METHODS OF USING TECHNICAL DOCUMENTS IN RAILWAY AUTOMATION AND TELEMECHANICS SYSTEM

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Abstract: The technical documents used in the railway automation and telemechanics system are considered in the article. The advantages of these documents are shown, and the principles of their operation are presented in a convenient and easy way to fill out the documents. The process of working according to the task of several technical documents is fully explained, and the process of checking devices is defined in documents.

Keywords: technical documents, voltage measurement, accounting and replacement of devices, automation devices, filling information.

МЕТОДЫ ИСПОЛЬЗОВАНИЯ ТЕХНИЧЕСКОЙ ДОКУМЕНТАЦИИ В СИСТЕМЕ ЖЕЛЕЗНОДОРОЖНОЙ АВТОМАТИЗАЦИИ И ТЕЛЕМЕХАНИКИ

Аннотация: В статье рассмотрены технические документы, используемые в системе железнодорожной автоматики и телемеханики. Показаны преимущества этих документов, а принципы их работы представлены в удобной и простой форме для заполнения документов. Полностью разъяснен процесс работы по заданию нескольких технических документов, в документах определен процесс проверки устройств.

Ключевые слова: техническая документация, измерение напряжения, учет и замена приборов, устройства автоматики, заполнение информацией.

INTRODUCTION

Responsible for the correct storage and maintenance of technical documents: the brigade leader - in the form of a technical service brigade and the electromechanics individually.

The correct content and storage of technical documents is controlled by the senior electromechanics within the site, the head of the production site - within the enlarged production site, the chief engineer or deputy chief engineer - at the signaling and communication distance.

Work on the content of technical documents on the signal and communication distance should be carried out by a group (brigade) of technical documents headed by a senior engineer or a senior electro-mechanical engineer [1-2].

The quantitative structure of the group of technical documents is determined by the model norms of the number of engineer-technical staff of railway signaling and communication distances, as well as the norms of the number of workers and employees, public professions, approved by "Uzbekistan Railways" JSC.

MATERIALS AND METHODS

There are several types of technical documentation in railway automation and telemechanics system [3-4].

1. SHU-2 - log of technical checks (Senior electromechanics, manuals of cord part);
2. SHU-2 - log of technical checks according to the schedule of those. process;

3. SHU-64 - voltage measurement log for travel relays, CALS (Continuous automatic locomotive signaling) currents;

4. SHU-64 - measurement log of normal transfer currents and friction currents, voltage on the electric motor;

5. SHU-64 - log of measurement and adjustment of the code current CALS on stations;

6. SHU-66 - battery magazine;

7. Journal of accounting and replacement of devices;

8. SHU-61 - logbook for replacing lamps at a traffic light;

9. SHU-2 - log for measuring the insulation resistance of the installation;

10. Logbook for measuring the insulation of cable cores with minimal disconnection installation;

11. Journal of measurement of the actual load on the fuses;

12. TNU-19 - current briefing log;

13. TNU-19 - journal of primary, periodic, extraordinary instruction and training;

14. Journal of three-stage control;

15. Journal for checking the correctness of the polarity alternation in rail chains;

16. Case of acts of checking the interdependence of arrows, signals and routes, crossing signaling, transition from the main power source to spare;

17. Journal of technical studies.

18. Landing check log on signal relays.

RESULTS AND DISCUSSION

1) SHU-2 - After checking the technical condition of the communication devices at the site, the distance leaders, heads of production sites and senior electricians must record the detected shortcomings with an indication of the timing of their elimination in the log form SHU-2. After eliminating the noted shortcomings, electromechanics or senior electromechanics make an appropriate entry in this journal indicating the date of execution and put their signature. The head of the production site and the senior electrician must selectively check the quality of work performance for previously discovered shortcomings [5].

In areas with a shift mode of work, a desk journal of the form SHU-2 is kept, where the acceptance and delivery of duty, failures of communication devices during the duty period, as well as the measures taken to eliminate them are noted.

2) Battery magazine form (SHU-66).

The SHU-66 form log is designed to document the results of measuring the voltage at the battery terminals and the density of the battery electrolyte.

The journal is stored at the post of EC (Electric centralization), DC (Dispatcher centralization), in a transportable module [6-7].

The Journal notes: the standard value of the voltage on the battery with the alternating current turned off, the standard value of the density of the electrolyte at a temperature of 20 °C.

3) The SHU-61 form card is designed to account for incandescent lamps and LED modules (with voltage measurement on lamps and modules) installed in traffic lights. From the tables given in form SHU-61, according to the number and purpose of the traffic lights and light indicators at

the station, which is kept at the EC post or mobile vehicle, is filled in. blocking module. In motor vehicles and intersections where the equipment is placed decentralized, SHU-61 form cards of signaling devices are stored in the relay cabinet of the signaling device and in the relay cabinet of the crossing, respectively.

Table 1. Entrance traffic light-Odd 1. Form SHU-61

Date	Red Lamp №	Yellow Lamp №	Green Lamp №	Moonwhite Lamp №	2-yellow Lamp №	Voltage (v)	Signature
18.01.22	53	21	1	22	34	11,5	
17.04.22	21	17	9	22	34	11	
19.07.22	8	17	14	6	23	11,2	
20.10.22	8	3	14	7	14	11,5	
14.01.23	8	13	10	31	14	11,5	
18.04.23	12	34	10	37	16	11,5	
…	…	…	…	…	…	…	…

Note 1. Voltage measurement is made on the currently burning dump. 2. When installing a new lamp, the letter "H" is put. 3. If the lamp burned out ahead of time, then the letter “P” is put in the corresponding column. 4. The movement of lamps from one light to another is marked with an arrow. 5. The name of the missing lamps is crossed out [8].

Table 2. Exit traffic light-Even 1. Form SHU-61

Date	Red Lamp №	Yellow Lamp №	Green Lamp №	Moonwhite Lamp №	Voltage (v)	Signature
18.01.22	34	1	21	22	11,5	
17.04.22	34	9	17	22	11	
19.07.22	23	14	17	6	11,2	
20.10.22	14	14	3	7	11,5	
14.01.23	14	10	13	31	11,5	
18.04.23	16	10	34	37	11,5	
…	…	…	…	…	…	…

4) Journal form SHU-64 is intended for registration of measurement results parameters of signaling devices at the station. Before the beginning of the entries, the pages of the Journal must be numbered, stitched and sealed with a signaling centralization and blocking distance seal to protect against withdrawals and investments. Corrections and strikethroughs when keeping records are allowed when the presence of a confirming signature of the contractor.

The journal consists of eleven tables and is stored at the EC post, HAC (Hill automatic centralization), transportable module.

Depending on which track circuits are used in the section of the senior electromechanics, fill in table 1 or tables 1 and 2.

Table 3. Form SHU-64

Date checked	Voltage(v)	Ballast condition	Voltage(v)	Ballast condition	Signature
27.02.22	3.2	wet	18	wet	
23.05.22	3.5	dry	17	dry	
19.08.22	3.4	dry	17.5	dry	
25.11.22	3.2	wet	19	wet	
13.02.23	3.2	wet	18.5	wet	
15.05.23	3.5	dry	17.5	dry	
……	……	……	……	……	……

Table 3 is intended for registration of the results of voltage measurement on secondary winding of the supply transformer and on the travel relay in normal and shunt mode of branched track circuits with a signal current frequency of not more than75 Hz.

5) The SHU-79 form log is used to document the results of measurements and checks at a signal installation or at a crossing. Corrections and strikethroughs when keeping records are allowed if there is a confirming signature of the performer of the work. The log is stored in the relay cabinet of the signaling installation or crossing.

6) The log form SHU-67 is designed to record the work performed and to document the results of checking the parameters of the installation of power supply for signaling devices at the posts of EC, HAC, microprocessor centralization. The log is stored at the post of electrical (hill, control room) centralization or in a transportable module.

CONCLUSION

We learned many things as a result of getting acquainted with the technical documents on the railway automation and telemechanic system. Each document performs its own task. It is based on these documents that you can find out the status of the device. For example, by looking at the SHU-61 log, we can find out the condition of the traffic lights on the railway, when they were last checked, and if the traffic lights were burned out, when they were replaced. This, in turn, increases the safety of equipment. That is, devices are always under control. Therefore, there is a responsible employee for each technical document, and after checking, he writes his name and surname in the journal and puts his signature.

Technical documents of each railway automation and telemechanic system are important for traffic safety. Each railway employee can study the data of devices through these documents and eliminate any deficiencies. In each technical document, inspection standards are given, and if they do not meet the standards, the malfunction is eliminated.

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