

Study on the Improvement Measures of Licensing Qualifications for Railway Locomotive Drivers

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Abstract: The qualification conditions for railway locomotive drivers can regulate the work of the qualification permit for rolling stock drivers, and ensure the safety and smooth operation of railway transportation. In this paper, the Author puts forward some suggestions on the conditions that railway locomotive drivers should have, such as age, health and quality, education, qualification, psychological quality and so on. From the point of view of the World Railway Development, the developed railway countries attach great importance to the construction and management of the quality of the driver team. The results of these experiences have certain guiding effect on improving the qualification of railway locomotive drivers in China.

1. Introduction

In order to meet the needs of the rapid development of China's railways, especially high-speed railways, for the licensing work of rolling stock drivers' qualifications, on December, 2019, the Ministry of Transport of the People's Republic of China promulgated the Newly Revised Rolling Stock Rules. Revised on the basis of the original "Measures for Rolling Stock Licensing of drivers" (Ministry of Transport of the People's Republic of China Order No. 14 of 2013), rolling Stock has increased the number of drivers who are permitted to enter or leave, their job responsibilities, examination organization, credit management, supervision and inspection, and penalties, etc., in addition, the requirements for improving the work efficiency of the rolling stock are added, and the work of the rolling stock is further standardized.

2. Requirements for Applicants of Rolling Locomotive Driving Licences

On March 25, 2014, the National Railway Administration issued the Detailed Rules for the Implementation of Rolling Stock Driver Qualification Permit of the State Railway Equipment Supervision and administration. It is divided into general rules, application conditions, examinations, driving license administration, supervision and administration, and Supplementary Rules.

According to the rules, requirements for applicants of rolling stock driving licences conditions for first-time applicants include:

2.1 Age Requirement

The age limit for rolling stock drivers is 18 to 45. The age requirement is only a basic criterion,

indicating that the person concerned has certain ability requirements

2.2 Physical and Quality Ability

Mental and quality abilities indicate that the person concerned is of sound mind to meet the requirements of national health standards for drivers, pass the driving adaptability test, have good Chinese character reading and writing ability and be able to communicate skillfully in Putonghua.

2.3 Education Background

Education level indicates that the applicant must have a certain amount of knowledge. Junior College or above (including higher vocational education, the same below) or railway-related technical secondary education is required for the applicants.

2.4 Qualifications

An applicant for the locomotive series shall study the locomotive crew for at least one year or the locomotive crew for at least 60,000 kilometers, and an applicant for the self-propelled locomotive series shall study the locomotive crew for at least six months, and to the different kind of driving qualification has stipulated the different practice time limit or the driving mileage.

Thus, the licensing measures and the implementation of detailed rules to improve the qualifications of applicants for railway locomotive driving: such as raising the requirements for academic qualifications, increasing the quality and ability, reducing the standard of practice mileage, it has positive significance for selecting excellent locomotive drivers.

3. Foreign Regulations on the Specific Conditions of Applicants for Rolling Locomotive Driving License

Each country attaches relative importance to the selection of locomotive drivers, so it will enact relevant laws for coordination. According to the legislation and practice of our country, the developed countries of the railway have stipulated the strict application conditions for the rolling stock.

In the UK, government departments and Industry Associations have jointly developed standards for Railway Vocational Qualifications, which require 60 per cent of skilled workers to attain intermediate vocational skills and 30 per cent to attain advanced vocational skills. To this end, in the UK, modern apprenticeships have been in place since the end of the last century, requiring young workers to obtain National Vocational Qualifications In order to meet the need of continuous training for all personnel, modern training methods are widely used in developed countries

3.1 Age Requirements

The European Union national legislation to limit the age of 20 years, such as the German railway locomotive driver's license regulations, this is also the implementation of the European Parliament and the commission's "guidelines on railway locomotive, train driver certification, " one of the prerequisites.

3.2 Health and Competency

Applicants in the United States are required to undergo hearing and vision tests, physical fitness tests, regular drug testing, and leadership, decision-making, and organizational skills; Since 2017, Germany has attached importance to the test of quality and ability, and has taken the test result as an

important assessment index, including understanding ability, cognitive ability, reaction ability and working ability.

3.3 Education Background

The United States requires applicants to have a high school education and an equivalent, which means that those who have reached the age of 16 and do not have a high school education must pass a special exam to qualify; Germany and France require the applicant to be a technical secondary school or above.

3.4 Qualifications

Germany and France require applicants to improve their driving skills and emergency response ability through simulated driving and train training. Germany requires applicants to have 2-3 years of relevant theoretical and practical driving training; France requires 2 years of work in the railway maintenance department before applying for driving qualification, and half a year of simulated driving and on-line driving, you have to pass the examination to be eligible to drive.

Also in Germany, it is required the reliability of railway locomotive drivers, the so-called reliability, which refers to having no particularly bad hobby or serious violations of traffic regulations, such as the previous record.

3.5 Psychological Quality

Japan Railway Company requires that the applicant must have good psychological conditions, through driving suitability test, psychological quality test to meet the standard to apply for driving qualification.

It can be seen that the developed countries have set up very strict conditions and procedures for the licensing of railway locomotive drivers, which is of great benefit to ensuring the safety of railway operation.

4. Perfect Measures on the Conditions of Persons Applying for Railway Locomotive Driving License

At present, China's railway is developing rapidly. The construction of railway locomotive drivers has become more and more important. The improvement of its overall quality and ability is very important for the safety of high-speed railway operation. Provisions on the qualifications of licensed railway locomotive drivers, combined with the legislation and practice of developed countries, are proposed to be improved from the following three points:

4.1 Raise the Age Limit for Applicants

Although 18 years old is a full capacity, but from the current situation, natural people generally 16 years old to complete compulsory education, 18 years old just completed secondary or post-secondary education, or in college, even with professional knowledge, practical ability still needs to be improved, so it is necessary to raise the age of application, above 20 years old is recommended.

4.2 Psychological Testing of Applicants

With the continuous improvement of the level of railway automation, the driver, as a relatively low reliability factor, has become the focus of the safety problem of railway operation. In addition to

requiring the physical health of railway locomotive drivers, psychological load has become a decisive factor in determining the safety of railway operation..

Emphasis is placed on the psychological testing of applicants, including their psychological quality and mental health. Railway locomotive drivers belong to special professional and technical personnel, whose working environment is monotonous, working space is narrow, noise is big, intensity is high, it is necessary to introduce psychological test and mental health examination to ensure driving safety. The Mental Health Index of the locomotive applicant should reach the above-medium level, with normal mind, good mental health, no bigotry and mental health problems.

4.3 The Applicant's Ability to Deal with Accidents and Emergencies

The traditional training of locomotive drivers has the advantages of high timber, high risk and long cycle. The use of simulated driving system training can solve these problems from the root. Under the condition of line simulation, the system can train the drivers in the skills of driving and handling, fault handling, etc. . The virtual reality technology can directly reflect the actual operating environment, operating conditions, traction control curve and other technical parameters. Simulated driving system has obtained good training results

It is strengthen the assessment of the applicant's ability to deal with simulated locomotive accidents and emergencies. There are great differences in the terrain and climate environment in China. The applicants can be familiar with the characteristics of locomotive traction, operation and braking in different environments. It is suggested that the accident handling ability and emergency response ability of the applicants should be tested by simulating the locomotive accidents and emergency events in recent decades.

5. Conclusion

With the rapid development of railway construction in China, the quality level of railway locomotive drivers is required to be higher. By studying the relevant regulations and practices of foreign countries and combining with the present situation of our country, the corresponding improvement measures are put forward.

In short, This paper optimizes and improves the current rolling stock training model by studying the application requirements of rolling stock drivers, which effectively solves the problems existing in the existing rolling stock drivers, and provides a strong theoretical basis for the development of driver talents for railway EMU. It is hoped that this paper can provide some ideas for relevant railway departments and promote the further selection of excellent railway locomotive drivers.

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