Occupation:	**Rail systems Signaling Maintainer and Repairer**
Level:	**4**[I]
Reference Code:	**12UMS0235-4**
Prepared by:	**Turkish State Railways (TCDD) Development & TCDD Personnel Solidarity and Assistance Foundation**
Verified by:	**VQA Transportation, Logistics and Communication Sector Committee**
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[I] Occupational Qualification Level is determined as Level Three (4) in the octal (8) level matrix.

TERMS, SYMBOLS AND ABBREVIATIONS

3.RAY: The power rail transmitting the electric power used in the railroad cars to the vehicle over current collector,

ACTIVE DEVICE: XDSL, Multiplexer, SDH, and DWDM devices in communication systems,

Interlocking: Control unit of signalization systems,

ANTENNA: The component receiving and giving the electromagnetic signals for communication on rail systems,

INTERFACE: Electronic and electromechanical system prepared for communication of the systems with each other in the areas where different signal systems are combined,

ATC (Automatic Train Control): Automatic Train Control System,

ATO (Automatic Train Operation): Automatic Train Operation,

ATP(Automatic Train Protection): Automatic Train Protection System,

ATS (Automatic Train Stop): Automatic Train Stop System,

ATS (Automatic Train Supervising): Automatic Train Supervising System,

BALİS/BEACON: Roadside equipments transmit the fixed and variable data can be written at ATP, ATC systems to on vehicle system,

BARRIER MOTOR: Electrical motor serves for operating barrier arm at level crossing,

BARRIER: Mechanism serves for closing/opening the level crossings to road vehicles, operated automatically or manually, made of wooden, pvc or metal,

BONDING: Conductive allows for electrical continuation at rail connection points,

BTM (Balis Transmation Modul): Balis transmission module,

CER ARACI (ÇEKEN ARAÇ): Locomotive and its rail car moving by driving power produced by the motor on itself,

DWARF SIGNAL: Low smaller signals mounted on exit of passing tracks,

DETECTOR: Device informing the position of the switch at circuit controlled switches,

RAILWAY: A pair of rails and whole facilities composing the rails on which series of tractive and hauled vehicles move,

CIRCUIT CONTROLLED SWITCH: Collective single turnout whose positions can be monitored from traffic control office and station control desk,

SWITCH RAIL LOCK: Mechanical gear lock-up that prevents turning of switch rail tongue by locking it at switches,

AXLE COUNTER: The unit conducts the existence of the train to signalization system by counting axle,

AXLE: The wheel set component that interconnects two wheels, carries the loads on itself as if a beam and transfers the torque to the wheel,

DMI (Driver Machine Interface): Driver Machine Interface,

ELECTRICAL LOCKED SWITCH: Collective turnout equipped with an electrical lock, used manually, and its positions are monitored from traffic control office and station control desk,

IMPEDANCE BOND: Equipment provides continuation of traction backrush in insulated track circuits,

INDUCTIVE LOOP: The system that provides communication with the train and the perception in light rail systems,

ETCS (European Train Control System): European Train Control System,

EVC (European Vital Computer): European Vital Computer,

F/O SIGNAL: Alphanumeric signals informing deviation rate and direction,

F/O: Fiber optic cable,

GAUGE: Safety distance between fixed facilities and railway cars,

GSM-R (Global System for Mobile Communications - Railway): Mobile communication system that provides data communication of audio and signalization system between railway operational staff,

LEVEL CROSSING: the section where railroad and highway cross each other at the same level,

LEVEL CROSSING PROTECTION SYSTEM: The system that informs the existence of the train in junction of highway and railway to road vehicles and pedestrians,

ISCO: International Standard Classification of Occupation,

ISG (WHS): Occupational Health & Safety,

STATION FACILITIES: All facilities within the boundaries of station,

STATION: The place where there is railway and its facilities providing traffic services and serving for passenger and load transportation,

INSULATED FISHPLATE: The fishplate that is insulated,

INSULATED GASKET: Insulation of the gasket for not being intermingled of two adjacent track circuits in track circuits,

SHORT CIRCUIT: Low resistance line parallel to load in an electrical or electronic circuit .

PERSONAL PROTECTIVE EQUIPMENT (PPE): All kinds of tools, instruments, appliances and devices which are worn, put on or hold by the worker and which protect the worker from one or more hazards arising from the work and effect the health and safety of the worker, and which are designed to suit such purpose,

CONTACT: The component that provides breaking and giving tension in electrical circuits,

CONTROL PANEL: Installment where regulation of the switches are carried out by the officials with permission to be obtained from traffic controller,

SWITCH RAIL: The moving part taking the lead the vehicles for their passing from one way to another at the switches by reclining one of the operational rails according to passing direction,

SWITCH HEATER: The system preventing freezing between reclining spring and switch rail at the switches,

SWITCH CONTROL SYSTEMS: The system providing control of the switches in signalization systems,

SWITCH MOTOR: The mechanism locking the switch by changing its position to final point and sending position information of the switch to signalization system by remote controller,

SWITCH: Railway facility providing railway cars to pass from one rail to another,

SWITCHES ZONE: The rail circuit road part between enter and exit signals in one part of the stations,

OCCUPATION: Staying of train on the block, station road or (OS) switches region or appearing full of these regions due to failure,

CONFORMITY ARM: The arm providing locking in switch control systems,

CONFORMITY: Being in standards of locking of the switch,

AUDIOMETRIC SENSOR: Device measuring instantaneous speed of the train,

POLARITY CONTROL: Controlling tension polarity on both rails in insulated gaskets in insulated rail circuits,

PROTOCOL PRINTER: The system that can records and prints textual out by constantly monitoring the movements of the operator and system in traffic monitoring centers,

TRACK CIRCUIT: The unit conducting the existence of the train to signalization system electrically,

TRACK: specially profiled track superstructure component which provides an uninterrupted and smooth surface for vehicle wheels to roll and transmits load coming from wheels to culvert units,

RISK: Possibility of loss, injury or other unfavorable consequences that may occur due to dangers,

RELAY: Switching element working electromagnetically,

SENSOR: Electronic flow, weight, speed and capacity sensor,

SIGNAL TELEPHONE: Telephone providing the rail systems staff with communication with control office/central monitoring station,

SIGNAL: Railway traffic facility with two, three or four color lamps placed on steel pipe, console or bridges, arranging railway traffic providing various color notice, giving automatically or remote-control notice,

SIGNALLING: Signaling systems used for ensuring security in railway traffic and maneuver,

ACTUATOR: Arm that transmits driving power and tractive force in switch motor in switch control systems,

DANGER: Potential of damage or injury likely to affect the worker or work place and likely to exist in the workplace or to be caused externally,

WHEEL SENSOR: Unit that informs on wheel equipment about wheel rotating speed in railway vehicles,

TRAFFIC CONTROLLER: traffic controller who use systems and communication devices installed to ensure train traffic safety and management, conduct all train moves at a certain line section as planned, make decisions on train choice in cases not planned, to take provisional measures if the track is blocked,

TRAFFIC CONTROL OFFICE: The place where the system is available necessary for directing the traffic, the traffic transactions are carried out by commanding and instructions are given,

TRAIN SENSING SYSTEM: The system that detects the existences of moving vehicles in rail systems and transmits command/Monitoring system by signalization system,

TRAIN: Integrated rail system vehicle made of one or more traction vehicles and railway cars or one or more traction vehicles,

TRAINGRAPH: The system that constantly monitors the train movements in traffic monitoring centers, records them graphically and prints out,

REMOTE CONTROL SWITCH: The switch that can be commanded from traffic control center, station control desk or control panel, that can be used manually when necessary, having an electrical motor, that its positions can be monitored from control center and station control desk,

VİDEOWALL: Control/monitoring screen consisting of LCD, LED or DLP screens,

RECLINING RAIL: Operation rail where switch rail is reclined,

HIGH SIGNAL: Signals on the main road with three or four lamps, placed on 3-3,8 m height pipe posts or consoles and bridges where the land and gauge are not applicable.

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1. INTRODUCTION

National vocational standard on Rail Systems Signaling Maintainer & Repairer (level 4) is issued by Foundation of Turkish Railways Development and Cooperation & Solidarity with Turkish Railways Personnel assigned by Vocational Qualifications Agency in accordance with provisions of "Directive on Drawing National Vocational Standards" and "Directive on Procedures and Fundamentals of establishment, assignment and works of Committees under Vocational Qualification Agency" published pursuant to 5544 numbered Law on Vocational Qualifications Agency and mentioned law.

Rail Systems Signaling Maintainer & Repairer (level 4) National Vocational Standard was assessed upon receiving the opinions of the related institutions and organizations in the sector, and approved by VQA Board of Directors upon examination of the VQA Transportation, Logistics and Communication Sector Committee.

2. INTRODUCTION OF THE OCCUPATION

2. 1. Definition of the Occupation

Rail Systems Signaling Maintainer & Repairer (level 4) is the person who has ability of performing assembly and disassembly of signaling systems in accordance with project, making any and all kinds of periodical maintenance operations of systems for the purpose of making them available for operation, and detecting and repairing faults individually or within a team within certain time period in frame of OHS, environmental protection, and quality rules and methods and within limits of her/his predefined authority and task instructions.
Rail Systems Signaling Maintainer & Repairer (Level 4) is responsible for correctness, timing, and quality of assembly, disassembly, control, maintenance, and repair works s/he performs under partial supervision. In the performance of works, s/he works in accordance with the work instructions and informs the failures and defects falling out of his area of responsibility to the relevant persons in charge. Taking her/his own safety measures and contributing to occupational safety of others are also at responsibility of Rail Systems Signaling Maintainer & Repairer (Level 4).

2. 2. Place of the Occupation in International Classification System

ISCO 08: 7421 (Electronics mechanics and service personnel)

2. 3. Regulations on Health, Safety and Environment

Labor Law No. 4857
Social Security and General Health Insurance Law No.5510
By Law on Heavy and Dangerous Works
Circular on Occupational Training of the Workers to Employ in Heavy and Dangerous Works
Bylaw on Control of Packaging Wastes
Bylaw on the Control of Waste Oils
Bylaw on the General Principles of Waste Management
By Law on the Principles and Procedures of Occupational Health and Safety Trainings of Employees
By Law on the Authorities, Tasks, and Responsibilities of Scientists Relating to Electricity
Bylaw on Heavy Current Electrical Installations
Bylaw on the Works of Carrying by Hand
By Law on the Environmental Noise
By Law on the Safety and Health Markings
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By Law on the Health and Safety Conditions when Working with Business Equipment
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By Law on the Safety and Health Measures in the Works with Chemical Substances
By Law on the Usage of Personal Protective Equipment in the Business Places
Bylaw on Safety of Machinery (2006/42/EC)
By Law on the Protection of Employees from Dangers Caused by Explosive Environments

Bylaw on the Control of Hazardous Wastes
By Law on Vibration
Furthermore, it is essential to comply with applicable laws, bylaws, and other legislation regarding occupational health, security, and environment and to carry out relevant risk analysis.

2. 4. Other Legislation Related to the Occupation

Public servants Law No. 657
Law No. 2821 on Trade Unions
Law No. 2822 on Collective Bargaining Agreement, Strike, and Lockout
Highway Traffic Law No. 2918

3308 sayılı Mesleki Eğitim Kanunu

Government Labor Unions and Collective Bargaining Law No. 4688
Decree Law Concerning Regulation of State Economic Enterprises Personnel System Law No. 399 and Repealing Some Articles of Decree Law No. 233
Bylaw on Vocational and Technical Education

Furthermore, it is essential to obey other legislation regarding the occupation.

2. 5. Working Environment and Conditions

Provided not exceeding international standards, odor, noise, damp, vibration, excessive air flow, and electrical current and radiation are some of adverse conditions which Rail Systems Signaling Maintainer & Repairer (level 4) may suffer during work. S/he can work in shifts.

There are risks of accident and getting injured during performance of works and these require being taken of measures regarding occupational health and security. Rail Systems Signaling Maintainer & Repairer (Level 4) is in cooperation with the people who execute other works and uses required personal protective equipment (PPE).

2.6. Other Requirements Regarding the Occupation

Rail Systems Signaling Maintainer & Repairer (Level 4) shall not have height phobia and have the report of " employment and periodical inspection of heavy and dangerous works".

3. OCCUPATIONAL PROFILE

3. 1. Duties, Tasks and Performance Criteria

Tasks		Actions		Performance Criteria	
Code	**Name**	**Code**	**Name**	**Code**	**Description**
A	Applying occupational health and safety, fire and emergency rules	**A.1**	To apply legal and workplace rules regarding occupational health and safety.	**A.1.1**	Participates in trainings on occupational health and safety.
				A.1.2	Uses working clothes and personal protective equipment suitable for the work done.
				A.1.3	Controls the deficiency, suitability for usage and expiration dates of personal protective equipments, replaces that are not suitable with new ones.
				A.1.4	Places warning signs and boards regarding the operation done, in accordance with the instructions and thus contributes to ensuring safety of work place and other workers during the operations.
				A.1.5	Keeps the first-aid, emergency action or personal protective equipment related to Occupational Health and Safety handy suitable for usage and in-service.
		A.2	To mitigate risk factors	**A.2.1**	Contributes to the activities related to determination of risks.
				A.2.2	Reports the available or potential risk factors he faces during the performance of work to the authorities.
				A.2.3	Participates in the activities for decreasing risk factors.
		A.3	To apply emergency procedures in case of emergency.	**A.3.1**	Contributes to taking precautions activities for determining dangerous situations and terminating them expeditiously.
				A.3.2	Informs relevant people about dangerous situations which are not possible to eliminate immediately.
				A.3.4	Carries out the works described in the emergency procedure.
				A.3.4	Applies the exit and escape procedures in emergency cases.

Tasks		Actions		Performance Criteria	
Code	**Name**	**Code**	**Name**	**Code**	**Description**
B	Working in accordance with environmental protection legislation	B.1	To determine environmental hazards	B.1.1	Contributes to evaluation of environmental impacts and potential dangers in connection with operations done
				B.1.2	Attends in periodical trainings regarding environmental protection requirements and applications.
				B.1.3	Contributes to studies on elimination of given environmental danger sources and risk factors
		B.2	To apply environmental protection measures	**B.2.1**	Takes measures against the environmental impacts to occur during the performance of work processes according to the directives.
				B.2.2	Ensures elimination of the wastes being formed during application of work processes, in accordance with operation instructions.
				B.2.3	Takes measures related to safe and healthy operation of device, equipment and tools used against negative environmental impacts to occur.
		B.3	To be economical in consumption of operating assets	**B.3.1**	Uses the operating assets economically and efficiently.
				B.3.2	Carries out necessary determination and making plan activities for productive usage of operation resources.

Tasks		Actions		Performance Criteria	
Code	**Name**	**Code**	**Name**	**Code**	**Description**
C	Working in accordance with the quality management system regulations.	**C.1**	To control quality of works performed.	**C.1.1**	Carries out the corporation's quality assurance rules and procedures according to the instructions included in the transaction forms.
				C.1.2	Works in accordance with the conditions of the devices and tools used in the work processes defined in the quality assurance rules and procedures.
				C.1.3	Supervises the conformity of the tasks performed to the standards.
				C.1.4	Fills in the quality management system forms related to the work.
		C.2	To participate in the activities related to prevention of failures and defects detected during the processes.	**C.2.1**	Informs the failures and defects detected during the works to the superior/related authorized person.
				C.2.2	Participates to inspections and assessments regarding detection of reasons caused fault and failures within the scope of his assigned duties.
				C.2.3	Submits his and his team's observations, ideas and suggestions for improvement of work processes and elimination of faults to the relevant authority in accordance with the corporation's rules and procedures.
				C.2.4	Applies company's rules and procedures related to the failure and defect repairs.
				C.2.5	Informs the failures and defects outside his authority or he fails to repair to the related authorized person.

Tasks		Actions		Performance Criteria	
Code	Name	Code	Name	Code	Description
D	Making pre-work preparations.	D.1	To make personal preparations	D.1.1	Carries out personal care and cleaning in accordance with the rules specified by workplace.
				D.1.2	Is present in the workplace at the time stated in the work legislation before the work starts.
				D.1.3	Makes required process for check documents regarding his status of attendance (kart basılması, imza alınması vb)
				D.1.4	Puts introductory symbols and signs on working cloth.
		D.2	To accept work	D.2.1	Takes work schedule
				D.2.2	Gets information from the person who delivers him an ongoing operation if it is an ongoing operation
				D.2.3	Negotiates the work plan with other workers in the team, for the works to be done as a team
				D.2.4	Gets permission in the activities affecting other units.
		D.3	To investigate the work area	D.3.1	Examines the suitability of working area for the task.
				D.3.2	Contributes to optimization negative properties of working area.
		D.4	To prepare the equipment and material he shall use for work	D.4.1	Selects the equipment and material that are used in accordance with given instructions.
				D.4.2	Makes the equipment and material available for work.
				D.4.3	Repairs the faults and defects of the defective equipment and material under his/her authority.
				D.4.4	Informs relevant persons for replacement and repair of defective equipment and tools.

Tasks		Actions		Performance Criteria	
Code	**Name**	**Code**	**Name**	**Code**	**Description**
E	Making periodical maintenance (to be continued)	**E.1**	To make preparations prior to periodical maintenance	**E.1.1**	Examines the edited records with respect to condition of system equipment to be repaired and gets information from the authorities.
				E.1.2	Determines spare parts and consumables necessary for maintenance and procures them.
				E.1.3	Prepares the tools, instruments and devices necessary for maintenance and makes their adjustments.
				E.1.4	Takes occupational safety precautions before starting maintenance.
				E.1.5	Determines completion time of the work by taking into consideration the average transaction time necessary for maintenance.
				E.1.6	Before starting work gets confirmation with appropriate communication equipments from his/her authority on that the line is closed to traffic.
				E.1.7	If the line is fed from 3. rail, then determines necessity of power cut at 3rd rail within the line during the work to be done.
				E.1.8	Makes/ensures to be made energy grounding in working area.
		E.2	To perform maintenance of switch control systems (To be continued)	**E.2.1**	**Controls the damages on the switch visually.**
				E.2.2	**Controls all screw, points of contact and moving parts.**
				E.2.3	Controls the cable and connections of switch motor.
				E.2.4	Controls the switch cover closing connections and replaces damaged ones.
				E.2.5	Controls the tongue tip and ensure to be replaced.

Tasks		Actions		Performance Criteria	
Code	**Name**	**Code**	**Name**	**Code**	**Description**
E	Making periodical maintenance (to be continued)	**E.2**	To perform maintenance of switch control systems (To be continued)	**E.2.6**	Controls switch motor covers and grounding cable.
				E.2.7	Drying cleans inside of the motor.
				E.2.8	Cleans vent and drainage holes.
				E.2.9	Controls the damages in mechanical parts of the motor.
				E.2.10	Controls the preservations and seals.
				E.2.11	Controls contact covers and switch contacts.
				E.2.12	Controls electrical and mechanical working of switch motor.
				E.2.13	Controls hydraulic system and completes lubricant deficiency.
				E.2.14	**Control locking condition of switch rails bidirectionally.**
				E.2.15	**Control energy cutting of the motor within time, when the switch motor does not provide conformity.**
				E.2.16	**Lubricates switch motor, locked switch detector and moving parts of the detectors.**
				E.2.17	**Controls tongue opening according to standard values in the switches.**

Tasks		Actions		Performance Criteria	
Code	**Name**	**Code**	**Name**	**Code**	**Description**
E	Making periodical maintenance (to be continued)	**E.2**	To perform maintenance of switch control systems	**E.2.18**	**Controls switch heater cables.**
				E.2.19	**Controls the connections in switch distribution boxes.**
				E.2.20	**Controls electrical ports.**
				E.2.21	**Controls functions of displays on control panel.**
				E.2.22	**Controls synchronized work of all switches.**
				E.2.23	**Controls the functions on switch heater sensors and control panels.**
				E.2.24	**Controls isolation and function of the heaters.**
				E.2.25	**Informs relevant person about the problems monitored on superstructure of the switch.**
				E.2.26	**Carries out trouble shooting monitored during switch maintenance.**
				E.2.27	Controls suitability of moisture insulation of the switch.
				E.2.28	**Makes torque adjustments of switch motor.**
				E.2.29	Carries out maintenance of local control panels of the switch.

Tasks		Actions		Performance Criteria	
Code	**Name**	**Code**	**Name**	**Code**	**Description**
E	Making periodical maintenance (to be continued)	**E.3**	To perform maintenance of signals	**E.3.1**	Controls signal energy cables and fasteners.
				E.3.2	Cleans signal optic systems.
				E.3.3	Change period changes coming signal bulbs.
				E.3.4	Controls grounding cables, signal covers, **signal stairs, and signal focusing**.
				E.3.5	**Controls sufficiency of number of LEDs working in Led signal notifications.**
				E.3.6	**Controls impermeability of signal heads and connection boxes.**
				E.3.7	**Cleans the connection box and signal heads.**
				E.3.8	**Controls voltage setting of filament signal bulbs.**
				E.3.9	Controls the paint of the signals and informs the relevant person about those to be painted.
				E.3.10	Controls signal visibility distance and informs relevant person about the situations preventing visibility.
				E.3.11	Lubricates the locks and hinges.
				E.3.12	**Controls all screw and points of contact and moving parts.**
				E.3.13	**Performs signal notification function test of the signals.**
				E.3.14	Controls readability of signal numbers and suitability for numbering system.
				E.3.15	**Recovers failures monitored during signal maintenance.**

Tasks		Actions		Performance Criteria	
Code	**Name**	**Code**	**Name**	**Code**	**Description**
E	Making periodical maintenance (to be continued)	**E.4**	To perform maintenance of train sensor systems (To be continued)	**E.4.1**	**Controls grounding connections of receivers and transmitters.**
				E.4.2	**Controls occupation by shorting track circuit.**
				E.4.3	**Controls polarity in insulated gasket.**
				E.4.4	**Controls tension-current- phase-frequent values and makes adjustments of them.**
				E.4.5	**Empedansbond bağlantılarını kontrol eder.**[II]
				E.4.6	**Controls jumpers, insulation joints, connection boxes, connection ropes, grounding and rail return current joints.**
				E.4.7	**Measures rail voltage while track circuit is open (free).**
				E.4.8	Controls all welded and screwed joints on the lines for a secure connection.
				E.4.9	Performs function test of train sensing systems.
				E.4.10	**Recovers failures** of train sensing systems that were **monitored during maintenance** of (track circuits-axle counter systems)**.**
				E.4.11	Measures input voltage of axle counters and verifies that are in tolarence range.
				E.4.12	Measures frequencies of wheel sensing sensors and verifies they are in tolerance range.

[II] Ulusal demiryolu hatlarında geçerlidir.

Tasks		Actions		Performance Criteria	
Code	**Name**	**Code**	**Name**	**Code**	**Description**
E	Making periodical maintenance (to be continued)	**E.4**	To perform maintenance of train sensor systems	**E.4.13**	Does internal and external cleaning of loop connection boxes.
				E.4.14	Cleans electronic cards.
				E.4.15	Controls inductive loop integrity.
				E.4.16	Carries out test and measurements of electronic cards in loop connection boxes.
				E.4.17	Gets confirmation from control center about an occupation is not received from sensing system of the train that is serviced at the end of the work.
		E.5	To perform maintenance of level crossings. (To be continued)	**E.5.1**	Carries out measurement and maintenance of energy resources according to standards.
				E.5.2	Controls bells and flashers of voiced and illuminated road signal.
				E.5.3	Controls grounding of voiced and illuminated road signal.
				E.5.4	Controls barrier motors and arms.
				E.5.5	Controls lamps on barrier arms.
				E.5.6	Controls transfer to passive position of level crossing after having passed the train.
				E.5.7	Controls reactivation of level crossing that was transferred to passive position before due to the fact that the train has not left the area.

Tasks		Actions		Performance Criteria	
Code	**Name**	**Code**	**Name**	**Code**	**Description**
E	Making periodical maintenance (to be continued)	**E.5**	To perform maintenance of level crossings.	**E.5.8**	Cleans and lubricates barrier gears.
				E.5.9	Controls cable connections and rail connections.
				E.5.10	Controls the paint of the equipments and informs relevant persons about those to be painted.
				E.5.11	Controls level crossing cabinet.
				E.5.12	**Controls voltage adjustments** of voiced and illuminated raod signals **bulbs.**
				E.5.13	Change period changes coming bulbs.
				E.5.14	**Recovers failures monitored during maintenance of level crossing.**
		E.6	To perform maintenance of ATP and ATC on-vehicle equipment	**E.6.1**	Cleans DMI screen in accordance with standards.
				E.6.2	Controls audiometric sensors.
				E.6.3	Controls power resources and accumulators in the system.
				E.6.4	Controls EVC and DMI.
				E.6.5	**Recovers failures monitored during maintenance** of ATP and ATC on vehicle equipments**.**

Tasks		Actions		Performance Criteria	
Code	**Name**	**Code**	**Name**	**Code**	**Description**
E	Making periodical maintenance (to be continued)	**E.7**	ATS (automatic train stop), ATP ve ATC yol boyu ekipmanların bakımı yapmak	**E.7.1**	Carries out cleaning and maintenance of ATS (automatic train stop) ground magnets and balise/beacons (variable, fixed) and controls connection points.
				E.7.2	Controls connection points by cleaning line units.
				E.7.3	Controls ATS (automatic train stop) ground magnets and rail connections.
				E.7.4	Controls balises / beacons.
				E.7.5	ATS (automatic train stop) yer magnetlerinin frekans ve akım değerlerini ölçer.
				E.7.6	Recovers failures **monitored during** maintenance of ATS (automatic train stop), ATP and ATC roadside equipments**.**
		E.8	To perform maintenance of central and local control / monitoring systems and subsystems (To be continued)	**E.8.1**	**Cleans central and local control / monitoring panels.**
				E.8.2	Cleans traingraph and protocol printers.
				E.8.3	Replaces toner, cartridge and ribbons of traingraph and protocol printers.
				E.8.4	**Cleans system computers and environmental units.**
				E.8.5	**Controls operating of traingraph device and protocol record device.**
				E.8.6	Controls **colours and notifications of objects on central and local control / monitoring panels**.
				E.8.7	Controls all voiced and visual alarms in the system.

Tasks		Actions		Performance Criteria	
Code	**Name**	**Code**	**Name**	**Code**	**Description**
E	Making periodical maintenance (to be continued)	**E.8**	To perform maintenance of central and local control / monitoring systems and subsystems	**E.8.8**	Controls commanding buttons.
				E.8.9	Controls data communication systems in control center and technical buildings.
				E.8.10	Recovers **failures monitored during maintenance** of central and local control / monitoring systems and sub-systems.
				E.8.11	Controls air conditioning systems in technical building and informs the relevant persons about them.
		E.9	To perform maintenance of interlocking systems	**E.9.1**	Controls cable connection points of interlocking .
				E.9.2	Makes test and controls of interlocking systems.
				E.9.3	Tests the units providing train-railway communication.
				E.9.4	Cleans the roofs, cabinets and fasteners.
				E.9.5	Controls notification led and lamps.
				E.9.6	**Recovers failures monitored during maintenance** of interlocking systems**.**
				E.9.7	Measures receiver/transmitter cards in equipment inspector cabinet.

Tasks		Actions		Performance Criteria	
Code	**Name**	**Code**	**Name**	**Code**	**Description**
E	To make periodical maintenance	**E.10**	To perform maintenance of communication systems and subsystems	**E.10.1**	Carries out general cleaning of signal system telephones and controls cable connections.
				E.10.2	Controls grounding connection of signal system telephones.
				E.10.3	Controls locking mechanism of telephone cabinet of signal system.
				E.10.4	Controls central telephone system.
				E.10.5	Controls telephone sockets of signal system.
				E.10.6	Makes equipment and function tests of signal system telephones.
				E.10.7	**Recovers failures monitored during maintenance** of communication systems and sub-systems.
		E.11	To perform maintenance of cable distribution boxes	**E.11.1**	Controls cable heads.
				E.11.2	**Recovers failures monitored during maintenance** in cable distribution boxes.
				E.11.3	Controls the connections in distribution boxes.

Tasks		Actions		Performance Criteria	
Code	**Name**	**Code**	**Name**	**Code**	**Description**
F	Repairing the faults (To be continued)	**F.1**	To prepare before repairing	**F.1.1**	Examines the edited records with respect to condition of system equipment to be repaired and gets information from the authorities.
				F.1.2	Determines spare parts and consumables necessary for maintenance of system equipment and procures them.
				F.1.3	Prepares the tools, instruments and devices necessary for maintenance of system equipment and makes their adjustments.
				F.1.4	Takes occupational safety precautions before starting maintenance.
				F.1.5	Determines completion time of the work by taking into consideration the average transaction time necessary for maintenance.
				F.1.6	Before starting work gets confirmation from his/her authority on that the line is suitable for work.
		F.2	To repair switch control systems (To be continued)	**F.2.1**	Determines place and type of the failure by carrying out necessary controls.
				F.2.2	Replaces defective fuses in switch controls systems.
				F.2.3	Replaces defective contacts.
				F.2.4	Replaces defective electrical motor.
				F.2.5	Determines the failure in the cables feeding switch controls systems and troubleshoots.
				F.2.6	Make adjustments of switch actuators.
				F.2.7	Make adjustments of conformity arms of the switch.
				F.2.8	Notifies the failure arising out of road superstructure to relevant unit.
				F.2.9	By determining the failures arising out of hydraulic systems, repairs them.

Tasks		Actions		Performance Criteria	
Code	**Name**	**Code**	**Name**	**Code**	**Description**
F	Repairing the faults (To be continued)	**F.2**	To repair switch control systems	**F.2.10**	Adjusts the conformity contacts of the switch.
				F.2.11	Cleans foreign objects determined between switch reclining rail and switch rail.
				F.2.12	Controls adjustments of motor switches, locked and circuit controlled switches in accordance with specified standards.
				F.2.13	Tests operating of the switch mechanically and electrically.
				F.2.14	Repairs breakdown of local control panels of the switch.
				F.2.15	Replaces defective mechanical parts in switch motor.
				F.2.16	Closes the covers of switch motor.
		F.3	To repair signals	**F.3.1**	Determines place and type of the failure by carrying out necessary controls.
				F.3.2	Replaces defective signal bulb.
				F.3.3	Measures bulb tensions.
				F.3.4	Replaces defective equipments (relay, card, transformer, fuse etc.) .
				F.3.5	Troubleshoots in the cables feeding the signals.
				F.3.6	Closes the signal covers.
				F.3.7	Tests the signal after having repaired the breakdown.

Tasks		Actions		Performance Criteria	
Code	**Name**	**Code**	**Name**	**Code**	**Description**
F	Repairing the faults (To be continued)	**F.4**	To repair train sensor systems (To be continued)	**F.4.1**	Determines place and type of the failure by carrying out necessary controls.
				F.4.2	Replaces defective equipments and fuses.
				F.4.3	Measures output voltages of the equipments.
				F.4.4	Controls feeding devices of the equipments and loops.
				F.4.5	Controls rail connections.
				F.4.6	Tests insulation in isolated gaskets.
				F.4.7	Notifies to relevant person for replacing isolated fishplates.
				F.4.8	Measures feeding tension of track circuit.
				F.4.9	Informs relevant person about rail crack causes the failure.
				F.4.10	Repairs the failure in bonding connections.
				F.4.11	Measures input and output voltages of the transmitter, replaces defective transmitter.
				F.4.12	Measures input and output voltages of the receiver, replaces defective receiver.

Tasks		Actions		Performance Criteria	
Code	**Name**	**Code**	**Name**	**Code**	**Description**
F	Repairing the faults (To be continued)	**F.4**	To repair train sensor systems	**F.4.13**	Repairs the failure in the cables in train sensing systems.
				F.4.14	Replaces defective axle counter sensors.
				F.4.15	Resets axle counter system.
				F.4.16	Closes device boxes.
				F.4.17	Controls wheel sensing sensors, measures their frequencies and voltages, replaces them if necessary.
				F.4.18	Recovers failure by controlling inductive loop integrity.
		F.5	To level crossing protection systems	**F.5.1**	Determines place and type of the failure by carrying out necessary controls.
				F.5.2	Replaces defective fuses in protection system in level crossing.
				F.5.3	Repairs the failure in level crossing interlocking system.
				F.5.4	Replaces failure energy resources in level crossing.
				F.5.5	Repairs the failure in the bells belong to illuminated road signal.
				F.5.6	Repairs the failure in the flashers belong to illuminated road signal.
				F.5.7	Measures bulb tensions.

Tasks		Actions		Performance Criteria	
Code	**Name**	**Code**	**Name**	**Code**	**Description**
F	Repairing the faults (To be continued)	**F.5**	To perform maintenance of level crossings.	**F.5.8**	Replaces barrier arm and defective contacts in barrier driver.
				F.5.9	Repairs electrical motor failure of barrier driver.
				F.5.10	Replaces electrical driver of barrier driver.
				F.5.11	Replaces defective lamps on barrier arm.
				F.5.12	Repairs the failure on failure following system of level crossing.
				F.5.13	Closes device boxes.
		F.6	To repair ATP and ATC on-vehicle equipment	**F.6.1**	Determines place and type of the failure by carrying out necessary controls.
				F.6.2	Replaces defective modules and power resources on ATP and ATC on vehicle systems.
				F.6.3	Replaces ETCS DMI device.
				F.6.4	Replaces the fuses in ATP and ATC on vehicle systems.
				F.6.5	Replaces audiometric sensors, BTM, antennas and ETCS DMI amplifier.
				F.6.6	Closes device boxes.

Tasks		Actions		Performance Criteria	
Code	**Name**	**Code**	**Name**	**Code**	**Description**
F	Repairing the faults (To be continued)	**F.7**	To repair ATS (automatic train stop), ATP, and ATC equipment	**F.7.1**	Determines place and type of the failure by carrying out necessary controls.
				F.7.2	Replaces ATS (automatic train stop) ground magnets.
				F.7.3	Replaces balises/beacons.
				F.7.4	Replaces the fuse of ATS (automatic train stop) ground magnets.
				F.7.5	Replaces cable failure of ATS (automatic train stop) ground magnets.
		F.8	To repair central and local control / monitoring systems and subsystems	**F.8.1**	Determines place and type of the failure by carrying out necessary controls.
				F.8.2	Repairs the failure **on central and local control / monitoring panels**.
				F.8.3	Replaces projection lamps.
				F.8.4	Replaces traingraph and protocol printers.
				F.8.5	Replaces defective modules in the system.
				F.8.6	Replaces operator consoles.
				F.8.7	Repairs the failure in operator telephone system.
				F.8.8	Recovers the failure in system computer and environmental units.

Tasks		Actions		Performance Criteria	
Code	**Name**	**Code**	**Name**	**Code**	**Description**
F	Repairing the faults	**F.9**	To repair interlocking systems	**F.9.1**	Determines place and type of the failure by carrying out necessary controls.
				F.9.2	Replaces the fuse in interlocking system.
				F.9.3	Replaces defective relay, relay group or electronic module in interlocking system .
				F.9.4	Recovers the failure in the systems providing train-railway communication.
		F.10	To repair communication systems and subsystems	**F.100.1**	Determines place and type of the failure by carrying out necessary controls.
				F.100.2	Repairs the failure in signal telephones.
				F.100.3	Replaces the fuses belong to signal telephones.
				F.100.4	Replaces defective electronic equipments.
				F.1.5	Closes device boxes.
		F.11	To repair cables, cable distribution boxes, and active devices	**F.110.1**	Determines place and type of the failure by carrying out necessary controls.
				F.110.2	Repairs the failure by determining it in F/O cables in signalization systems.
				F.110.3	By determining the failure in signal cable, notifies it to relevant persons.
				F.110.4	By determining the failure in communication active devices, notifies it to relevant person.

Tasks		Actions		Performance Criteria	
Code	**Name**	**Code**	**Name**	**Code**	**Description**
G	Mounting and dismantling (To be continued)	**G.1**	To make preparation before assembly and disassembly	G.1.1	Examines the projects of system equipments to be mounted and demounted and gets information from the authorities.
				G.1.2	Reads assembly and disassembly instruction.
				G.1.3	Determines the materials necessary for assembly and disassembly of the system equipment and procures them.
				G.1.4	Prepares tools and materials necessary for assembly and disassembly of system equipment and makes their adjustments.
				G.1.5	Takes occupational safety measures before starting assembly and disassembly.
				G.1.6	By taking into consideration average transaction time necessary for assembly and disassembly and determines completion time of the work.
				G.1.7	Before starting work, gets confirmation from relevant person that the line is closed to traffic.
		G.2	To mount and dismantle switch control systems	**G.2.1**	Carries out assembly and disassembly of switch motor in accordance with project.
				G.2.2	Carries out assembly and disassembly of electrical locked switch systems in accordance with project.
				G.2.3	Carries out assembly and disassembly of detector switch systems in accordance with project.
				G.2.4	Carries out assembly and disassembly of local control panels of switch in accordance with project.
		G.3	To mount and dismantle signals	**G.30.1**	Carries out assembly and disassembly of high signals in accordance with project.
				G.30.2	Carries out assembly and disassembly of dwarf signals in accordance with project.
				G.30.3	Carries out assembly and disassembly of F/O signals in accordance with project.
				G.30.4	Carries out assembly and disassembly of signals of end of line in accordance with project.

Tasks		Actions		Performance Criteria	
Code	**Name**	**Code**	**Name**	**Code**	**Description**
G	Mounting and dismantling (To be continued)	**G.4**	To mount and dismantle train sensor systems	**G.4.1**	Carries out assembly and disassembly of receiver devices in accordance with project.
				G.4.2	Carries out assembly and disassembly of transmitter devices in accordance with project.
				G.4.3	Carries out assembly and disassembly of axle counter in accordance with project.
				G.4.4	Carries out assembly and disassembly of impedance bonds and rail joint bars in accordance with project.
				G.4.5	Carries out assembly and disassembly of loop cables in accordance with project.
		G.5	To mount and dismantle level crossing protection systems	**G.5.1**	Carries out assembly and disassembly of illuminated road signals in accordance with project.
				G.5.2	Carries out assembly and disassembly of barrier drivers in accordance with project.
				G.5.3	Carries out assembly and disassembly of level crossing cabinet in accordance with project.
				G.5.4	Carries out assembly and disassembly of rail joint bars in accordance with project.
		G.6	To mount and dismantle ATP and ATC on-vehicle equipment	**G.6.1**	Carries out assembly and disassembly of ETCS DMI in accordance with project.
				G.6.2	Carries out assembly and disassembly of audiometric sensors in accordance with project.
				G.6.3	Carries out assembly and disassembly of balise/beacon antennas in accordance with project.
				G.6.4	Carries out assembly and disassembly of EVC in accordance with project.
				G.6.5	Carries out assembly and disassembly of BTM in accordance with project.

Tasks		Actions		Performance Criteria	
Code	**Name**	**Code**	**Name**	**Code**	**Description**
G	Mounting and dismantling	**G.7**	To mount and dismantle ATS (automatic train stop), ATP, and ATC equipment	**G.7.1**	Carries out assembly and disassembly of ATS (automatic train stop) ground magnets in accordance with project.
				G.7.2	Carries out assembly and disassembly of balise/beacons in accordance with project.
				G.7.3	Carries out assembly and disassembly of control boxes in accordance with project.
		G.8	To mount and dismantle central and local control / monitoring systems and subsystems	**G.8.1**	Carries out assembly and disassembly of central and local control/monitoring panels in accordance with project.
				G.8.2	Carries out assembly and disassembly of system computers in accordance with project.
				G.8.3	Carries out assembly and disassembly of information transmission system in accordance with project.
				G.8.4	Carries out assembly and disassembly of traingraph and protocol printers in accordance with project.
		G.9	To mount and dismantle interlocking systems	**G.9.1**	Carries out assembly and disassembly of devices of interlocking system in accordance with project.
				G.9.2	Carries out assembly and disassembly of roofs of interlocking system in accordance with project.
		G.10	To mount and dismantle communication systems and subsystems	**G.100.1**	Carries out assembly and disassembly of central telephone system in accordance with project.
				G.100.2	Carries out assembly and disassembly of signal telephones and sockets in accordance with project.
		G.11	To mount and dismantle cable distribution boxes	**G.110.1**	Prepares assembly places of distribution boxes.
				G.110.2	Carries out assembly and disassembly of distribution boxes in accordance with project.

Tasks		Actions		Performance Criteria	
Code	**Name**	**Code**	**Name**	**Code**	**Description**
H	Carrying out end-of-work delivery procedures	**H.1**	To perform end-of-work controls	**H.1.1**	Controls if there is any incomplete work according to work order.
				H.1.2	Completes if there is incomplete work
		H.2	To carry out the cleaning of equipment and work area at the end of work.	**H.2.1**	Leaves his workplace in a tidy and clean condition.
				H.2.2	Keep maintained the tools and equipment used in the work.
				H.2.3	Puts materials, tools and instruments used into their places.
				H.2.4	Exercises due care during usage of the materials that may damage occupational safety and storages them in designated areas properly.
		H.3	To keep records of works done.	**H.3.1**	Records the completed works to relevant forms and/or digital environment.
				H.3.2	Records the consumed materials in the related forms.
		H.4	To report the works done	**H.4.1**	Prepares report of works s/he has done.
				H.4.2	Informs his/her supervisor about the works he/she done.
				H.4.3	Gives information about the work to personnel to whom he will deliver the work in case of ongoing works.

Tasks		**Actions**		**Performance Criteria**	
Code	**Name**	**Code**	**Name**	**Code**	**Description**
I	Conducting professional development activities	**I.1**	To do works on individual professional development	**I.1.1**	Participates in the trainings related to his occupation and keeps the certificates he obtains.
				I.1.2	Follows up new technologies.
		I.2	To share professional knowledge and experiences	**I.2.1**	Transfers his/her knowledge to his/her colleagues.
				I.2.2	Practices limited information and training in connection with the profession.

3. 2. Tools, Appliances and Equipment Used

1. Open-end wrench set
2. Battery tester
3. Allen wrench set
4. Multimeter
5. Balisemeter
6. Computer
7. Battery hydrometer
8. Bonding welding machine
9. Pipe wrench
10. Bag-type generator
11. Hammer-sledgehammer
12. Steel measuring tape
13. Tongue tip lock
14. Flat screwdriver set
15. Echometer
16. Flash lamp
17. Glove
18. Emergency line
19. Phasemeter
20. Camera
21. Frequency meter
22. General purpose programming device
23. Grease pump
24. Soldering iron
25. Communication instruments (wireless, portable telephone, mobile telephone, care worker telephone, GSM-R telephone) Smock
26. Cable peeling pliers
27. Insulating tape
28. Needle nose pliers
29. Pickax
30. Pickax
31. Personal protective equipment
32. Caliper
33. Adjustable wrench
34. Shovel
35. Socket set
36. Switch lever
37. Switch pin driver

38. Leverage
39. Drill bit set
40. Meger
41. Ladder
42. Micrometer
43. Oscilloscope
44. OTDR testing device
45. Shoe squeeze pliers
46. Pulley block mechanism
47. Clamp meter
48. Pliers
49. Mallet
50. Blow torch and welding torch set
51. Rail drill
52. High visibility jacket
53. RLC meter
54. Piston ring pliers
55. Feeler gage
56. Signal binocle
57. Signalization project
58. Spiral grinding machine
59. Bubble level
60. Shunting device
61. Tool box
62. Swab
63. Grounding measurement megger
64. Torque meter
65. Warning and work lamps
66. Vacuum soldering iron
67. Lubricator
68. Diagonal pliers
69. Ring spanner set
70. Phillips screwdriver set
71. High-tension glove
72. High-tension pliers

3. 3. **Knowledge & Skills**

1. Knowledge on emergency case
2. Analytical thinking skills

3. Failure analysis information
4. Basic first-aid knowledge
5. Computer skills
6. Information of determination of vanishing point and holding point in working area
7. Circuit diagram reading information
8. Hardware knowledge
9. Ability of working in a team or an organization
10. Safe work shill and knowledge with hand tools
11. Manual skill
12. Electrical train operation information
13. Visual inspection knowledge and skill
14. Knowledge on Occupational Health and Safety Precautions
15. Workplace working procedures information
16. Knowledge on quality control principles
17. Decision making skills
18. Crisis management skills
19. Knowledge on materials
20. Distance measuring skills
21. Communication information regarding occupation
22. Legal legislation information regarding occupation
23. Foreign language skills at occupational level
24. Knowledge of vocational terms
25. Knowledge of vocational and technical drawing
26. Skill of learning and being able to share what s/he learned
27. Knowledge on measuring and control
28. Problem solving skills
29. Rail systems signal information
30. Knowledge of rail systems traffic
31. Knowledge of signaling
32. Oral and written communication skills
33. Knowledge of basic electrification
34. Knowledge of basic electrification
35. Basic electronic information
36. Knowledge of basic physics
37. Basic mathematics information
38. Knowledge of basic mechanics
39. Basic road superstructure information

3. 4. Attitudes and Behaviors

1. Being cold blooded and calm under emergency and stressful situations
2. Informing superiors properly and in time
3. Making decisions within knowledge and experience
4. Using her/his time effectively and efficiently in accordance with work orders
5. Adopting regulations set forth in environmental, quality, and OHS legislation
6. Sharing experience with associates
7. Being cheery and kind to people
8. To be sensitive about the changes to occur during procedures
9. Being sensitive on use and recovery of resources
10. Behaving in accordance with hierarchical structure of workplace
11. Ensuring his/her own safety and safety of other people
12. Being planned and organized
13. To be sensitive to issues of risk and hazard factors
14. Knowing his/her responsibilities and fulfilling the same
15. To take care of process quality
16. To comply with instructions and guidelines
17. To inform relevant people of dangerous situations
18. To sense and assess dangerous situations carefully
19. Taking care of cleanness, tidiness, and order of workplace
20. To share information at shift changes in efficient, open, and correct manner
21. Being innovative and open to occupational developments
22. Informing concerned people about the malfunctions which are not under his/her authority

4. TESTING, ASSESSMENT AND CERTIFICATION

Testing and assessment for certification with respect to national qualifications based on Rail Systems Signaling Maintainer and Repairer (Level 4) Occupational Standard shall be held in written and/or oral forms, theoretically and practically, in testing and assessment centers where required conditions are met.

Testing and assessment method and practice principles shall be detailed with national qualifications to be drawn up pursuant to this occupational standard. Activities regarding testing, assessment and certification shall be conducted within the framework of Vocational Qualification Authority, Testing and Certification Regulation.

ANNEX: Institutions participated in the Occupational Standard Preparation Process

1. Professional Standards Team of Institution Preparing Professional Standard

İsa APAYDIN	Deputy General Manager, TCDD
Murat ÞENEKEN	Education and Training Department Head, TCDD
Yavuz KIRAN	General Manager of TCDD Foundation
Fatma Ülker YETGİN	Project Coordinator
Pİnar DEMİREKLER	Quality Process Manager
Mehmet EKTAŞ	Branch Manager (Education and Training Department, TCDD), moderator
Feyzi SIVACI	Branch Manager (Education and Training Department, TCDD), moderator
Ekrem ARSLAN	Office Chief (Education and Training Department, TCDD)

1. Technical Work Group Members

Meşhut KARGI	Occupation Group Coordinator (Deputy Manager of Premises Dept., TCDD)
Şaban ADIGÜZEL	Deputy Branch Manager, TCDD
Serdar ÇİLOĞLU	Surveyor, TCDD Facilities
Bilal AKTOY	Worker, TCDD
Mustafa TAMKOÇ	Worker, TCDD
Erdal AYDIN	Worker, TCDD

2. People, Institutions, and Organizations Asked for Opinion:

Alarko Group of Companies
Anatolian Technical and Industrial Vocational High School
Anatolian University Porsuk Vocational School
Ankara Chamber of Industry (ASO)
Ankara Chamber of Trade (ATO)
Ankaray
Antalya Metropolitan Municipality
Ataturk Anatolian Industrial Vocational High School
Independent Transportation Services Public Workers Trade Union (BUS)
Ministry of Science Industry and Technology
United Transportation Workers Trade Union (BTS)
Bursa Rail Operation Center (BURULAS)
Ministry of Labor and Social Security
Association of Railway Machinists and Revisors
Association of Railway Train Professionals
Demiryolu Lojistik Müh.San.Tic.Ltd.Şti.
Associatio ofn Railway Clerks
Association of Railway Vocational School Graduates
Demiryolu Taşımacılığı Derneği
State Personnel Administration
Confederation of Revolutionary Trade Unions of Turkey (DISK)
Aegean Region Chamber of Industry (EBSO)
Eregli Steel & Iron Plant Enterprise (ERDEMIR)
Erzincan University Refahiye Vocational High School Rail Systems Programme
Eskisehir Light Rail System Enterprise (ESTRAM)

Eti Mining Enterprise
Fatih Anatolian Vocational High School
Gazi Anatolian Vocational High School
HAK-IS Trade Union Confederation
Haydarpasa Anatolian Technical Vocational High School
Iskenderun Steel & Iron Plant Enterprise (ISDEMIR)
Istanbul Chamber of Commerce (ITO)
İstanbul Transportation Inc.
İzmir subway Inc.
Kayseray
Konya Metropolitan Municipality
Small and Medium Industry Development Organization (KOSGEB)
MoE Life-Time Learning Directorate General
MoE Occupational and Technical Education Directorate General
MoE Innovation and Education Technologies Directorate General
Central Technical and Industrial Vocational High School
Mechanical and Chemical Industry Corporation (MKE)
Olmuksa
Petkim
Association of Rail Transportation Systems
Rhomberg Kalebozan Demiryolu İnş. San. ve Tic. A. Ş.
Sumer Holding (Iron&Steel)
Sht. Kemal Ozalper Anatolian Vocational High School
Turkish State Railways (TCDD) Ankara Training Center
Turkish State Railways (TCDD) Traction Division
Turkish State Railways (TCDD) Eskisehir Training Center
Turkish State Railways (TCDD) Personnel and Administrative Affairs Department
Turkish State Railways (TCDD) Sivas Training Center
Turkish State Railways (TCDD) Premises Department
Turkish State Railways (TCDD) Traffic Department
Turkish State Railways (TCDD) Railway Department
Tüpraş
Turkey Railway Machinery Industry Corporation
Confederation of Turkish Tradesmen and Craftsmen (TESK)
Turkish Exporters Assembly (TIM)
The Turkish Employers Association of Construction Industries (INTES)
Turkish Statistical Institute (TUIK)
Turkish Labor Institution (ISKUR)
Confederation of Turkish Trade Unions (TURK-IS)
Turkish Confederation of Employer Associations (TİSK)
Turkish Locomotive and Motor Industry Corporation
Turkish Union of Chambers and Exchange Commodities (TOBB)
Turkish Transportation Sector Public Workers Trade Union (TUS-Turk-Ulasim Sen)
Turkish Railway Car Industry Corporation
Transportation Workers Trade Union (Ulasim-Bir-Sen)
Transportation Workers Right Trade Union (Ulasim-Hak-Sen)
Transportation Sector Public Servants Trade Union (UCMS)
Ulaştırma Faal Memur Sendikası
Ulaştırma Faal-Sen (UFS)
Transportation and Railway Workers Right Trade Union (Udem-Hak-Sen)
Ministry of Transportation maritime and Communication
Yapıray
Yıldız Entegre (Tügsaş)
Board of Higher Education (YOK)

Yuksel Project Corporation

3. Sector Committee Members and Experts

Prof. Dr. Mustafa KARAŞAHİN,	President (Board of Higher Education)
Şeyhamit Ünal SARIBAŞ,	Vice President (Ministry of Education)
Nasip Gül İNCEKARA,	Member (Ministry of Labor and Social Security)
Edip TÜRKAY,	Member (Ministry of Energy and Natural Resources)
Ahmet VURAL,	Member (Ministry of Industry and Trade)
Erkin GÜNER,	Üye (Ulaştırma Bakanlığı)
Burak ERDEM,	Member (Turkish Confederation of Employer Associations)
Mehmet KARABÜBER,	Member (HAK Trade Unions Confederation)
Hakan BEZGİNLİ	Member,(Turkish Union of Chambers and Exchange Commodities -TOBB)
Nizamettin ATEŞ,	Member, Confederation of Turkish Tradesmen and Craftsmen - TESK
Dilek TORUN,	Member, Vocational Qualification Authority
Firuzan SİLAHŞÖR,	Department Head, Vocational Qualification Authority
Sinan GERGİN,	Representative of Sector Committee, (Adm. Handicapped & Elderly Services)

4. Executive Board

Bayram AKBAŞ,	Ministry of Labor and Social Security Repr, President
Prof. Dr. Oğuz BORAT,	Ministry of National Education Repr, Acting President
Doç.Dr. Ömer AÇIKGÖZ,	Representative of Council of Higher Education, Member
Prof. Dr. Yücel ALTUNBAŞAK,	Professional Organizations Repr, Member
Celal KOLOĞLU,	Turkish Confederation of Employer Associations Repr, Member
Dr. Osman YILDIZ,	Confederation of Turkish Trade Unions Repr, MemberMember