

# DRAFT



## RAIL SYSTEM VEHICLES MAINTENANCE AND REPAIRER

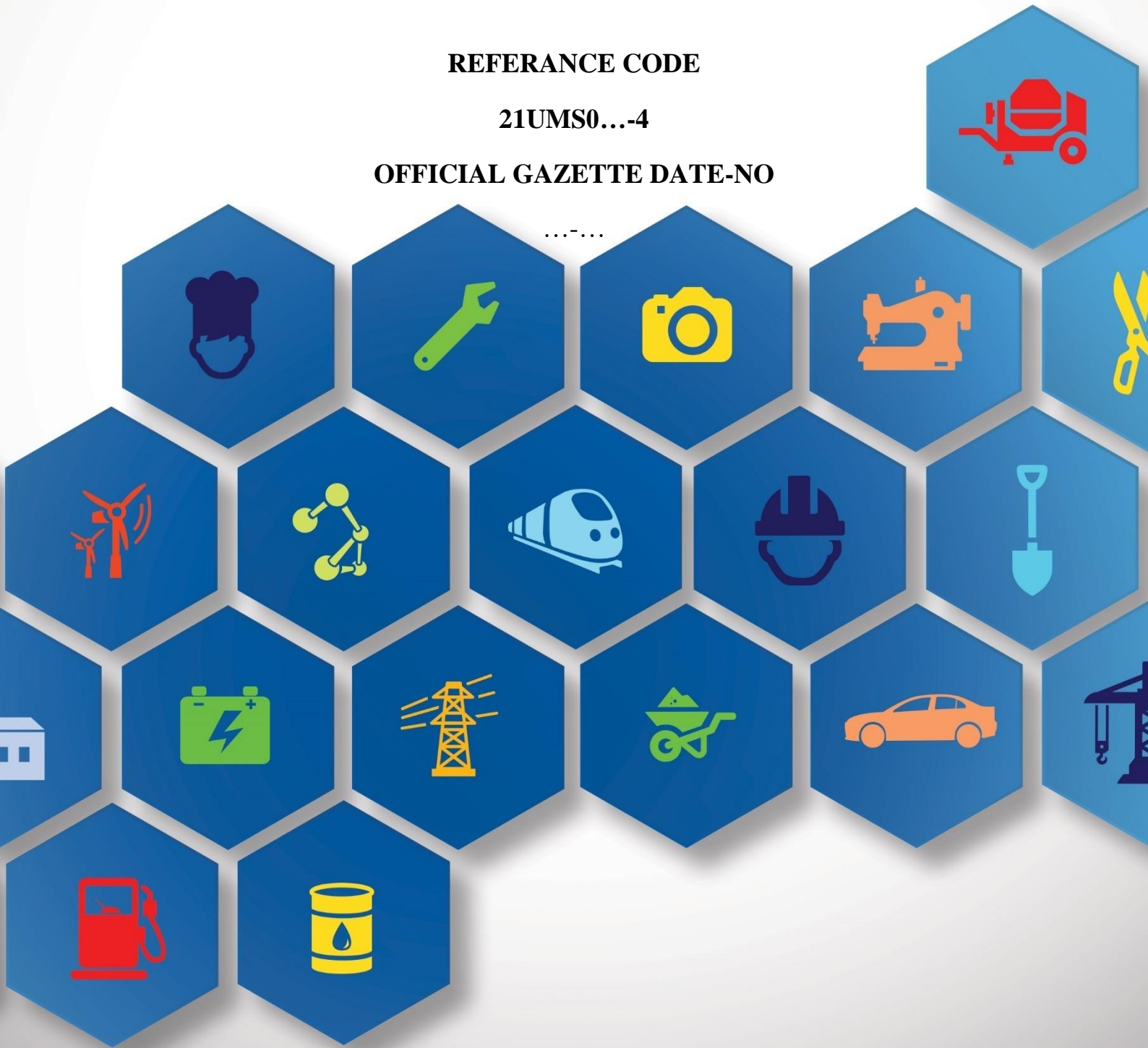
LEVEL 4

REFERANCE CODE

21UMS0...-4

OFFICIAL GAZETTE DATE-NO

...-...



<b>Profession:</b>	RAIL SYSTEM VEHICLES MAINTENANCE AND REPAIRER
<b>Level:</b>	4 <sup>1</sup>
<b>Reference code:</b>	21UMS0...-4
<b>Organization(s) that prepared the standard:</b>	Prepared by: TCDD Development and TCDD Staff Solidarity and Aid Foundation Updated by: VQA (Vocational Qualification Authority) working group
<b>Industry Committee Validating the Standard:</b>	VQA Transport Logistic and Communication Sector Committee
<b>MYK Board of Directors Approval Date/Number:</b>	-
<b>Official Gazette Date/Number:</b>	-
<b>Revision Number:</b>	01

<sup>1</sup>The proficiency level of the profession has been determined as level 4 according to the 8-level Turkish Qualifications Framework.

## TERMS, SYMBOLS AND ABBREVIATIONS

**EMERGENCY:** Incidents that require emergency intervention, struggle, first aid or evacuation such as fire, explosion, spread of dangerous chemicals, natural disasters that may occur in the whole or part of the workplace,

**EMERGENCY PLAN:** A plan that includes information and practical actions, including the work and actions to be taken in emergencies that may occur in the workplace,

**ALTERNATOR:** Electric machine that produces alternating current with its mechanical rotation motion,

**VEHICLE:** One rail vehicle,

**ON-BOARD SIGNALIZATION:** On-board equipment that introduces trains to the signalling system and provides movement, safety and control of trains according to signal information,

**ARTICULATION ZONE:**

**BATTERY:** Generator, which is created by connecting more than one battery in series or parallel and provides the electrical energy required during the revival of the trains,

**TRACTION VEHICLE (TOWING VEHICLE):** The locomotive and its railcar moving with the propulsion power produced or regulated by the power unit on it,

**TRACTION MOTOR:** Electric motor that drives the towing vehicle,

**TRACTION SYSTEM:** The system enabling a vehicle to move,

**RAILWAY:** All of the facilities that make up a double rail series and this series, on which the vehicle series consisting of towing and towed vehicles moves,

**DYNAMO:** Generator,

**ISCO:** International Standard Occupation Classification,

**AIR CONDITIONING:** The system that performs heating, cooling and ventilation operations,

**OHS:** Occupational Health and Safety,

**CATENARY:** The system that transfers the electrical energy used in railway vehicles to the vehicle over the overhead line,

**PERSONAL PROTECTIVE EQUIPMENT:** All tools, equipment and devices designed for this purpose, which are worn or held by employee, which protect the employee against one or more risks arising from the work carried out, affecting health and safety,

**COMPRESSOR:** Compressed air generator,

**SHORT CIRCUIT:** The part that enables the voltage to be cut and given in electrical circuits,

**CONTACTOR:** Electromechanical device that enables the receiver to be energized or de-energized in electrical circuits,

**COUPLING:** The process of joining two trains/vehicles electrically, mechanically and /or pneumatically,

**LOCOMOTIVE:** A rail system vehicle that moves with the mechanical power applied to its wheels and that moves the towed vehicles that are connected to the front or rear with this movement,

**PNEUMATIC:** Compressed air,

**PT (PANTOGRAPH):** In electric traction systems, the equipment that transmits the electrical energy needed by the traction vehicle from the electric line (catenary) to the traction vehicle,

**NEAR-MISSING EVENT:** The event that occurs in the workplace, which is not occurring any damages, although it has the potential to cause damage to the employee, workplace or equipment,

**RAIL SYSTEM VEHICLE:** General name given to all vehicles moving on the railway (High Speed Train, locomotive, passenger/freight wagon, diesel multiple units, electric multiple unit, tram, metro, funicular, light rail vehicle, suburban, train etc.),

**RECTIFIER:** A device that converts alternating current (AC) to direct current (DC),

**RIGID CATENARY:** System consisting of copper conductor fixed on the ceiling of the tunnel or on the aluminium profile carrier part attached with direct post insulators,

**RISK:** The possibility of loss, injury or other harmful consequence resulting from the hazard,

**RISK ASSESSMENT:** Necessary work to be done in order to determine the dangers that exist in the workplace or that may come from outside, the factors that cause these hazards to turn into risks, and the analysis and rating of the risks arising from the hazards, and to decide on control measures,

**RELAY:** Electromagnetically operated electromechanical switching element,

**SEKSIYONER:** Unit that separates and cuts energy,

**SENSOR:** A device that detects flow, weight, temperature, velocity, capacity etc. variables electrically, electronically and mechanically,

**CHARGING:** Charging accumulators with electric charge,

**DRIVE:** Excitation and power transfer,

**DANGER:** The potential for harm or damage that exists in the workplace or may come from outside, which may affect the employee or the workplace,

**TRAIN SET (TRAIN SERIE):** Railcar/Rail-car series, which is a combination of inseparable vehicles consisting of cars and wagons designed accordingly,

**TRAIN:** Compound rail system vehicle consisting of one or more traction vehicles and wagons or one or more traction vehicles,

**3.RAIL:** The energy rail that transfers the electrical energy used in the railway vehicles to the vehicle through the current collector.



## 1. INTRODUCTION

Rail System Vehicles Maintenance and Repairer (Level 4) National Occupational Standard, which was prepared by the TCDD Development and TCDD Personnel Solidarity and Assistance Foundation appointed by the VQA in accordance with the provisions of “Regulation on the Preparation of National Occupational Standards and National Competencies” published in the Official Gazette dated 19/10/2015-numbered 29507 “Regulation on the Establishment, Duties, Working Procedures and Principles of Vocational Qualifications Institution Sector Committees” published in the Official Gazette dated 27/11/2007 – numbered 26713, and which was evaluated by taking the opinions of the relevant institutions and organizations in sector, has been approved by the Executive Board of VQA after being reviewed by VQA Transport, Logistics and Communications Sector Committee.

The revision of the Rail System Vehicles Maintenance and Repairer (Level 4) National Occupational Standard no.01 was made by the VQA Working Group and approved by VQA Executive Board after being reviewed by VQA Transport, Logistic and Communication Sector Committee.



## 2. JOB DESCRIPTION

### 2.1. Job Description

Rail System Vehicles Maintenance and Repairer (Level 4), within the framework of OHS, environmental protection, quality rules and methods; is a qualified person who has the knowledge and skills to carry out the maintenance and repair of the vehicles' mechanical, electrical and electronic, hydraulic equipment and systems and diesel engines in order to keep the rail system vehicles ready for use, alone or in a team.

The Rail System Vehicles Maintenance and Repairer (Level 4) also intervenes in the possible malfunctions that may occur during the operation process of the vehicles that are in operation.

### 2.2. The place of Occupation in Occupational Classification Systems

**ISCO 08:** 8342 (Operators of earthmoving machinery and similar machinery)

**ISCO 08:** 3115.44 (Rail Systems Mechatronics Technician) recommending

**ISCO 08:** 7233 (Those who work in the maintenance and repair works of agricultural and industrial machines)

### 2.3. Special Regulations for the Profession

“Railway Safety Critical Missions Regulation” published in the Official Gazette with the number 29935 on 31.12.2016

*\* It is essential to comply with the legislation on OHS, Environment and other issues for the execution of the profession.*

### 2.4. Working Environment and Conditions

Rail System Vehicles Maintenance and Repairer (Level 4) can work in production, maintenance and repair works in enterprises operating in the field of rail system vehicle maintenance and repair and in companies that are rail system vehicle manufacturers.

He/she is responsible for the accuracy, timing and quality of the maintenance and repair operations performed on vehicles. He/she works in communication and cooperation with his supervisors and other team members within the framework of the work plan. He/she works in accordance with the work instructions in the execution of the transactions and notifies the related persons about the malfunctions and errors that are outside the scope of responsibility.

There is a risk of occupational diseases arising from the working environment and conditions of the Rail System Vehicles Maintenance and Repairer (Level 4) during the maintenance and repair process. There is talk of working at all hours of the day and on holidays.

There is a risk of occupational accident, occupational disease, injury and health problems during the execution of the profession. Necessary measures are taken by the employer in order to completely eliminate and prevent these risks. In cases where the risks cannot be completely

eliminated, he/she works by using the appropriate personal protective equipment provided by the employer.





### 3. PROFESSION PROFILE

#### 3.1. Tasks, Operations, Performance Criteria, Professional Knowledge and Practical Skills

Task		A. Implementing occupational health and safety, environmental protection and quality requirements (continued)		Professional Knowledge and Practical Skills
Operations		Performance Criteria		
Code	Explanation	Code	Explanation	
A.1	Implementing occupational health and safety instructions	A.1.1	In line with the instructions, he/she works in a way that does not put himself and those around it at risk, taking into account the measures related to OHS.	<ol style="list-style-type: none"> <li>1. Obligations of employers and employees in occupational health and safety</li> <li>2. OHS instructions and performing of instructions in business processes</li> <li>3. Safe use of tools, equipment and equipment and implementing of instructions in business processes</li> <li>4. Types and characteristics of personal protective equipment</li> <li>5. Selecting and using personal protective equipment</li> <li>6. Recognizing and complying with health and safety signs</li> <li>7. Methods and techniques to identify hazards and risks in the working environment</li> <li>8. Emergency instructions</li> <li>9. Implementing emergency instructions in business processes</li> <li>10. Environmental protection instructions</li> <li>11. Implementing environmental protection guidelines in business processes</li> <li>12. Efficient use of resources and basic savings practices</li> </ol>
		A.1.2	He/she works by using machinery, tools, equipment and other production tools in the workplace and their safety equipment in accordance with health and safety signs and instructions.	
		A.1.3	He/she works in the working environment by using PPE in accordance with the instructions according to the business processes.	
		A.1.4	He/she shares the dangers, risks and near-miss events that he/she observes that will affect himself/herself and his/her environment, verbally and/or in writing.	
		A.1.5	He/she conveys his/her observations and opinions to the risk assessment team in risk assessment studies.	
		A.1.6	He/she follows the maintenance and periodic inspections of the machines that he is authorized.	
		A.1.7	He/she works by complying with the preventive and restrictive measures taken within the scope of the issues specified in the emergency plan.	
		A.1.8	He/she communicates emergencies related to health and safety in the workplace to the relevant persons.	

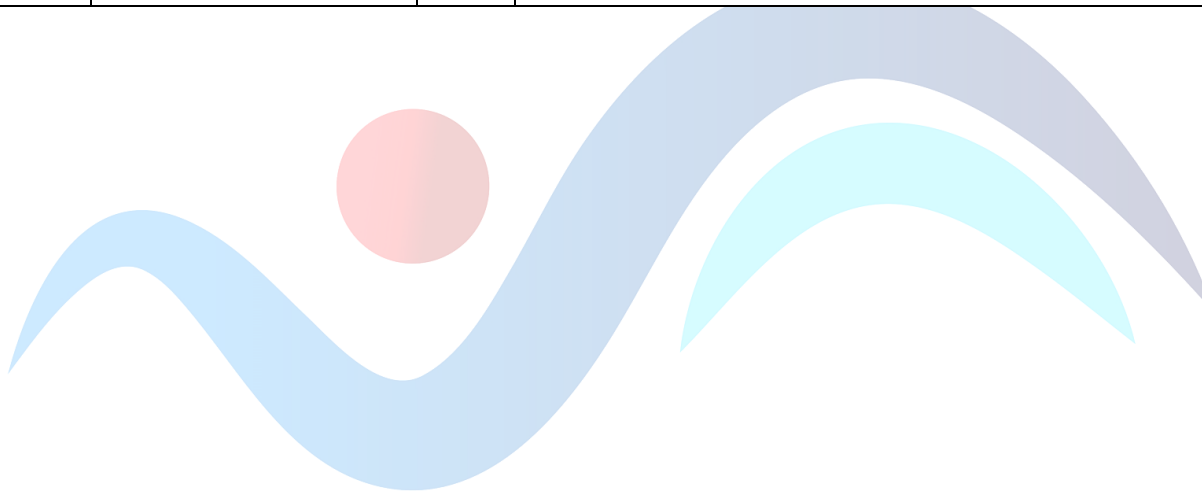
Task		A. Implementing occupational health and safety, environmental protection and quality requirements			
Operations		Performance Criteria		Professional Knowledge and Practical Skills	
Code	Explanation	Code	Explanation		
A.2	Taking environmental protection measures	A.2.1	He/she works in accordance with possible environmental hazards and risks in business processes.	13. Quality requirements to be applied in business processes 14. Methods to eliminate nonconformities in business processes 15. Keeping records of work done in business processes 16. Storage and use of chemicals used in business processes	
		A.2.2	He/she implements environmental protection measures in accordance with the requirements of the work done.		
		A.2.3	He/she participates in determination and planning studies for less use of natural and business resources.		
		A.2.4	He/she separates the environmental wastes and recyclable materials that occur in the area where it works and collects them in defined containers.		
A.3	Working in accordance with quality requirements	A.3.1	He/she acts in accordance with the instructions and plans in the transaction forms.		
		A.3.2	He/she works in accordance with the quality requirements of the tool, tool, equipment or system.		
		A.3.3	He/she keeps a record of the work done according to the operating procedure.		

Task		B. Maintenance/repair of rail system vehicles		
Operations		Performance Criteria		Professional Knowledge and Practical Skills
Code	Explanation	Code	Explanation	
B.1	Prepare for maintenance/repair	B.1.1	Determine the maintenance/repair method and techniques of the vehicle to be repaired.	1. Rail system vehicle types and types 2. In rail system vehicles; <ul style="list-style-type: none"> <li>• Brake systems</li> <li>• Vehicle drive systems</li> <li>• Door systems</li> <li>• Bogie systems</li> <li>• On-board signal systems</li> <li>• Battery systems</li> <li>• CCTV systems</li> <li>• Air conditioning systems</li> <li>• Coupling systems</li> <li>• Current collector/energy receiver systems</li> <li>• Pneumatic/Hydraulic systems</li> <li>• Fire detection and extinguishing systems</li> <li>• Auxiliary power systems</li> <li>• Passenger information and announcement systems</li> <li>• Driver information systems</li> <li>• Train control and management systems</li> <li>• Vehicle maintenance terminals</li> <li>• Vehicle body and side equipment</li> <li>• Sub-chassis and connections</li> <li>• Vehicle interior and exterior lighting systems</li> <li>• Diesel engines</li> <li>• Alternators</li> <li>• Cargo transport systems (continued)</li> </ul>
		B.1.2	Prepare materials used in maintenance and repair processes.	
		B.1.3	Prepare hardware, tools, tools and equipment used in maintenance and repair works.	
B.2	Maintenance/repair (Continued)	B.2.1	Perform brake system maintenance/repair.	
		B.2.2	Perform vehicle drive system maintenance/repair.	
		B.2.3	Perform door system maintenance/repair.	
		B.2.4	Perform bogie system maintenance/repair.	
		B.2.5	Perform on-board signal system maintenance/repair.	
		B.2.6	Perform battery system maintenance/repair.	
		B.2.7	Perform CCTV system maintenance/repair.	
		B.2.8	Perform air conditioning system maintenance/repair.	
		B.2.9	Perform coupling system maintenance/repair.	

Task		B. Maintenance/Repair		
Operations		Performance Criteria		Professional Knowledge and Practical Skills
Code	Explanation	Code	Explanation	
B.2	Maintenance/Repair (Continued)	B.2.10	Perform maintenance/repair of current collector/energy receiver system.	<ul style="list-style-type: none"> <li>• Loading/unloading systems</li> <li>• Transformers</li> <li>• Event Recorder</li> </ul> 3. Rail system vehicles maintenance/repair procedures 4. Machinery and equipment used in the maintenance/repair of rail system vehicles 5. Materials used in maintenance/repair of rail system vehicles 6. Earthing system 7. Air conditioning system
		B.2.11	Perform Pneumatic/Hydraulic system maintenance/repair.	
		B.2.12	Perform fire detection and extinguishing system maintenance/repair.	
		B.2.13	Perform auxiliary power system maintenance/repair.	
		B.2.14	Perform passenger information and announcement system maintenance/repair.	
		B.2.15	Perform maintenance/repair of driver information system.	
		B.2.16	Perform maintenance/repair of train control and management system.	
		B.2.17	Perform maintenance/repair of vehicle maintenance terminals.	
		B.2.18	Perform maintenance/repair of the event logger system.	
		B.2.19	Maintenance/Repair of car body and side equipment.	
		B.2.20	Perform inspection/repair of sub-chassis and connections.	
B.2.21	Perform the maintenance/repair of the system in the service units for the passengers in the vehicles.			

Task		B. Maintenance/Repair		
Operations		Performance Criteria		Professional Knowledge and Practical Skills
Code	Explanation	Code	Explanation	
B.2	Maintenance/Repair	B.2.22	Perform the maintenance/repair of the bellows and articulation area.	
		B.2.23	Perform diesel engine maintenance/repair.	
		B.2.24	Perform alternator maintenance/repair.	
		B.2.25	Perform maintenance/repair of the load handling system.	
		B.2.26	Perform load/unload system maintenance/repair.	
		B.2.27	Perform test monitoring and corrective maintenance while the train is in operation.	
		B.2.28	Perform transformer maintenance/repair.	
B.3	Post-Maintenance/Repair operations	B.3.1	Fix nonconformities by checking functionality after maintenance/repair.	
		B.3.2	Clean the equipment and work area at the end of the job.	
		B.3.3	Keep records of work done	

Task		C. Participate in professional development activities			
Operations		Performance Criteria		Professional Knowledge and Practical Skills	
Code	Explanation	Code	Explanation		
C.1	Working on personal professional development	C.1.1	Determine the learning needs related to the profession with guidance.	1. Rail System Vehicles Maintenance Repairer duty and professional development 2. Professional terminology 3. Professional legal regulations 4. Professional equipment, tools and consumables (properties and uses) 5. Observing and evaluating 6. Transfer of professional knowledge and experience	
		C.1.2	Participate in vocational training and organizations determined by the management.		
		C.1.3	Follow the technological developments in materials, tools, equipment and equipment related to the profession.		
		C.1.4	Apply the developments related to his/her profession in the transactions he/she carries out.		
C.2	Contributing to the professional development of the people working with	C.2.1	Transfer his/her knowledge and experience about the jobs to be done to his/her colleagues who have just started work.		
		C.2.2	Share his/her new knowledge and experience with his/her teammates.		



### 3.2. Tools and Equipment Used

1. **Machine, system, hardware, tools and equipment** (Battery charger, cables, Key set (hex, open, wrench, socket set, torque wrench, etc.), Argon welding device and tools, Adjustable DC power supply, Maintenance channels and stands, Biological and chemical water treatment systems, Adjustable pliers, hammer, hacksaw, file set, brush, Steel rope, chain, Various machine tools (drill, grinding, saw, hammer, press, spiral stone, etc.), Jigsaw, Circuit breakers, Axle and bogie lowering units, Electric welding machine, Electric/electronic circuit components, Power tools and motors, Safety stand and wedge types, Injection pump adjustment device, Injector cleaning device, Injector tester, Phase pen/check pen, control lamps, phase direction controller, Galvanometer, Gas metal arc welding device and tools, Grease pump and lubrication units, Communication cable measurement/test device, Soldering iron kit (soldering iron, solder wire, solder paste, solder pump), Hydraulic, electr. Power and pneumatic hand tools, Hydrometer, Communication tools (radio, telephone, mobile phone, etc.), Generators, Lifting, carrying and pulling equipment, Compressor and air distribution unit, Jack types, Krone knife (telephone clamp tightening tool), Control tables , Caliper, Lever, Cleat, Oxy-gas welding and tools, Programming devices, Spot welding machine, RCL bridge/weston bridge, Rectifier (current rectifier and voltage reducer), Refractometer , Relays, Bearing puller, Circlip pliers, Sensors, Signal converters (RS-232, RS-485, RJ-45, etc.), Signal generator, Cooling radiator maintenance unit, Water treatment systems, Valve adjustment kits, Susta (cable guide), Switch, contactor, booster cable etc., Repair, maintenance and parts catalog / data programs, Annealing furnace, Thermal camera, Test tube, Fuel filling and discharge unit, Washing machine and units (water, air and chemical)
2. **Test and measurement device** (Ammeter, battery measuring device, Shock absorber tester, Voltmeter, Avometer, Multimeter, Micrometer, Ohmmeter, Oscilloscope, Clamp meter, Relay tester, Wattmeter), Special type analog and information instruments and devices, Diagnostic test device, Portable and limited tools and devices, Tachometer, Bench analog and many instruments and devices, Ultrasonic device devices, Vacuum leakage tester, Insulation measuring device (meger), Calibrators / calibration devices, Ultraviolet inspection devices, Engine compression test device, Multimeter, Boom meter, Decibel meter, etc.)
3. **Various materials** (Antifreeze, Vehicle interior and exterior protective covers, Vehicle service book, maintenance forms, Fasteners (bolts, nuts, screws, rivets, etc.), magnifying bench lamp, flashlight, Sandpaper, Electrical grounding and insulation materials, grounding cable and rod, Contact cleaners, Insulation materials, Cable apparatus, Chemical cleaning and rust removers, Plugs, rails, bolts, nuts, terminal blocks, etc. materials, Safety instruction information and warning letters, warning signs, Chemical cleaning and rust removers, Marking label and pen, Various plumbing materials (nipple, union, sleeve, etc.), Liquid gasket, Sealing elements, silicone and silicone gun, Cleaning solvent, methyl alcohol, etc., Oil types, Insulation materials, Fire extinguishing equipment and materials, etc. )
4. **Personal protective equipment** (helmet, steel toe shoes, gloves, safety belt and lock, glasses, work clothes, visor, dust mask, etc.)
5. First aid kit
6. Fire extinguishing equipment

### 3.3. Attitudes and Behaviours

1. To be cool and calm in emergency and stressful situations,
2. To convey accurate and timely information to their superiors,
3. Making decisions within the scope of knowledge and experience,
4. To use the working time effectively and efficiently in accordance with the work order,
5. To adopt the regulations in the environment, quality and OHS legislation,
6. To transfer their experiences to their colleagues,
7. To be sensitive about the changes that may occur during the transactions,
8. To be sensitive about to use and recovery of business resources,
9. To act in accordance with the workplace hierarchy relationship,
10. To take care of the safety of himself and others,
11. Willingness to research for professional development,
12. To work in a planned and regular manner,
13. To be sensitive about risk factors,
14. To know and fulfil their responsibilities,
15. To comply with the instructions and guidelines,
16. Informing those concerned in case of danger,
17. Paying attention to cleanliness, order and workplace organization,
18. To share information effectively, clearly and accurately in shift changes,
19. Being open to innovations and adapting to changing conditions,
20. To inform the relevant parties about the defects that are not under its authority,

### Appendix: Persons Involved in the Preparation and Verification Process of Occupational Standards

#### 1. Members of the Occupational Standards Preparation Team and Technical Working Group:

No	Name-Surname	Education* (Date – Educational Institution/Department Name)	Experience* (Date – Workplace – Title)
1.	<u>Cüneyt TÜRKKUŞU</u>	<u>1995, TCDD</u> Eskisehir Vocational High School <u>2000, Gazi Univ.</u> Industrial Technology Education, Bachelor's degree	<u>2010</u> – still continue, TCDD, In-Service Training Manager <u>2016 – 2018</u> , Eskişehir Technical University, Instructor (Rail Systems) <u>2004 – 2010, TCDD</u> , In-Service Training Program Development and Trainer <u>1996 – 2004, TCDD, Sürveyan</u> , Railway Signalling Maintenance
2.	<u>Kamil Esen</u>	<u>1998</u> , Railway Vocational High School	<u>2011</u> -Still continue, <u>TCDD Taşımacılık Inc.</u> , Traction Branch Teacher, <u>2016 – 2018</u> , Eskişehir Technical University, Instructor (Rail Systems)



		<p><u>2004</u>, Cumhuriyet University, Mechanical Associate Degree</p> <p><u>2009</u>, Anadolu University, Economics, Bachelor's Degree</p> <p><u>2017</u>, Istanbul University, Industrial Engineering, Bachelor's Degree</p>	<p><u>1999-2011 TCDD, Machinist</u></p>
3.	<u>Emin Ekici</u>	<p><u>1997</u>, Railway Vocational High School</p> <p><u>2000</u>, Kocatepe University, Associate Degree</p> <p><u>2005</u>, Anadolu University, Public Administration, Bachelor's degree</p>	<p><u>2007</u>-Still continue, <u>TCDD Taşımacılık Inc.</u>, Traction Branch Teacher</p> <p><u>2010-2012</u> Gazi Vocational and Technical Anatolian High School, Teacher</p> <p><u>2016 – 2018</u>, Eskişehir Technical University, Instructor (Rail Systems)</p> <p><u>1997-2007 TCDD, Machinist</u></p>
4.	<u>Çağdaş Görgülü</u>	<p><u>1997</u>, Railway Vocational High School</p> <p><u>2003</u>, Anadolu University, Business Administration, Bachelor's degree</p> <p><u>2008</u>, Dumlupınar University, Construction, Bachelor's degree,</p> <p><u>2016</u>, Ahmet Yesevi University, Bachelor's degree</p>	<p><u>2017</u>- Still continue, <u>TCDD Taşımacılık Inc.</u>, Engineer-Quality and Certification Manager</p> <p><u>2006-2017</u> Still continue, <u>TCDD Taşımacılık Inc.</u>, Engineer</p> <p><u>2011-2016</u> Railway Traffic Branch Teacher</p> <p><u>2010-2012</u> Gazi Vocational and Technical Anatolian High School, Teacher</p> <p><u>2016 – 2018</u>, Eskişehir Technical University, Instructor (Rail Systems)</p> <p><u>2009-2011 SAP</u> Integration Module Analyst-Module Leader</p> <p><u>2005-2007</u> Station Chief / Station Manager Assistant</p> <p><u>1997-2005</u> Dispatcher</p>
5.	<u>Dr. Kerim COLAK</u>	<p><u>2013</u>, New York University, Electrical Eng., Doctoral degree</p> <p><u>2003</u>, Gebze Technical University, Energy Systems Eng., Master's degree</p> <p><u>1998</u>, <u>İTÜ</u>, Electrical Eng., Bachelor's degree</p>	<p><u>2015</u>-Still continue, <u>Metro İstanbul</u>, Training Chief</p> <p><u>2013-2015</u>, <u>Metro İstanbul</u>, R&amp;D Engineer</p> <p><u>2009-2013</u>, New York University, Research Assistant</p> <p><u>2005-2008</u>, <u>Metro İstanbul</u>, System Safety Chief</p> <p><u>1998-2005</u>, <u>Metro İstanbul</u>, R&amp;D Engineer</p>
6.	<u>Bayram AKÇAY</u>	<p><u>2018</u>, <u>Yıldız Technical University</u>, Education Management and Supervision, Master's degree</p> <p><u>1997</u>, <u>Ankara University</u>, Library science</p>	<p><u>2007</u>-Still continue, <u>Metro İstanbul</u>, Technical Training Specialist</p> <p><u>2020</u>-Still continue, Beykoz University, Lecturer (Rail Systems Management)</p> <p><u>2016-2018</u>, <u>İETT</u>, General Manager Education Consultant</p> <p><u>2012</u>-Still continue, <u>TÜRKAK</u>, Technical Expert-Auditor</p> <p><u>2012</u>-Still continue, <u>VQA</u>, Technical Expert-Auditor</p> <p><u>1995-2007</u>, <u>BUGSAŞ-Ankaray</u>, Technical Trainer</p>
7.	<u>Bilal ÖZCAN</u>	<p><u>2005</u> Trakya University, Faculty of Engineering and Architecture, Department of Mechanical Engineering</p>	<p><u>2018</u>- Still continue, <u>Metro İstanbul</u>, - <u>Metro</u> Vehicle Mechanical Equipment Chief</p> <p><u>2017-2018</u>, <u>Metro İstanbul</u>, M3 Line Vehicle Maintenance Chief</p>

			<u>2015-2017 Metro İstanbul, Metro Vehicle Heavy Maintenance Specialist Engineer</u> <u>2010-2015, Metro İstanbul, Vehicle Maintenance Engineer</u>
8.	<u>Turgay KADIOĞLU</u>	<u>2020, Istanbul Commerce University, Urban Systems and Transportation Management, Master's degree</u> <u>2005, Yıldız Technical University, Electrical Engineering</u>	<u>2018-Still continue, Metro İstanbul, T4 Vehicle Maintenance Chief</u> <u>2016-2018 Metro İstanbul, Zeytinburnu Vehicle Workshop Chief</u> <u>2015-2016, Metro İstanbul, Chief of R&amp;D Electrical-Electronic Systems</u> <u>2014-2015 Metro İstanbul, Electrical Systems Production and Control Chief</u> <u>2013-2014, Metro İstanbul, Chief of R&amp;D Electrical-Electronic Systems</u> <u>2007-2013 Metro İstanbul, Workshop Engineer</u> <u>1998-2001 Enmar Engineering, Project Specialist</u> <u>2003-2006 Bombardier Transportation, Site Support-Site Manager</u>
9.	<u>Erhan SEZGİN</u>	<u>2001, Kocaeli University, Faculty of Engineering, Electronics and Communication Engineering, Bachelor's degree</u>	<u>2016 – Still continue, ESTRAM, Vehicle Assistant Manager</u> <u>2018 – Still continue, TÜRSİD, Chairman of the Vehicle Committee</u> <u>2004-2016 ESTRAM, Electrical - Electronics Maintenance Chief</u>
10.	Eyyüp ONAT	1987, H.Ü. Science and Science Ins. (Statistics), Master's Degree 1983, H.Ü. Faculty of Science (Statistics), Bachelor's degree	2016 – Still continue, VQA, Moderator 2010-2016 EDUSER, UMS-UY Moderation and Assessment-Evaluation Specialist 1983-1997 ÖSYM, Computer Programmer, Assessment-Evaluation Specialist

*\*Only education/experience information related to the profession will be included.*

## 2. Persons, Institutions and Organizations Requested for Opinion:

### 3. VQA Sector Committee Members and Experts

### 4. VQA Board of Directors