoor	Tread milling	To be continued in July
	Covering by basalt plate in bottom	Finished
	Covering by basalt plate on the top	Finished

	Backfilling, compacting of soil	To be continued in July
	Water supply and sewerage system construction	To be continued in July
	Manufacturing and installation of gates	To be continued in July
Substation	Electrical Installation	To be continued in July
	Water supply and sanitation	Finished
	Interior Cosmetic, Plastering works	To be continued in July
	Exterior cosmetic works	To be continued in July
	Construction of underground cable troughs Substation Building	Finished

***Annex 4: Monthly maximum and minimum numbers of workers worked and anticipated changes in staff on all active construction sites for January-June 2019 period***

***Table 1: Number of workers –January 2019***

Construction site	Number of workers in January		Anticipated changes in staff in February
	Minimum	Maximum	
Sevan 110kV OPGW	7 person	7 person	The number of workers will increase by 5 workers.
BU DC	10 person	10 person	The number of workers will increase by 7 people.

***Table 2: Number of workers –February 2019***

Construction site	Number of workers in February	
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	Minimum	Maximum	Anticipated changes in staff in March
<b>Sevan 110kV OPGW</b>	12 person	12 person	The number of workers will increase by 2 workers.
<b>BU DC</b>	17 person	17 person	The number of workers will not change

**Table 3: Number of workers –March 2019**

Construction site	Number of workers in March		Anticipated changes in staff in April
	Minimum	Maximum	
<b>Sevan 110kV OPGW</b>	14 person	14 person	The number of workers will be reducing such as the works are mainly finished.
<b>BU DC</b>	17 person	17 person	The number of workers will be increase on 6 people.

**Table 4: Number of workers –April 2019**

Construction site	Number of workers in April		Anticipated changes in staff in May
	Minimum	Maximum	
<b>Sevan 110kV OPGW</b>	17 person	29 person	The works were finished
<b>Gumri 220kV OPGW</b>	17 person	24 person	After finishing the works on Sevan 110kV OPGW all workers started to work on Gyumri 220kV OPGW
<b>BU DC</b>	15 person	29 person	Changes in staff are not anticipated in May

**Table 5: Number of workers – May 2019**

Construction site	Number of workers in May	
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	Minimum	Maximum	Anticipated changes in staff in June
<b>Gyumri 220kV OPGW</b>	13 person	24 person	Changes in staff are not anticipated in June
<b>BU DC</b>	24 person	29 person	Changes in staff are not anticipated in June

*Table 6: Number of workers – June 2019*

Construction site	Number of workers in June		Anticipated changes in staff in July
	Minimum	Maximum	
<b>Gyumri 220kV OPGW</b>	10 person	12 person	Changes in staff are not anticipated in June
<b>BU DC</b>	23 person	24 person	Changes in staff are not anticipated in June

***Annex 5: Act on Construction wastes handling***



ACT \_ Gyumri.PDF

***Annex 6: Electrical supplies switch over permit (examples)***

Էլեկտրական ջններում աշխատելու իմանար

Կարգագիր-թույլտվություն N 1

Կազմակերպություն «Բեյքալ» ՓԲԸ

Ստորագրածանով Աննա ՀՕ ԿՅ ՎԳ

Աշխատանքի պատասխանատու ղեկավարին Կարին Երեմյան  
անուն ազգանուն

Թույլատրողին Միքայիլ Ա. Մկրտչյան շխատանքներ կատարողին Բազումյան Ա. Բաբայան Մ. Բաբայան Մ.  
 անուն ազգանուն անուն ազգանուն

Հսկողին Պարսյան Կր.Ս. Բրիգադի անդամներով Դրոսյան Զարի, Կրոսյան  
անուն ազգանուն անուն ազգանուն

[illegible]

Հանձնարարվում է: Մեծահասակ 09-7 72÷91 հեծանքների վրա իրեն  
համապատասխան չլինող հոգսերի համար հանձնարվող

Աշխատանքը սկսել 10.01 2019թ. ժամը 10<sup>00</sup> ավարտել 12.01 2019թ. ժամը 17<sup>30</sup>  
ամիս, ամսաթիվ ամիս, ամսաթիվ

Աշխատատեղերի նախապատրաստման միջոցառումներ

Էլեկտրակայանների անվանումը, որտեղ պետք է կատարել անջատումներ և դնել հողանցումներ	Ինչո՞ւ պետք է անջատվի և որտեղ պետք է հողանցվի
1	2
Մասն 110 կՎ ՕԶ-ի վրա 72 ÷ 91 հեծանքահան	1. Մեծալարի շարժական հողանցում №72 և հեծանքահան վրա: 2. Մեծալարի շարժական հողանցում №91 և հեծանքահան վրա:

Հատուկ ցուցումներ Սևանա լճի 09-րդ խոր խորան 5-րդ քաղցրահամ  
բայրի Դրեկյանի և Քաղցրահամի անփայտ սրբան չեփ-  
ի խոր խորանից:

Կարգադիրը տվեց 10.21 2019թ. ժամը 9<sup>00</sup>

Ստորագրություն Ը. Տաթևյան Անուն, Ազգանուն Սեդրակ Կարսյան

Կարգադիրը նրկարացվեց սինգլ \_\_\_\_\_ 201 թ. թվական \_\_\_\_\_  
ամիս, ամսօրվա \_\_\_\_\_

Ստորագրություն \_\_\_\_\_ Անուն, Ազգանուն \_\_\_\_\_

201 թ. ժամը \_\_\_\_\_

Աշխատատեղերի նախապատրաստման և աշխատանքների կատարման թույլտվության  
իրավունք

Աշխատատեղերի նախապատրաստման և աշխատանքների կատարման թույլտվության իրավունքը տվեց պաշտոնը, ազգանունը և ամսաթիվը ժամը	Աշխատատեղերի նախապատրաստման և աշխատանքների կատարման թույլտվության իրավունքը ստացած աշխատողի ստորագր.
1	2
ԲԶԾԳ Զատուրյան պեշր Գ. Պատկանյան	10.01.2019թ ժ. 9:00

Աշխատատեղերը նախապատրաստված են: Լարման տակ մնացել են՝

Գաղապիճ 110 կ/ՕԶ և Զրառար 35 կ/ՕԶ:

Թույլատրող Վ.Մ. Աշխատանքի ղեկավար (կատարող կամ հսկող) Վ.Մ.  
ստորագրություն ստորագրություն

**Աշխատանքի ամենօրյա թույլատրումը և ավարտի ժամանակը**

Բրիգադը ստացել է նախատակային հրահանգավորում և թույլատրվել է աշխատել նախապատրաստված աշխատատեղում				Աշխատանքն ավարտված է, բրիգադը հանված է	
Աշխատատեղի անվանումը	Ամսաթիվը, ժամը	Ստորագրություններ		Ամսաթիվը, ժամը	Աշխատանքները կատարողի (հսկողի) ստորագրությունը
		Թույլատրողի	Աշխատանքները կատարողի հսկողի		
1	2	3	4	5	6
Ղևաճ 110 կ/ՕԶ թիվ 72-ՅԻ ԿԵՆՏՐՈՆ	10.01.2019 ժ. 14:20	<u>Վ.Մ.</u>	<u>Վ.Մ.</u>	10.01.2019 ժ. 17:10	<u>Վ.Մ.</u>
Ղևաճ 110 կ/ՕԶ թիվ 72-ՅԻ ԿԵՆՏՐՈՆ	11.01.2019 ժ. 11:00	<u>Վ.Մ.</u>	<u>Վ.Մ.</u>	11.01.2019 ժ. 16:05	<u>Վ.Մ.</u>
Ղևաճ 110 կ/ՕԶ թիվ 72-ՅԻ ԿԵՆՏՐՈՆ	12.01.2019 ժ. 10:40	<u>Վ.Մ.</u>	<u>Վ.Մ.</u>	12.01.2019 ժ. 14:50	<u>Վ.Մ.</u>

**Փոփոխություններ բրիգադի կազմում**

Ներգրվված է բրիգադի կազմում (ազգանուն, անուն, խումբ)	Հանված է բրիգադի կազմից (ազգանուն, անուն, խումբ)	Ամսաթիվը, ժամը	Թույլատրեց (ստորագրություն)
1	2	3	4

Աշխատանքն ամբողջովին ավարտված է, բրիգադը հանված է, բրիգադի կողմից դրված հողանցումները հայտնված են, հայտնված է (ում)

ԴՆՕԶ Զրառար 35 կ/ՕԶ պեղ Գ. Զառարյան  
12.01.2019 թ. ժամը 14:50

Աշխատանքները կատարող (հսկող) Զառարյան Կ. Զառարյան  
(ստորագրություն, անուն ազգանուն)

Աշխատանքների պատասխանատու ղեկավար Ղևաճ 110 կ/ՕԶ  
(ստորագրություն, անուն ազգանուն)



**Էլեկտրակայանքներում աշխատելու իմամար**  
**Կարգագիր-թույլտվություն N 2**

Կազմակերպություն «Բեքիներ» ՓԲԸ Ստորաբաժանում Մեան 110 կՎ ՕԳ.

Աշխատանքի պատասխանատու ղեկավարին Խաչատրյան Արամ Երվանդի  
անուն, ազգանուն

Թույլատրողին Մեքենայի ղեկավար Աշխատանքներ կատարողին Բաղդասարյան Արամ Երվանդի  
անուն, ազգանուն

Հսկողին Մարգարյան Արմեն Բրիգադի անդամներով Պրոքյան Գևորգ, Զարգյան  
անուն, ազգանուն

Յեզեյան, Կարենյան, Մարգարյան, Բաղդասարյան, Օհանյան, Զարգյան,  
Խաչատրյան, Բաղդասարյան

Հանձնարարվում է Մեան 110 կՎ ՕԳ-ի 72 ÷ 91 հեմարանների վրա իրա-  
կազմակերպել անվտանգության խնամքի միջոցառումներ, համապատասխան աշխատել ՕԳ.

Աշխատանքը սկսել 10.01 2019թ. ժամը 10<sup>00</sup> ավարտել 12.01 2019թ. ժամը 17<sup>30</sup>  
ամիս, ամսաթիվ ամիս, ամսաթիվ

**Աշխատատեղերի նախապատրաստման միջոցառումներ**

Էլեկտրակայանքների անվանումը, որտեղ պետք է կատարել անջատումներ և դնել հողանցումներ	Ինչը պետք է անջատվի և որտեղ պետք է հողանցվի
1	2
<u>Մեան 110 կՎ ՕԳ-ի 72 ÷ 91 հեմարաններ:</u>	<u>Մեան 110 կՎ ՕԳ-ի անջատիչ և ԳԲ-ի կողմից հողանցվել Մեան 110 կՎ ՕԳ-ի Մեան 237 ա՝ Է քարտեզում 237-ում հողանցումը կատարվում է 2350 ՓԱԲ-ի կողմից: 72 ÷ 91 հեմարանների վրա պետք է շահմանվեն հողանցումներ:</u>

Հատուկ ցուցումներ Մեան 110 կՎ ՕԳ-ի վրա կատարվող և ինչից հետևում է իրա-  
կազմակերպել աշխատանքի անվտանգության պահպանման կանոն-  
ներ:

Կարգագիրը տվեց 10.01 2019թ. ժամը 9:30  
 Ստորագրություն Ա. Բաղդասարյան Անուն, Ազգանուն Մեքենայի ղեկավար  
 Կարգագիրը երկարացվեց մինչև \_\_\_\_\_ 201 թ. ժամը \_\_\_\_\_  
ամիս, ամսաթիվ  
 Ստորագրություն \_\_\_\_\_ Անուն, Ազգանուն \_\_\_\_\_  
 \_\_\_\_\_ 201 թ. ժամը \_\_\_\_\_  
ամիս, ամսաթիվ

**Աշխատատեղերի նախապատրաստման և աշխատանքների կատարման թույլտվության իրավունք**

Աշխատատեղերի նախապատրաստման և աշխատանքների կատարման թույլտվության իրավունքը տվեց պաշտոնը, ազգանունը կամ ստորագրությունը	Ամսաթիվը ժամը	Աշխատատեղերի նախապատրաստման և աշխատանքների կատարման թույլտվության իրավունքը ստացած աշխատողի ստորագր.
1	2	3
<u>ՕԳ Լաուրյանյան Կենդի</u>	<u>10.01.2019թ</u>	<u>Ա. Բաղդասարյան</u>
<u>Գ. Խաչատրյան</u>	<u>9:30</u>	

Աշխատատեղերը նախապատրաստված են: Լարման տակ մնացել են՝

Գացալիճ 110 կմ ՕԳ-ը և Զրառապ 35 կմ ՕԳ-ը:

Թույլատրող Վ. Բեգլյան Աշխատանքի ղեկավար (կատարող կամ հսկող) Վ. Բեգլյան  
ստորագրություն ստորագրություն

**Աշխատանքի ամենօրյա թույլատրումը և ավարտի ժամանակը**

Բրիգադը ստացել է նպատակային հրահանգավորում և թույլատրվել է աշխատել նախապատրաստված աշխատատեղում				Աշխատանքն ավարտված է, բրիգադը հանված է	
Աշխատատեղի անվանումը	Ամսաթիվը, ժամը	Ստորագրություններ		Ամսաթիվը, ժամը	Աշխատանքները կատարողի (հսկողի) ստորագրությունը
		Թույլատրողի	Աշխատանքները կատարողի հսկողի		
1	2	3	4	5	6
Սևանա 110 կմ ՕԳ թիվ 78 ÷ 76 հեռացման և 14:35	10.01.2019 ժ. 14:35	<u>Վ. Բեգլյան</u>	<u>Վ. Բեգլյան</u>	10.01.2019 ժ. 17:20	<u>Վ. Բեգլյան</u>
Սևանա 110 կմ ՕԳ թիվ 79, 80, 81, 75, 74 և 72 հեռացման և 11:35	11.01.2019 ժ. 11:35	<u>Վ. Բեգլյան</u>	<u>Վ. Բեգլյան</u>	11.01.2019 ժ. 16:15	<u>Վ. Բեգլյան</u>
Սևանա 110 կմ ՕԳ թիվ 82, 83, 88, 90, և 10:30	12.01.2019 ժ. 10:30	<u>Վ. Բեգլյան</u>	<u>Վ. Բեգլյան</u>	12.01.2019 ժ. 15:00	<u>Վ. Բեգլյան</u>

**Փոփոխություններ բրիգադի կազմում**

Ներգրված է բրիգադի կազմում (ազգանուն, անուն, խումբ)	Հանված է բրիգադի կազմից (ազգանուն, անուն, խումբ)	Ամսաթիվը, ժամը	Թույլատրեց (ստորագրություն)
1	2	3	4

Աշխատանքն ամբողջովին ավարտված է, բրիգադը հանված է, բրիգադի կողմից դրված հողանցումները հայտնված են, հայտնված է (ում)

ԲԶՕԳ Լուսապարտյան պեյզ Գ. Ռաֆայելյան  
 \_\_\_\_\_ 201 թ. \_\_\_\_\_ ժամը \_\_\_\_\_

Աշխատանքները կատարող (հսկող) Բուրապան Կարապետյան  
(ստորագրություն, անուն ազգանուն)

Աշխատանքների պատասխանատու ղեկավար Դավիթյան Եղանեղոսյան  
(ստորագրություն, անուն ազգանուն)

**Annex 7: EHS trainings and Tool box meetings register (example)**

