

# **Railway Car Technician (RCT)**

Provincial Occupational Analysis  
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## **ACKNOWLEDGEMENTS**

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## TABLE OF CONTENTS

	Page
<b>Guide to Analysis</b>	
DEVELOPMENT OF ANALYSIS	ii
STRUCTURE OF ANALYSIS	ii
VALIDATION METHOD	iii
SCOPE OF THE OCCUPATION	iv
OCCUPATIONAL OBSERVATIONS	v
<b>Analysis</b>	
<b>BLOCK A    Occupational Skills</b>	<b>1</b>
Task 1        Uses, selects and maintains tools and equipment.	1
Task 2        Organizes work.	8
Task 3        Operates cranes and boom trucks per applicable regulations.	11
Task 4        Fabricates railcar components from metal and wood materials.	13
<b>BLOCK B    Underframe Systems</b>	<b>15</b>
Task 5        Diagnoses and services wheel/axle assemblies.	15
Task 6        Diagnoses/services coupling units.	16
Task 7        Diagnoses/services cushion units.	18
Task 8        Diagnoses/services structural underframe units.	19
<b>BLOCK C    Brake Systems</b>	<b>22</b>
Task 9        Diagnoses/services air-brakes.	22
Task 10       Diagnoses/services hand-brakes.	23
<b>BLOCK D    Railcar Bodies and Units</b>	<b>26</b>
Task 11       Diagnoses/services open-top freight-car bodies.	26
Task 12       Diagnoses/services enclosed freight-car bodies.	28
Task 13       Diagnoses/services miscellaneous freight-car bodies.	30
Task 14       Diagnoses/services passenger-car bodies.	31

<b>BLOCK E</b>	<b>Climate-Control and Plumbing Systems</b>	35
	Task 15	Diagnoses/services climate-control system and components. 35
	Task 16	Diagnoses/services plumbing system and components. 37
<b>BLOCK F</b>	<b>Yard Systems</b>	40
	Task 17	Operates rerailment equipment. 40
	Task 18	Performs switching. 42
	Task 19	Performs Certified Car Inspector (CCI) duties. 43
<b>Appendices</b>		
Appendix A	Tools and Equipment	47
Appendix B	Pie Chart	50
Appendix C	DACUM Chart – Task Profile Chart	51

**GUIDE TO ANALYSIS**

## **DEVELOPMENT OF ANALYSIS**

A draft analysis is developed by a knowledgeable consultant who, with the assistance of a committee of experts in the field, identifies all the tasks performed in the occupation.

## **STRUCTURE OF ANALYSIS**

To facilitate the understanding of the nature of the occupation, the work performed is divided into the following divisions:

- A. BLOCK** - is the largest division within the analysis and reflects a distinct operation relevant to the occupation.
- B. TASK** - is the distinct activity that, combined with others, makes up the logical and necessary steps the worker is required to perform to complete a specific assignment within a Block.
- C. SUB-TASK** - is the smallest division into which it is practical to subdivide any work activity and, combined with others, fully describes all duties constituting a Task.

### **Supporting Knowledge and Abilities**

The element of skill and knowledge that an individual must acquire to adequately perform the task is identified under this heading.

### **Trends**

Any shifts or changes in technology or the working environment which affect the block are identified under this heading.

## **VALIDATION METHOD**

A working group of Railway Car Technicians convened by Apprenticeship Manitoba during March-May 2011 validated the sub-tasks and applied percentage ratings to the Blocks.

### **DEFINITIONS**

- YES:** Task is performed in my workplace.
- NO:** Task is not performed in my workplace.
- BLOCK %:** The percent percentage of questions to be apportioned, respectively, to each Block of trade task-content on a hypothetical exam consisting of 100 questions.

### **TOOLS AND EQUIPMENT (APPENDIX A)**

### **ACRONYMS (APPENDIX B)**

### **PIE CHART (APPENDIX C)**

The graph depicts the percentages the committee assigned to blocks in the analysis during validation.

### **DACUM CHART (APPENDIX D)**

The listing of all the blocks, tasks and sub-tasks as established by the Industry Working Group and validated by other Railway Car Technicians.

## SCOPE OF THE OCCUPATION

Railway Car Technicians (RCTs) inspect, diagnose, maintain and repair railway cars connected to or moved by a power unit. Railway cars include rolling stock used for transporting passengers as well as goods including motor vehicles, clothing, coal, foodstuffs, etc. RCTs inspect, service and repair parts and components of systems such as suspension and brake systems, mechanical and plumbing components, flooring, hydraulic systems, axles, wheel assemblies, and coupling units.

RCTs are employed at railway companies, railway car manufacturers, sales and repair facilities, as well as at construction or industrial sites and fleet repair shops. Some RCTs specialize in materials used in construction and/or repair of freight cars, passenger cars, and related components, frame repair or replacement, and replacing climate control systems. Many practice their trade in shops, whereas others operate out of mobile service-vehicles on an ongoing basis.

To meet government standards and regulations, RCTs may be required to attain specialty certifications in order to perform work-related tasks. A propane license, Certified Car Inspector (CCI) designation, mobile crane certificate, forklift certificate, scissor-lift certificate, and specialized pressure vessel welding license, are examples of additional certification that may be required by certain jurisdictions.

Technicians must practice safe operating procedures and be conscious of the impact on people, equipment, work area and environment when performing work that typically requires the use of heavy equipment, power tools and welding equipment. Due to the size and complexity of the trade's tools equipment and work assignments, safety is of prime importance. RCTs must also take precautions associated with moving equipment, rail equipment, and working around loud noises, grease, oil, gasoline and various exhaust fumes. Hazardous cargo or residue contained within, can pose a risk to technicians.

RCT trade-practice requires considerable standing, climbing, crouching, kneeling and heavy lifting, and the ability to work year-round in often-harsh conditions is expected. Good vision, hearing and sense of smell, as well as the ability to think systematically, allow technicians to identify and isolate problems. Technicians must also be able to diagnose complex problems and interpret technical manuals and schematics. Consequently, not only are fabrication and assembly-related skills required, but so are the technical/conceptual abilities to perform inspections and diagnose problems.

This analysis recognizes similarities or overlaps with the work of other tradespersons such as ironworkers, welders, crane/hoist operators, painters, heavy duty equipment technicians, plumbers, boilermakers, transport trailer technicians, carpenters, metal fabricators, and CNC operators.

Experienced RCTs act as mentors and trainers to apprentices in the trade, and some also assume managerial responsibilities.



## **OCCUPATIONAL OBSERVATIONS**

In order to maximize load capacities, lighter, longer and stronger railway cars are always entering the market. As a result, repair procedures are changing with the uptake of new products that use aluminum, composites, and an expanding range of new materials. There are also new products that can be added to railway cars to improve safety and longevity.

Computer and diagnostic skills have become required to work in the trade. Computers are used on and in railway cars for a variety of functions, and computerized diagnostic equipment is more common. There are opportunities for specialization involving brake systems, painting, blasting, difference welding technologies, and others.

There has been greater emphasis on environmentally friendly and less hazardous products, with better recycling, disposal and handling procedures.

## **ANALYSIS**

## BLOCK A

### Occupational Skills

*Trends: There are more efficient tools, methods of repair and more sophisticated diagnostic techniques. Workplaces have become safer and safety requirements have become more stringent. There is a greater need to work with and interpret drawings, prints, sketches and schematics. There is more access to trade information through new information technologies such as CD-ROMs, Intranet and the Internet.*

**Task 1 Uses, selects, and maintains tools and equipment.**

#### Sub-task

**1.01 Maintains safe work-environment.**

#### Supporting Knowledge and Abilities

- |         |  |
|---------|--|
| 1.01.01 | Knowledge of WHMIS   |
| 1.01.02 | Knowledge of workers' rights and responsibilities                  |
| 1.01.03 | Knowledge of company safety-policies and procedures                |
| 1.01.04 | Knowledge of safety-training requirements                          |
| 1.01.05 | Knowledge of jurisdictional health/safety regulations              |
| 1.01.06 | Knowledge of emergency procedures                                  |
| 1.01.07 | Knowledge of on-site First Aid stations                            |
| 1.01.08 | Knowledge of disposal/recycling procedures                         |
| 1.01.09 | Ability to apply WHMIS procedures                                  |
| 1.01.10 | Ability to interpret safety, health, and environmental regulations |
| 1.01.11 | Ability to recognize/address personal injury hazards               |
| 1.01.12 | Ability to interpret and comply with Blue Flag Regulations         |

1.01.13 Ability to interpret and comply with lock-out/tag-out requirements

**Sub-task**

**1.02 Uses Personal Protective Equipment (PPE).**

**Supporting Knowledge and Abilities**

1.02.01 Knowledge of PPE including specifications for use (e.g., selection of respirator cartridges for dust-particles vs. vapour)

1.02.02 Knowledge of PPE applications re: general and specific jobsite hazards and precautions

1.02.03 Ability to select, inspect, adjust, and monitor functionality of PPE in use

1.02.04 Ability to recognize pre-existing as well as emergent hazards and required precautions re: PPE use

**Sub-task**

**1.03 Uses, selects, and maintains hand tools.**

**Supporting Knowledge and Abilities**

1.03.01 Knowledge of tool-manufacturer specifications including user manuals, schematic diagrams, maintenance/warranty requirements, and preferred use(s)

1.03.02 Knowledge of general/specific hazards, precautions, and procedures re: tool use

1.03.03 Ability to select and use inspection- tools per AAR and Transport Canada requirements

1.03.04 Ability to match capacity of tool(s) to specific job requirements and materials

1.03.05 Ability to manipulate tool safely, efficiently, and proficiently

- 1.03.06 Ability to adapt tool-use to changing conditions/requirements
- 1.03.07 Ability to recognize worn, damage, or defective tools

**Sub-task**

**1.04 Uses, selects, and maintains power tools.**

**Supporting Knowledge and Abilities**

- 1.04.01 Knowledge of tool-manufacturer specifications including user manuals, schematic diagrams, maintenance/warranty requirements, and preferred use(s)
- 1.04.02 Knowledge of general/specific hazards, precautions, and procedures and precautions re: tool use (e.g., storage)
- 1.04.03 Ability to match capacity of tool(s) to specific job requirements and materials
- 1.04.04 Ability to manipulate tool safely, efficiently, and proficiently
- 1.04.05 Ability to adapt tool-use to changing conditions/requirements
- 1.04.06 Ability to recognize worn, damage, or defective tools

**Sub-task**

**1.05 Uses rigging, lifting, and conveyancing equipment.**

**Supporting Knowledge and Abilities**

- 1.05.01 Knowledge of operating procedures for rigging/lifting equipment such as jacks, hoists, stands, etc., including limitations and preferred uses

- 1.05.02 Knowledge of general operating procedures for such conveyancing equipment as front-end loaders, forklifts, dollies, etc., including limitations and preferred uses
- 1.05.03 Knowledge of specific procedures for using drop-table and other specialized railcar-lifting [practices such as air-jack use, lifting-table for intermodal stock, split-rail system for wheel change-out, etc.
- 1.05.04 Ability to interpret manufacturer specifications re: selection, use, maintenance, and storage of rigging, lifting, and conveyance equipment
- 1.05.05 Ability to identify and utilize lifting points
- 1.05.06 Ability to select and operate rigging/lifting equipment such as jacks, hoists, stands, etc. to suit job requirements
- 1.05.07 Ability to select and operate conveyance equipment as rail-car movers, front-end loaders, forklifts, dollies, etc.
- 1.05.08 Ability to comply with specific procedures for using drop-table and other specialized railcar-lifting procedures (e.g., air jack use, lifting-table for intermodal stock, etc.)

**Sub-task**

**1.06 Bends/fits air, water, and pneumatic pipes, including thread-cutting.**

**Supporting Knowledge and Abilities**

- 1.06.01 Knowledge of pipefitting materials, equipment, and procedures, including, gasket-making, brazing, soldering, flaring, manual/electric thread-cutting, etc.
- 1.06.02 Knowledge of pipefitting materials, equipment, and procedures, including measurement/layout of required bending radii, and thread-cutting

- 1.06.03 Knowledge of rail-car pipe-fitting practices in general re: circulation of air, water, and pneumatic fluid
- 1.06.04 Ability to adapt pipefitting materials, equipment, and procedures to complete railcar-pipefitting assignments

**Sub-task**

**1.07 Uses welding and cutting equipment per applicable regulations.**

**Supporting Knowledge and Abilities**

- 1.07.01 Knowledge of welding/cutting materials, equipment, and procedures including gauges, consumables, shielding-gases, filler-metal selection, flux-core procedure, GMAW procedure, SMAW procedure, etc.
- 1.07.02 Knowledge of certification and regulatory requirements re: qualification of person(s) welding, including GMAW, SMAW and other specialized qualifications as applicable to work-assignment
- 1.07.03 Ability to interpret and apply welding-related technical resources such as blueprints, welding symbols/codes, AAR Rules, etc.
- 1.07.04 Ability to select, set up, use, monitor, and maintain general welding equipment, including GMAW, SMAW, flux-core, and other specialty-welding apparatus applicable to work-assignment

**Sub-task**

**1.08 Paints rail-equipment and components.**

**Supporting Knowledge and Abilities**

- 1.08.01 Knowledge of railcar painting tools, equipment, and procedures, including classification/coding of serial numbers, set-up, surface-prep techniques, use of ladders and access-structures, application techniques, etc.

- 1.08.02 Knowledge of varieties of epoxy and enamel paints, solvents, and their application to railcars, including manufacturer specifications re priming, timing, coverage rates, etc.
- 1.08.03 Knowledge of special hazards, such as explosion, combustion, or poisoning due to fumes and paint dusts, due to improper containment/disposal of wastes/residues, etc.
- 1.08.04 Knowledge of special precautions, such as use of respirator cartridges, Supplied Breathable Air Systems, WHMIS data, manufacturer specifications, etc.
- 1.08.05 Ability to select, use, and dispose of railcar-painting equipment, materials, and accessories per manufacturer, employer, and regulatory requirements, including environmental/personal safety-protection standards

**Sub-task**

**1.09 Uses fasteners, adhesives, sealants, lubricants, gaskets, etc.**

**Supporting Knowledge and Abilities**

- 1.09.01 Knowledge of types and applications of fasteners such as locking washers, lock nuts and split washers
- 1.09.02 Knowledge of types and applications of sealing devices, adhesives and gaskets
- 1.09.03 Knowledge of specifications for optimal selection/ use(s) of fasteners, including identification of grade, thread pitch, size, torque requirements, etc.
- 1.09.04 Knowledge of tools for using fasteners, adhesives, sealants, and gaskets, including taps, dies, thread-repair kits, etc.



- 1.09.05 Ability to select the appropriate sealing or gasket material for the job
- 1.09.06 Ability to select and install fasteners, sealing devices, adhesives and gaskets
- 1.09.07 Ability to make gaskets and seals, including materials selection, layout, tool use etc.
- 1.09.08 Ability to repair threads using tools such as taps, dies, chasers, and thread-inserts
- 1.09.09 Ability to apply specialty sealants
- 1.09.10 Ability to remove broken fasteners

**Sub-task**

**1.10 Uses computers.**

**Supporting Knowledge and Abilities**

- 1.10.01 Knowledge of computer technology in general, including hardware, software, Web interfaces, etc.
- 1.10.02 Knowledge of employer-specific and trade-specific computer applications and databases, e.g., for verifying completeness of technical procedures and/or compliance with standards/protocols.
- 1.10.03 Knowledge of websites and computer-assisted databases for health and safety information
- 1.10.04 Knowledge of special-purpose computer applications for technical drawing, storekeeping/inventory maintenance, training support, e-mail, etc.
- 1.10.05 Ability to access computer-assisted procedural guidance, e.g., procedure to remove/replace end-of-car cushioning unit
- 1.10.06 Ability to use computerized components of car information systems such as bills of lading/waybills

1.10.07 Ability to upgrade skills using a computer-based learning management system (LMS)

**Task 2 Organizes work.**

**Sub-task**

**2.01 Communicates with others.**

**Supporting Knowledge and Abilities**

2.01.01 Knowledge of workplace communication requirements/resources, including hand signals, radio, employer protocols/guidelines, etc.

2.01.02 Knowledge of roles/responsibilities, e.g., formal/informal reporting channels, dissemination of information/documents, and record-keeping, etc.

2.01.03 Ability to select/use communication systems and resources per specific requirements and challenges

2.01.04 Ability to create, use and share relevant information in accordance with communication resources

**Sub-task**

**2.02 Coaches and mentors apprentices.**

**Supporting Knowledge and Abilities**

2.02.01 Knowledge of workplace skills-coaching roles, principles, and methods, e.g., assessing needs, structuring a training opportunity, monitoring progress, providing appropriate encouragement/guidance, etc.

2.02.02 Knowledge of regulatory, employer, learner, and other expectation re: workplace skills coaching of trade-learners

- 2.02.03 Ability to define and adapt one's own trainer role(s) per workplace conditions and coaching requirements
- 2.02.04 Ability to access learner's needs, assist in structuring workplace training opportunities, and to monitor progress
- 2.02.05 Ability to negotiate/integrate one's responsibilities as a productive worker vis-à-vis one's role as a journey-level trainer of apprentices
- 2.02.06 Ability to acquire information through questioning

**Sub-task**

**2.03 Uses technical documents.**

**Supporting Knowledge and Abilities**

- 2.03.01 Knowledge of types of documentation such as service manuals, parts manuals, service bulletins and work orders
- 2.03.02 Knowledge of formats of documentation and reference tools such as print, Internet, microfiche and CD-ROM
- 2.03.03 Knowledge of Workplace Hazardous Materials Information System (WHMIS) documentation and symbols
- 2.03.04 Ability to extract and apply detailed information from technical documents, e.g. measurement-specific itemization of no-go wheel defects in Section 9.1, *Railway Passenger Car Inspection and Safety Rules* (Transport Canada C O-0-26).
- 2.03.05 Ability to interpret technical sketches
- 2.03.06 Ability to complete work-related records such as work orders, warranty-claim data, service reports, and results of failure-service service analyses

**Sub-task**

**2.04 Interprets and complies with standards and regulatory documents.**

**Supporting Knowledge and Abilities**

- 2.04.01 Knowledge of Federal Railroad Administration (FRA), Association of American Railroads (AAR), and Transport Canada requirements re: their general/specific significance within the railway-sector regulatory environment
- 2.04.02 Knowledge of Blue Flag and lockout procedures in general, including their variability re: specific work assignments and contexts
- 2.04.03 Knowledge of non-federal and other regulatory requirements which define or impinge upon railway sector activity, e.g., environmental protection legislation
- 2.04.04 Ability to apply standards and regulatory documents re: specific situations and operational conditions, including Blue Flag Regulations and lock-out procedures per varying job requirements

**Sub-task**

**2.05 Plans daily/long-term tasks per work-assignment or project.**

**Supporting Knowledge and Abilities**

- 2.05.01 Knowledge of time management
- 2.05.02 Knowledge of sequencing of jobs
- 2.05.03 Ability to assign priorities to tasks
- 2.05.04 Ability to estimate repair times and finish dates
- 2.05.05 Ability to plan required materials and tools for diagnostics and repair for service calls
- 2.05.06 Ability to organize schedule

**Task 3 Operates cranes and boom-trucks per applicable regulations.**

**Sub-task**

**3.01 Transports and sets up cranes and hoisting equipment.**

**Supporting Knowledge and Abilities**

- 3.01.01 Knowledge of crane technology including major varieties(e.g., stationary vs. mobile), components, configurations, manufacturer specifications, and employer policies
- 3.01.02 Knowledge of crane-trades regulatory environment and its requirements re: certification, operation, etc.
- 3.01.03 Knowledge of crane transport and set-up procedure including use of load charts, lift plans, etc.
- 3.01.04 Ability to satisfy applicable licensing and certification requirements
- 3.01.05 Ability to plan transport/set-up re: transport, routes, on-site location, etc.
- 3.01.06 Ability to select and use rigging equipment to suit job requirements
- 3.01.07 Ability to follow detailed set-up procedures including blocking, outrigger extension, ground preparation, inspections, etc.

**Sub-task**

**3.02 Uses load charts and engineered lift-plans to organize lift and advise crew.**

**Supporting Knowledge and Abilities**

- 3.02.01 Knowledge of crane technology including major varieties( e.g., stationary vs. mobile), components, configurations, manufacturer specifications and employer policies

- 3.02.02 Knowledge of crane-trades regulatory environment and its requirements re: certification, operation, operator roles/responsibilities, etc.
- 3.02.03 Knowledge of load charts and their use, including mathematics, geometry, and mechanics (e.g., operational quadrants; balance of forces, etc.)
- 3.02.04 Ability to satisfy applicable licensing and certification requirements
- 3.02.05 Ability to interpret load-charts and apply them to a specific loads/hoisting assignments
- 3.02.06 Ability to communicate appropriately (e.g., hand signals) and competently with other hoisting job-site personnel regarding lift
- 3.02.07 Ability to identify and address all special hazards and required precautions associated with specific lift

**Sub-task**

**3.03 Executes lift.**

**Supporting Knowledge and Abilities**

- 3.03.01 Knowledge of crane technology including major varieties( e.g., stationary vs. mobile), components, configurations, manufacturer specifications and employer policies
- 3.03.02 Knowledge of crane-trades regulatory environment and its requirements re: certification, operation, etc.
- 3.03.03 Knowledge of controls used to operate crane and crane components.
- 3.03.04 Ability to identify and address all special hazards and required precautions associated with specific lift

- 3.03.05 Ability to satisfy applicable licensing and certification requirements
- 3.03.06 Ability to manipulate crane controls
- 3.03.07 Ability to adapt operation of crane to changing conditions

**Task 4 Fabricates railcar components from metal and wood materials.**

**Sub-task**

**4.01 Designs/lays out parts and components for fabrication. Supporting Knowledge and Abilities**

- 4.01.01 Knowledge of railcar parts, materials, and their use in fabrication
- 4.01.02 Knowledge of fabrication layout/design tools and procedures
- 4.01.03 Knowledge of procedures and metallurgical properties re: fabricating with such materials as cast iron, mild steel, High Speed Steel (HSS), High Tensile Steel (HST), aluminum, etc.
- 4.01.04 Ability to estimate materials and other resources required for fabrication assignment
- 4.01.05 Ability to predict/adapt operations to allow for and allow for dimensional and other changes due to the working properties and physical characteristics of metal workpieces
- 4.01.06 Ability to anneal, cut , grind, heat-treat, weld, solder, braze, plasma-cut, etc.

**Sub-task**

**4.02 Executes fabrication plan per relevant specifications. Supporting Knowledge and Abilities**

- 4.02.01 Knowledge of railcar parts, materials, and their use in fabrication

- 4.02.02 Knowledge of fabrication tools and procedures
- 4.02.03 Knowledge of procedures and metallurgical properties re: fabricating with such materials as cast iron, mild steel, High Speed Steel (HSS), High Tensile Steel (HST), aluminum , etc.
- 4.02.04 Ability to estimate materials and other resources required for fabrication assignment
- 4.02.05 Ability to predict and allow for dimensional and other changes due to physical properties of metal workpieces (e.g., heat-tempering)
- 4.02.06 Ability to select, use, and maintain metalwork tools/equipment required to complete equipment for railcar-parts fabrication, e.g., break, press, shears, roller, drills, etc.
- 4.02.07 Ability to anneal, cut , grind, heat-treat, weld, solder, braze, plasma cut, etc., per fabrication-assignment requirements

**Sub-task**

**4.03 Verifies fit and finish of fabricated part/component.**

**Supporting Knowledge and Abilities**

- 4.03.01 Knowledge of railcar parts, materials, and their use in fabrication
- 4.03.02 Knowledge of criteria and procedures for ascertaining quality suitability of fabricated part
- 4.03.03 Ability to interpret and comply with fabrication plans/specifications
- 4.03.04 Ability to follow quality-assurance protocols and procedures using such equipment as calipers, micrometers, templates, gauges (Transport Canada-prescribed and other), jigs, etc.



## BLOCK B

### Underframe Systems

*Trends: There is a trend towards greater use new metal-alloys and metal products. The use of precision-engineered parts and components, and the design of the underframe and related components have allowed for greater load capacities on today's railway cars. Manufacturers are expanding their use of articulated coupling to decrease the number of trucks required. Metal composition of newer wheels have been optimized for extended wheel lifecycles despite the heavier loads that these systems support.*

#### Task 5 Diagnoses and services wheel/axle assemblies.

##### Sub-task

##### 5.01 Diagnoses and services freight-car wheel/axle assemblies.

##### Supporting Knowledge and Abilities

- 5.01.01 Knowledge of freight-car wheel/axle-assembly components and defects
- 5.01.02 Knowledge of AAR standards re: required functionality/allowed limitations of freight-car wheel/axle-assembly function
- 5.01.03 Ability to select/use prescribed gauges
- 5.01.04 Ability to identify and specify wheel-axle-assembly defect(s)
- 5.01.05 Ability to interpret assembly inspection criteria
- 5.01.06 Ability to remove and replace assembly components

##### Sub-task

##### 5.02 Diagnoses and services passenger-car wheel/axle assemblies.

##### Supporting Knowledge and Abilities

5.02.01	Knowledge of passenger-car wheel/axle-assembly components and defects
5.02.02	Knowledge of AAR standards re: required functionality/allowed limitations of passenger-car wheel/axle-assembly function
5.02.03	Ability to select/use prescribed gauges
5.02.04	Ability to identify and specify wheel-axle-assembly defect(s)
5.02.05	Ability to interpret assembly inspection criteria
5.02.06	Ability to remove and replace assembly components

**Task 6 Diagnoses and services coupling units.**

**Sub-task**

**6.01 Inspects couplers, knuckles, yokes, draft-gears and associated components.**

**Supporting Knowledge and Abilities**

6.01.01	Knowledge of coupling-unit components and defects
6.01.02	Knowledge of AAR standards re: required functionality/allowed limitations of coupling-unit function
6.01.03	Ability to select/use prescribed gauges
6.02.04	Ability to identify and specify coupling-unit defect(s)
6.02.05	Ability to interpret coupling-unit inspection criteria
6.02.06	Ability to remove and replace coupling-unit components

**Sub-task**

**6.02 Selects/interprets Procedural Sheets per job requirements.**

**Supporting Knowledge and Abilities**

- 6.02.01 Knowledge of Procedural Sheets and their selection/use
- 6.02.02 Ability to recognize relevant technical information provided via Procedural Sheet
- 6.02.03 Ability to apply Procedure Sheet to specific work-assignment

**Sub-task**

**6.03 Assembles/disassembles, knuckles, yokes, draft-gears and associated components.**

**Supporting Knowledge and Abilities**

- 6.03.01 Knowledge of assembly/disassembly procedures re: railcar coupling-unit components
- 6.03.02 Knowledge of AAR standards and other requirements re: coupling-unit assembly
- 6.03.03 Ability to apply prescribed coupling-unit assembly procedures to specific work-assignments and situations

**Sub-task**

**6.04 Reconditions couplers knuckles, yokes, and other equipment.**

**Supporting Knowledge and Abilities**

- 6.04.01 Knowledge of assembly/disassembly procedures re: railcar coupling-unit components
- 6.04.02 Knowledge of AAR standards and other requirements re: coupling-unit condition

6.04.03 Knowledge of metalworking procedures, equipment, and materials required for reconditioning railcar coupling-unit components

Ability to interpret standards and diagnostic information re: coupling-unit yokes, knuckles, etc.

6.04.04 Ability to anneal, cut, grind, heat-treat, weld, solder, braze, plasma cut, etc. per standards and requirements for reconditioning railcar coupling-unit components

## **Task 7 Diagnoses/services cushion units.**

### **Sub-task**

**7.01 Diagnoses/services centre-of-car cushion units.**

### **Supporting Knowledge and Abilities**

7.01.01 Knowledge of centre-of-car cushion-unit inspection criteria and standards

7.01.02 Knowledge of carrier-iron system/components

7.01.03 Knowledge of manufacturer specifications re: cushion-unit servicing, up to and including removal/replacement procedures

7.01.04 Ability to determine wear-limits re: carrier-iron system components

7.01.05 Ability to comply with manufacturer specifications re: inspection, service, assembly and/or replacement procedures, including selection/use of pressure gauges

### **Sub-task**

**7.02 Diagnoses/services end-of-car cushion units.**

### **Supporting Knowledge and Abilities**

- 7.02.01 Knowledge of end-of-car cushion-unit inspection criteria and standards
- 7.02.02 Knowledge of carrier-iron system/components
- 7.02.03 Ability to determine wear-limits re: carrier-iron system components
- 7.02.04 Ability to follow manufacturer-specified procedures regarding inspection, service, assembly and/or replacement procedures, including selection/use of pressure gauges

**Task 8 Diagnoses/services structural underframe units.**

**Sub-task**

**8.01 Diagnoses/services chassis and chassis components.**

**Supporting Knowledge and Abilities**

- 8.01.01 Knowledge of AAR/other relevant specifications re: railcar chassis and chassis components
- 8.01.02 Knowledge of manufacturer specifications re: reconditioning of truck components including column-wear plate, gibs, thrust-lugs, vertical/horizontal liners, etc.
- 8.01.03 Knowledge of HEP-2 car-truck components including bolster, anchor-rod assembly, swing hanger, equalizer springs, spring plank, cross-bar, swing hanger-bar and other passenger-car chassis components per VIA Rail Maintenance Manual (VMP) and other relevant technical resources
- 8.01.04 Ability to inspect and repair chassis and chassis-components per AAR specifications
- 8.01.05 Ability to work to company-prescribed tolerances and standards

**Sub-task**

**8.02 Diagnoses/services  
centre-sill.**

**Supporting Knowledge and Abilities**

- 8.02.01 Knowledge of AAR and other relevant specifications re: railcar chassis centre-sill and centre-sill components
- 8.02.02 Knowledge of manufacturer specifications re: reconditioning of centre-sill components
- 8.02.03 Knowledge of requirements re: centre-sill diagnostics/service procedures per company maintenance manual
- 8.02.04 Ability to inspect and repair railcar chassis centre-sill and centre-sill components per AAR specifications
- 8.02.05 Ability to work to company-prescribed tolerances and standards

**Sub-task**

**8.03 Diagnoses/services  
underframe trucks.**

**Supporting Knowledge and Abilities**

- 8.03.01 Knowledge of AAR and other relevant specifications re: railcar underframe trucks and truck components
- 8.03.02 Knowledge of manufacturer specifications re: reconditioning of underframe trucks and truck components
- 8.03.03 Knowledge of requirements re: underframe-truck diagnostics/service procedures per company maintenance manual
- 8.03.04 Ability to inspect and repair railcar truck and truck-components per AAR specifications
- 8.03.05 Ability to work to company-prescribed tolerances and standards

## BLOCK C

### Brake Systems

*Trends: There is increasing use of computer diagnostics for brakes and brake systems. Better braking materials such as scrubber shoes are used. Increased uptake of aluminum valves which offer performance advantages as well as improved ergonomic characteristics.*

#### Task 9 Diagnoses/services air-brakes.

##### Sub-task

##### 9.01 Diagnoses air-brake system and components.

##### Supporting Knowledge and Abilities

- |         |  |
|---------|--|
| 9.01.01 | Knowledge of brake-system manufacturer specifications  |
| 9.01.02 | Knowledge of types of air-brake systems in general and re: railcar-specific variations such as the Knorr Wheel-Slide Protection Device                   |
| 9.01.03 | Knowledge of air-brake system diagnostic procedures and inspection-criteria  |
| 9.01.04 | Ability to evaluate condition of system and of specific components (e.g., brake-pad wear) via measurement, and checks such as leak-testing               |
| 9.01.05 | Ability to determine causes of failure, e.g., contaminants, abuse, disuse, etc.  |
| 9.01.06 | Ability to evaluate condition of general system and of specific components (e.g., brake shoes) including via measurement and checks such as leak-testing |

##### Sub-task

##### 9.02 Services air-brake system and components.

##### Supporting Knowledge and Abilities

- |         |   |
|---------|---|
| 9.02.01 | Knowledge of brake-system manufacturer specifications |
|---------|---|

- 9.02.02 Knowledge of types of air-brake systems in general and re: railcar-specific variations such as the Knorr Wheel-Slide Protection Device
- 9.02.03 Knowledge of air-brake system operation, diagnostic procedures, and performance standards
- 9.02.04 Ability to remove, replace, and repair system and system-component(s) per application of standards and diagnostic-procedure data

**Sub-task**

**9.03 Services air-brake system consumables. Supporting Knowledge and Abilities**

- 9.03.01 Knowledge of air-brake system consumables, including rods, chains, pins, shoes, hoses, pistons, slack-adjusters, etc., including their proneness to wear
- 9.03.02 Knowledge of and applicable manufacturer specifications re selection, use, and functional requirements re: consumables
- 9.03.03 Ability to remove, replace, and repair system-consumables per application of standards and diagnostic-procedure data re: such items as rods, chains, pins, shoes, hoses, pistons, slack-adjusters, etc.

**Task 10 Diagnoses/services hand-brakes.**

**Sub-task**

**10.01 Diagnoses hand-brake system and components. Supporting Knowledge and Abilities**

- 10.01.01 Knowledge of hand-brake system types, e.g., high-/low-pressure
- 10.01.02 Knowledge of hand-brake consumables, and their proneness to wear



10.01.03 Ability to evaluate condition of general system and of specific components including via measurement and checks e.g. apply/release test

**Sub-task**

**10.02 Services hand-brake system and components.**

**Supporting Knowledge and Abilities**

10.02.01 Knowledge of manufacturer specifications and AAR requirements re: hand-brake systems

10.02.02 Knowledge of types of air-brake systems in general and re: railcar-specific variations such low-pressure and high-pressure handbrake systems

10.02.03 Knowledge of air-brake system operation, diagnostic procedures, and performance standards

10.02.04 Ability to adjust chain and rod-length

10.02.05 Ability to assess quality of required alignments

**Sub-task**

**10.03 Services hand-brake system consumables.**

**Supporting Knowledge and Abilities**

10.03.01 Knowledge of air-brake system consumables, including rods, chains, pins, shoes, etc. and their proneness to wear

10.03.02 Knowledge of AAR-specified wear-limits

10.03.03 Ability to identify condition of consumables re: wear, damage, loss, and other defects

10.03.04 Ability to remove, replace, and repair system-consumables per application of standards and diagnostic-procedure data re: such items as rods, chains, pins, clevises, shoes, etc.

## BLOCK D

### Railcar Bodies and Units

*Trends: Boxcar door design has benefitted from a transition from slider-style to plug-style. Discharge outlets, which reduce the potential for leakage of commodity during transport, are becoming the norm. Passenger cars have also seen quality improvements such as durable fabric for seat covering and drapes for quieter cabins and durability.*

#### Task 11 Diagnoses/services open-top freight-car bodies.

##### Sub-task

##### 11.01 Diagnoses/services gondola-car components.

##### Supporting Knowledge and Abilities

- 11.01.01 Knowledge of gondola-car assembly, components, diagnostic/servicing considerations, manufacturer specifications, and defects, including car-specific safety appliances
- 11.01.02 Knowledge of applicable regulatory specifications and rail industry standards
- 11.01.03 Ability to identify/address special hazards and precautions
- 11.01.04 Ability to identify and use prescribed gauges
- 11.01.05 Ability to recognize worn/damaged, or defective components
- 11.01.06 Ability to interpret inspection and assembly criteria
- 11.01.07 Ability to remove, replace, and repair car components, including car-specific safety appliances

##### Sub-task

##### 11.02 Diagnoses/services bulkhead/flat-car components.

##### Supporting Knowledge and Abilities

- 11.02.01 Knowledge of bulkhead/flat-car assembly, components, diagnostic /servicing considerations, manufacturer specifications, and defects, including car-specific safety appliances
- 11.02.02 Knowledge of applicable regulatory specifications and rail industry standards
- 11.02.03 Ability to identify/address special hazards and precautions
- 11.02.04 Ability to identify and use prescribed gauges
- 11.02.05 Ability to recognize worn/damaged, or defective components
- 11.02.06 Ability to interpret inspection and assembly criteria
- 11.02.07 Ability to remove, replace, and repair car components, including car-specific safety appliances

**Sub-task**

**11.03 Diagnoses/services intermodal/other freight-car components.**

**Supporting Knowledge and Abilities**

- 11.03.01 Knowledge of intermodal/other freight-car assembly, components, diagnostic /servicing considerations, manufacturer specifications, and defects, including car-specific safety appliances
- 11.03.02 Knowledge of applicable regulatory specifications and rail industry standards
- 11.03.03 Ability to identify/address special hazards and precautions
- 11.03.04 Ability to identify and use prescribed gauges
- 11.03.05 Ability to recognize worn/damaged, or defective components

- 11.03.06 Ability to interpret inspection and assembly criteria
- 11.03.07 Ability to remove, replace, and repair car components, including car-specific safety appliances

**Task 12 Diagnoses/services enclosed freight-car bodies.**

**Sub-task**

**12.01 Diagnoses/services hopper-car components.**

**Supporting Knowledge and Abilities**

- 12.01.01 Knowledge of hopper-car assembly, components, diagnostic/servicing considerations, manufacturer specifications, and defects, including car-specific safety appliances
- 12.01.02 Knowledge of applicable regulatory specifications and rail industry standards
- 12.01.03 Ability to identify/address special hazards and precautions
- 12.01.04 Ability to identify and use prescribed gauges
- 12.01.05 Ability to recognize worn/damaged, or defective components
- 12.01.06 Ability to interpret inspection and assembly criteria
- 12.01.07 Ability to remove, replace, and repair car components, including car-specific safety appliances

**Sub-task**

**12.02 Diagnoses/services boxcar components.**

**Supporting Knowledge and Abilities**

- 12.02.01 Knowledge of boxcar assembly, components, diagnostic /servicing considerations, manufacturer specifications, and defects, including car-specific safety appliances

- 12.02.02 Knowledge of applicable regulatory specifications and rail industry standards
- 12.02.03 Ability to identify/address special hazards and precautions
- 12.02.04 Ability to identify and use prescribed gauges
- 12.02.05 Ability to recognize worn/damaged, or defective components
- 12.02.06 Ability to interpret inspection and assembly criteria
- 12.02.07 Ability to remove, replace, and repair car components, including car-specific safety appliances

**Sub-task**

**12.03 Diagnoses/services auto rack-car components.**

**Supporting Knowledge and Abilities**

- 12.03.01 Knowledge of autorack-car assembly, components, diagnostic /servicing considerations, manufacturer specifications, and defects, including car-specific safety appliances
- 12.03.02 Knowledge of applicable regulatory specifications and rail industry standards
- 12.03.03 Ability to identify/address special hazards and precautions
- 12.03.04 Ability to identify and use prescribed gauges
- 12.03.05 Ability to recognize worn/damaged, or defective components
- 12.03.06 Ability to interpret inspection and assembly criteria
- 12.03.04 Ability to remove, replace, and repair car components

**Task 13 Diagnoses/services miscellaneous freight-car bodies.**

**Sub-task**

**13.01 Diagnoses/services tanker-car components.**

**Supporting Knowledge and Abilities**

- 13.01.01 Knowledge of tanker-car assembly, components, diagnostic/servicing considerations, manufacturer specifications, and defects
- 13.01.02 Knowledge of applicable regulatory specifications and rail industry standards
- 13.01.03 Ability to identify/address special hazards and precautions
- 13.01.04 Ability to identify and use prescribed gauges
- 13.01.05 Ability to recognize worn/damaged, or defective components
- 13.01.06 Ability to interpret inspection and assembly criteria
- 13.01.07 Ability to remove, replace, and repair car components

**Sub-task**

**13.02 Diagnoses/services caboose components.**

**Supporting Knowledge and Abilities**

- 13.02.01 Knowledge of caboose assembly, components, diagnostic/servicing considerations, manufacturer specifications, and defects
- 13.02.02 Knowledge of applicable regulatory specifications and rail industry standards
- 13.02.03 Ability to identify/address special hazards and precautions
- 13.02.04 Ability to identify and use prescribed gauges

- 13.02.05 Ability to recognize worn/damaged, or defective components
- 13.02.06 Ability to interpret inspection and assembly criteria
- 13.02.07 Ability to remove, replace, and repair car components

**Task 14 Diagnoses/services passenger-car bodies.**

**Sub-task**

**14.01 Diagnoses/services baggage-car bodies.**

**Supporting Knowledge and Abilities**

- 14.01.01 Knowledge of baggage-car assembly, components, diagnostic/servicing considerations, manufacturer specifications, and defects, including car-specific safety components
- 14.01.02 Knowledge of applicable regulatory specifications and rail industry standards
- 14.01.03 Ability to identify/address special hazards and precautions
- 14.01.04 Ability to identify and use prescribed gauges
- 14.01.05 Ability to recognize worn/damaged, or defective components
- 14.01.06 Ability to interpret inspection and assembly criteria
- 14.01.07 Ability to remove, replace, and repair car components

**Sub-task**

**14.02 Diagnoses/services domed (park/skyline)-car bodies.**

**Supporting Knowledge and Abilities**

- 14.02.01 Knowledge of domed (park/skyline)-car assembly, components, diagnostic/servicing considerations, manufacturer specifications, and defects, including car-specific safety components
- 14.02.02 Knowledge of applicable regulatory specifications and rail industry standards
- 14.02.03 Ability to identify/address special hazards and precautions
- 14.02.04 Ability to identify and use prescribed gauges
- 14.02.05 Ability to recognize worn/damaged, or defective components
- 14.02.06 Ability to interpret inspection and assembly criteria
- 14.02.07 Ability to remove, replace, and repair car components. including car-specific safety components

**Sub-task**

**14.03 Diagnoses/services coach-car components.**

**Supporting Knowledge and Abilities**

- 14.03.01 Knowledge of domed coach-car assembly, components, diagnostic/servicing considerations, manufacturer specifications, and defects
- 14.03.02 Knowledge of applicable regulatory specifications and rail industry standards
- 14.03.03 Ability to identify/address special hazards and precautions
- 14.03.04 Ability to identify and use prescribed gauges
- 14.03.05 Ability to recognize worn/damaged, or defective components
- 14.03.06 Ability to interpret inspection and assembly criteria



14.03.07 Ability to remove, replace, and repair car components, including car-specific safety components

**Sub-task**

**14.04 Diagnoses/services diner-car components. Supporting Knowledge and Abilities**

14.04.01 Knowledge of diner-car assembly, components, diagnostic/servicing considerations, manufacturer specifications, and defects

14.04.02 Knowledge of applicable regulatory specifications and rail industry standards

14.04.03 Ability to identify/address special hazards and precautions

14.04.04 Ability to identify and use prescribed gauges

14.04.05 Ability to recognize worn/damaged, or defective components

14.04.06 Ability to interpret inspection and assembly criteria

14.04.07 Ability to remove, replace, and repair car components

**Sub-task**

**14.05 Diagnoses/services sleeper-car components. Supporting Knowledge and Abilities**

14.05.01 Knowledge of sleeper-car assembly, components, diagnostic/servicing considerations, manufacturer specifications, and defects

14.05.02 Knowledge of applicable regulatory specifications and rail industry standards

14.05.03 Ability to identify/address special hazards and precautions

- 14.05.04 Ability to identify and use prescribed gauges
- 14.05.05 Ability to recognize worn/damaged, or defective components
- 14.05.06 Ability to interpret inspection and assembly criteria
- 14.05.07 Ability to remove, replace, and repair car components

## BLOCK E

### CLIMATE-CONTROL and PLUMBING SYSTEMS

*Trends: Current climate control systems are electric-pneumatic instead of mechanical. Both air-conditioning (AC) and heating systems installed in today's railway cars are higher-efficiency models that deliver better performance consuming less energy. Plumbing systems use mostly PVC tubing instead of copper or steel.*

#### Task 15 Diagnoses/ services climate-control system and components.

##### Sub-task

**15.01 Assists in removal, reinstallation, and replacement of air-conditioning components.**

##### **Supporting Knowledge and Abilities**

- |          |  |
|----------|--|
| 15.01.01 | Knowledge of special hazards and precautions associated with railcar HVAC systems/components, e.g., asbestos, refrigerant gases, Manitoba Ozone Protection Industry Association (MOPIA) requirements, etc. |
| 15.01.02 | Knowledge of manufacturer specifications   |
| 15.01.03 | Knowledge of railcar heating, ventilation, and air-conditioning (HVAC) system components including ductwork, fans, filtration systems, etc.  |
| 15.01.04 | Ability to assess/identify hazardous materials such as asbestos-containing pipe-wrap, insulation, etc.   |
| 15.01.05 | Ability to coordinate/communicate with other personnel mandated to perform prescribed duties such as capture of refrigerants, abatement of asbestos, etc.  |
| 15.01.06 | Ability to perform diagnostic/servicing procedures required in changing-out and/or repairing railcar ductwork, fans, filtration systems, etc.  |

**Sub-task**

**15.02 Assists in removal, reinstallation, and replacement of heating-system components.**

**Supporting Knowledge and Abilities**

- 15.02.01 Knowledge of manufacturer specifications
- 15.02.02 Knowledge of railcar ductwork, electric baseboard heating-systems and associated ventilation components, e.g., mechanical louvred vents installed in sleeper cars
- 15.02.03 Ability to follow procedures to repair and refurbish heating systems/components
- 15.02.04 Ability to assess condition of railcar heating-system components and determine cause of failure

**Sub-task**

**15.03 Diagnoses/services caboose- heater.**

**Supporting Knowledge and Abilities**

- 15.03.01 Knowledge of manufacturer specifications
- 15.03.02 Knowledge of the varieties of railcar diesel-fuel carburetor assemblies
- 15.03.03 Knowledge of special hazards and precautions associated with railcar HVAC systems/components, e.g., asbestos, refrigerant gases, MOPIA requirements, etc.
- 15.03.04 Ability to assess carburetor function
- 15.03.05 Ability to follow procedures to repair and replace carburetor and related components
- 15.03.06 Ability to assess/identify hazardous materials such as asbestos-containing pipe-wrap, insulation, etc.

15.03.07 Ability to coordinate/communicate with other personnel such as electricians mandated to perform prescribed duties

**Task 16 Diagnoses/services plumbing system and components.**

**Sub-task**

**16.01 Diagnoses/services pumps, hoses, and related components.**

**Supporting Knowledge and Abilities**

- 16.01.01 Knowledge of railcar plumbing systems/components, including pumps/hoses associated with the pressurized air-system for raising potable water
- 16.01.02 Knowledge of manufacturer specifications for water/air- filters
- 16.01.03 Knowledge of special hazards and precautions associated with railcar plumbing systems/components
- 16.01.04 Knowledge of manufacturer specifications for water/air- filter
- 16.01.05 Knowledge of applicable procedures and standards for railcar plumbing-system filtration, special filtration, sterilization, etc.
- 16.01.06 Knowledge of railcar pipework techniques and procedures
- 16.01.07 Knowledge of air-pressure principles and air-regulation practices
- 16.01.08 Knowledge of railcar plumbing design and design specifications, e.g., coach-car taps, toilet assemblies, showers, sinks, drinking fountains, etc.
- 16.01.09 Knowledge of railcar-plumbing flushing and sanitizing procedures

- 16.01.10 Ability to repair, replace, and refurbish railcar water-raising system and related components
- 16.01.11 Ability to use railcar plumbing-system schematic drawings and blueprints
- 16.01.12 Ability to perform specific air-/water-pipefitting assignments re: railcar water-system components

**Sub-task**

**16.02 Diagnoses/services tanks and related components.**

**Supporting Knowledge and Abilities**

- 16.02.01 Knowledge of railcar plumbing systems/components, including manufacturer specifications, re: electric/pneumatic valves, slide valves, tanks, etc.
- 16.02.02 Knowledge of special hazards and precautions associated with railcar plumbing systems/components, e.g., WHMIS and TDG requirements for use/disposal of cleaning materials such as industrial bleaches and solvents
- 16.02.03 Knowledge of waste-product disposal protocols and requirements
- 16.02.04 Knowledge of flushing/sanitizing procedures
- 16.02.05 Ability to change out electrical/pneumatic toilet-system components
- 16.02.06 Ability to change out water-filters and other water-raising components
- 16.02.07 Ability to perform specific air/water-pipe fitting assignments
- 16.02.08 Ability to empty, repair, sterilize, and replenish potable-water tank
- 16.02.09 Ability to perform leak-testing and other diagnostic procedures

16.02.10 Ability troubleshoot system components including electric/pneumatic valves, slide valves, etc.

## BLOCK F

### YARD SYSTEMS

*Trends: There is an increased resort to remote-controlled and more ergonomically-designed switching technology, which in turn imposes change on RCT work involving yard systems. These developments also reflect in part another trend toward the development of rail-car stock that is more robustly built and affords greater weight-capacities. Increasingly sophisticated defect-sensor systems are making it easier to conduct rigorous monitoring to identify defective or malfunctioning components without needlessly interrupting the travel of properly-functioning railway cars.*

#### **Task 17 Operates reraiment equipment.**

##### **Sub-task**

#### **17.01 Sets up and uses rerailers (replacers). Supporting Knowledge and Abilities**

- |          |  |
|----------|--|
| 17.01.01 | Knowledge of specifications and significant dimensions re: rails and replacers           |
| 17.01.02 | Knowledge of procedure for using wedges and groove in reraiment operations               |
| 17.01.03 | Ability to assess rerailing requirements   |
| 17.01.04 | Ability to match replacer with rail as a function of height, weight, and length          |
| 17.01.05 | Ability to adapt rerail techniques and equipment to particular assignment specifications |

##### **Sub-task**

#### **17.02 Operates jacks to rerail cars. Supporting Knowledge and Abilities**

- |          |   |
|----------|---|
| 17.02.01 | Knowledge of jacking principles and practices                   |
| 17.02.02 | Knowledge of types of jack, their capacities, and preferred use |



- 17.02.03 Knowledge of special hazards and precautions re: jacking operations, including placement/plumbness of jack, ground conditions, etc.
- 17.02.04 Ability to set up jack in such a way as to maximize stability and mechanical efficiency
- 17.02.05 Ability to crib, block, jack, and rejack as required

**Sub-task**

**17.03 Operates crane to rerail cars.**

**Supporting Knowledge and Abilities**

- 17.03.01 Knowledge of crane regulatory environment, including certification requirements where applicable
- 17.03.02 Knowledge of company-provided Learning Management System (LMS) resources and requirements re: hoisting-equipment operation
- 17.03.03 Knowledge of rigging standards and procedures
- 17.03.04 Knowledge of engineered-lift specifications including provisions re: ground condition, blocking, crane stability, overhead/other clearances, environmental conditions, etc.
- 17.03.05 Ability to secure all applicable authorization/qualifications required to operate such railway-sector hoisting equipment as gantry cranes, overhead cranes, mobile cranes, boom trucks, forklifts, scissor-lifts, etc.
- 17.03.06 Ability to assess and rig loads per specific load-geometry, lift-points, equipment configuration, rigging, etc.
- 17.03.07 Ability to transport, set up, and manipulate controls, and coordinate jobsite personnel for the operation of hoisting equipment

17.03.08 Ability to perform engineered and lifts per provided specifications

**Task 18 Performs switching.**

**Sub-task**

**18.01 Operates railcar-mover per switching assignment and Yard Operating rules.**

**Supporting Knowledge and Abilities**

- 18.01.01 Knowledge of Yard Operating rules
- 18.01.02 Knowledge of regulatory requirements applicable to railcar-mover operation
- 18.01.03 Knowledge of engineered-lift specifications including provisions re: ground condition, blocking, crane stability, overhead/other clearances, environmental conditions, etc.
- 18.01.04 Knowledge of rigging standards and procedures
- 18.01.05 Knowledge of company-provided Learning Management System (LMS) resources and requirements
- 18.01.06 Ability to interpret switching assignments and Yard Operating rules
- 18.01.07 Ability to satisfy applicable standards and protocols, e.g., company certification
- 18.01.08 Ability to operate railcar-mover in accordance with specific situational and regulatory requirements

**Sub-task**

**18.02 Operates switches and derails.**

**Supporting Knowledge and Abilities**

- 18.02.01 Knowledge of roles, responsibilities, and protocols re: switching

- 18.02.02 Knowledge of track-protection devices including the standard derail, special derail, blue derail, portable derail, derail switches, power derails, etc.
- 18.02.03 Knowledge of procedure and associated rationale re: selection/use of derailleurs for track-protection and other specified purposes
- 18.02.04 Knowledge of rules/regulations and standards associated with use of derailleurs, e.g., required placement.
- 18.02.05 Ability to select/use derail equipment including derail-lock in accordance with rules/regulations
- 18.02.06 Ability to accept formal responsibility for physically moving railcars on track(s)
- 18.02.07 Ability to determine/monitor activities of multiple crews (including one's own) operating within shared or adjacent track-area(s)
- 18.02.08 Ability to adapt derailer use to suit special conditions, e.g. to restore function of frozen/damaged equipment using picks, jackhammer, tiger torch, brooms, air compressors, hammer drills, etc.

**Task 19 Performs Certified Car Inspector (CCI) duties.**

**Sub-task**

**19.01 Applies Transport Canada specifications re: CCI responsibilities. Supporting Knowledge and Abilities**

- 19.01.01 Knowledge of regulations and company policy
- 19.01.02 Knowledge of roles/responsibilities associated with CCI protocols, e.g., distinctions between owner's responsibility and handling-line responsibility

- 19.01.03 Knowledge of inspection criteria and requirements for interpreting inspection criteria
- 19.01.04 Ability to apply inspection method and criteria to a given situation, e.g., to ensure that shiftable loads are secured
- 19.01.05 Ability to act in accordance with distinctions between line-handler and owner responsibilities, e.g., regarding wheel defects/damage

**Sub-task**

**19.02 Monitors/reports violations per regulatory requirements.**

**Supporting Knowledge and Abilities**

- 19.02.01 Knowledge of regulations and company policy
- 19.02.02 Knowledge of roles/responsibilities associated with CCI certification documentation, e.g., distinctions between owner's responsibility and handling-line responsibility
- 19.02.03 Knowledge of monitoring/reporting protocols
- 19.02.04 Ability to apply monitoring/reporting protocols in specific situations

**Sub-task**

**19.03 Participates in Joint Inspection Procedures to identify defects and remedies.**

**Supporting Knowledge and Abilities**

- 19.03.01 Knowledge of Joint Inspection protocols per AAR requirements and stipulations

- 19.03.02 Knowledge of procedures for preparing/using Joint Inspection Certifications, such as communicating with Claims Department per billing requirements
- 19.03.03 Knowledge of procedures for preparing/using Joint Inspection Certifications, such as document-routing protocols including communication with Claims Department per billing requirements, and for hand-offs and document-routing
- 19.03.04 Ability to identify, estimate, and document railcar damage per Joint Inspection protocols
- 19.03.05 Knowledge of railcar coding and signage conventions, e.g., Home Shop Repair decal or stencil
- 19.03.06 Ability to identify, estimate, and document railcar damage per Joint Inspection protocols
- 19.03.07 Ability to interpret railcar codes/signage, for example re: Bad Order status
- 19.03.04 Ability to compile, select, and share information as a Joint Inspection Procedure principal

## **APPENDICES**

## Appendix "A"

### Tools and Equipment

#### Safety and First Aid Equipment

dust mask	goggles
protectors	latex gloves
ear protectors	personal protective clothing
eye wash station	safety cage
face shield	safety signs
fire blanket	shields and guards
fire extinguishers	sniffers
first aid kit	welder's helmet
gloves	welding curtains

#### Measuring Devices

air pressure gauge	micrometer
alignment tool	multimeter
ball gauge	oil pressure gauge
boring bar	plastigage
caliper	pounds pull gauge
carburetor float level gauge	protractor (magnetic)
coolant tester	steel rule
cylinder bore gauge	straightedge
degree wheel	straightedge gauge
dial indicator	tape measure
engine tachometer	telescopic gauge
feeler gauge	tension gauge
graduated cylinder	thickness gauge
height gauge	tire pressure gauge
hydrometer	torque wrench
inclinometer	tread depth gauge
inside micrometer	vacuum gauge
inside/outside calipers	vernier caliper

## Diagnostic and Testing Tools

alignment tool	multimeter
borescope	pressure tester
coil tester	stethoscope
compression tester	test light
crankcase pressure test equipment	timing light
hydrometer	vacuum gauge
leak-down tester	vacuum pump
load tester	

## Hand Tools

4-way pick set	pliers
Allen wrenches	plug socket
bearing driver	probe
bearing puller	pry bar
brass mallet	punch
bushing and seal driver	rubber mallet
circlip pliers	screwdriver set
combination wrench set	snap ring pliers
crimping tool	sockets and adapters
dead-blow hammer	test light for power
file	utility knife
flashlight	wire brush
jumper lead set alligator clip	wire connector
lock wrench	wire cutting tool
magnetic pickup tool	wire stripping tool
mirror	wrench set
mechanics fingers	

## Pneumatic and Electric Power Tools

compressed air gun	impact tool
drills	riveting equipment
grinder	rotary tool
hydraulic jack	spring shock compressor
hydraulic press	valve spring compressor
impact driver	



## Cutting/Heating Tools and Equipment

electric-arc welding equipment	propane torch
heat gun	soldering equipment
oxyacetylene welding and cutting equipment	

## Shop Tools and Equipment

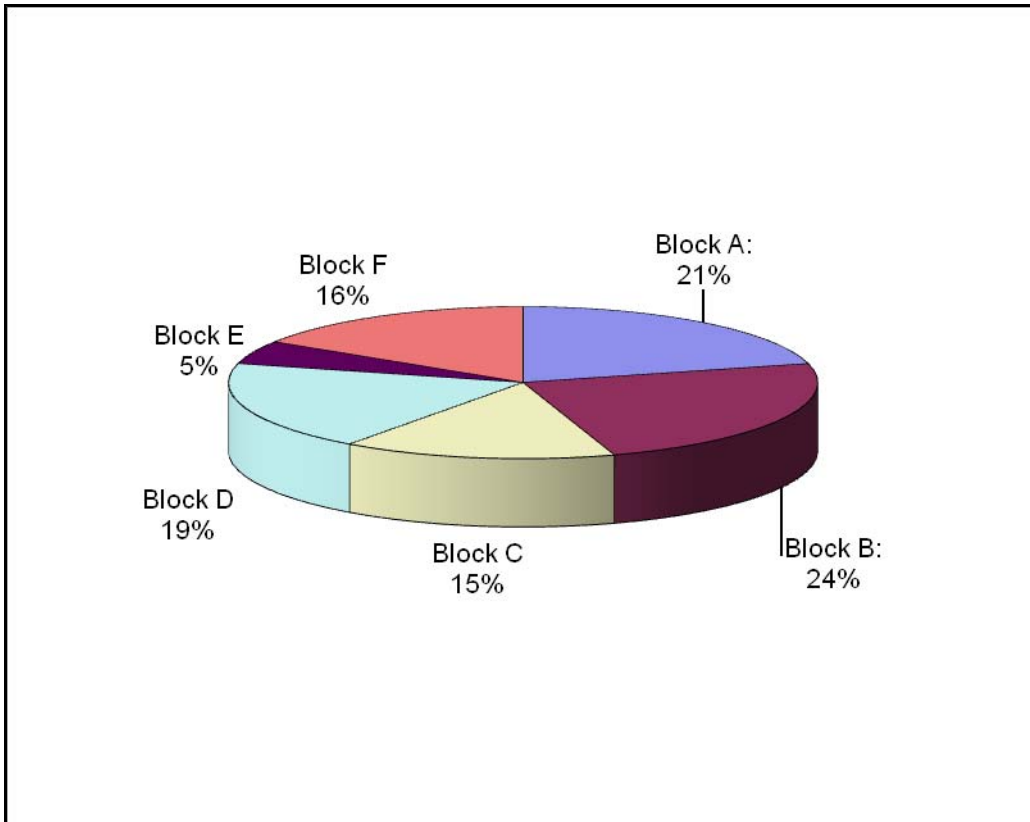
air chuck	lifting equipment
alignment bars	line lap
ball hone	magnetic base
battery charger	nitrogen recharging unit
battery terminal cleaner	“O”-ring tool set
bearing installation tool	piston pin puller
bench grinder	reamers
bleeding equipment	ring compressor
brake cylinder hone	riveting tools
cable lubber	rotary drive shaft puller
carbon scraper	scraper
chain breaker	seal driver
computer diagnostic equipment	seal installer
crank aligning jig	seal remover
crank installer	slide hammer
crankcase separator	spark plug gauge
crankshaft puller	tensioner socket
cylinder hone	threaded insert
damper rod holder	tin snips
degree wheel	tirebalancing equipment
dynamometer	tire iron
electrical termination tool	tire machine
electronic diagnostic equipment	tire mounting equipment
fluid extractor	torque plates
frame jig	torx wrench
gasket remover	truing jack
gasket scraper	valve resurfacing tool
grinder	valve seat cutter
guide installation pilot	v-block
hacksaw with blades	vice
hand pump	water bath
headlight aiming equipment	wheel balancing equipment
hone	wheel jig
honing stone	

## Appendix "B"

### Block Percentages\* Titles of Blocks

Block A	Occupational Skills	21%
Block B	Underframe Systems	24%
Block C	Brake Systems	15%
Block D	Railcar Bodies and Units	19%
Block E	Climate-Control and Plumbing Systems	5%
Block F	Yard (Line-Point) Systems	16%

\* The percentages reflect the average amount of time workers within the occupation spend performing these tasks on a yearly basis.



## Appendix “C” DACUM Chart – Task Profile Chart

### Railway Car Technician

BLOCKS	TASKS	SUB-TASKS				
<b>A</b> OCCUPATIONAL SKILLS	<b>1.</b> Uses, selects and maintains tools and equipment.	1.01 Maintains safe work environment, incl. operation of energizing equipment.	1.02 Uses Personal Protective Equipment (PPE).	1.03 Uses selects, and maintains hand tools.	1.04 Uses selects, and maintains power tools.	1.05 Uses rigging and lifting equipment.
		1.06 Bends/fits fits air-, water-, and pneumatic pipes, including thread-cutting.	1.07 Uses welding and cutting equipment per applicable regulations.	1.08 Paints rail equipment and components.	1.09 Uses fasteners, adhesives, sealants, lubricants, gaskets, etc.	1.10 Uses computers.
	<b>2.</b> Organizes work.	2.01 Communicates with others.	2.02 Coaches and mentors apprentices.	2.03 Uses technical documents.	2.04 Interprets and complies with standards and regulatory documents.	2.05 Plans daily tasks per work- assignment.
	<b>3.</b> Operates cranes and boom trucks per applicable regulations.	3.01 Transports and sets up cranes and hoisting equipment.	3.02 Uses load charts and engineered lift- plans to organize lift and advise crew.	3.03 Executes lift.		
<b>4.</b> Fabricates railcar components from metal and wood materials.	4.01 Designs/ lays out parts and components for fabrication.	4.02 Executes fabrication plan per relevant specifications.	4.03 Verifies fit and finish of fabricated part/component.			
<b>B</b> UNDERFRAME SYSTEMS	<b>5.</b> Diagnoses and services wheel/axle assemblies.	5.01 Diagnoses and services freight- car wheel /axle assemblies.	5.02 Diagnoses and services passenger-car wheel/axle assemblies.			
	<b>6.</b> Diagnoses and services coupling units.	6.01 Inspects couplers, knuckles, yokes, draft-gears and associated components.	6.02 Selects/ interprets Procedural Sheets per job requirements.	6.03 Assembles/ disassembles, knuckles, yokes, draft-gears and associated components.	6.04 Reconditions couplers knuckles , yokes, and other equipment.	

BLOCKS	TASKS	SUB-TASKS				
<p style="text-align: center;">B UNDERFRAME SYSTEMS <i>(continued)</i></p>	<p>7. Diagnoses/ services cushion units.</p>	<p>7.01 Inspects/services centre-of-car cushion units.</p>	<p>7.01 Inspects/services end-of-car cushion units.</p>			
	<p>8. Diagnoses/ services structural underframe units.</p>	<p>8.01 Diagnoses/ services chassis and chassis components.</p>	<p>8.02 Diagnoses/ services centre- sill.</p>	<p>8.03 Diagnoses/ services underframe trucks.</p>		
<p style="text-align: center;">C BRAKE SYSTEMS</p>	<p>9. Diagnoses/ services air- brakes.</p>	<p>9.01 Diagnoses air- brake system and components.</p>	<p>9.02 Services air- brake system and components.</p>	<p>9.03 Services air- brake system consumables.</p>		
	<p>10. Diagnoses/ services hand- brakes.</p>	<p>10.01 Diagnoses hand-brake system and components.</p>	<p>10.02 Services hand- brake system and components.</p>	<p>10.03 Services hand- brake system consumables.</p>		
<p style="text-align: center;">D RAILCAR BODIES and UNITS</p>	<p>11. Diagnoses/ services open- top freight-car bodies.</p>	<p>11.01 Diagnoses/ services gondola-car components.</p>	<p>11.02 Diagnoses/ services bulkhead/ flat- car components.</p>	<p>11.03 Diagnoses/ services intermodal/other freight-car components.</p>		
	<p>12. Diagnoses/ services enclosed freight-car bodies.</p>	<p>12.01 Diagnoses/ services hopper-car components.</p>	<p>12.02 Diagnoses/ services boxcar components.</p>	<p>12.03 Diagnoses/ services autorack-car components.</p>		
	<p>13. Diagnoses/ services miscellaneous freight-car bodies.</p>	<p>13.01 Diagnoses/ services tanker- car components.</p>	<p>13.02 Diagnoses/ services caboose components.</p>			
	<p>14. Diagnoses/ services passenger-car bodies.</p>	<p>14.01 Diagnoses/ services baggage-car bodies.</p>	<p>14.02 Diagnoses/ services domed (park/skyline)- car bodies.</p>	<p>14.03 Diagnoses/ services coach- car components.</p>	<p>14.04 Diagnoses/ services diner- car components.</p>	<p>14.05 Diagnoses/ services sleeper-car components.</p>

BLOCKS	TASKS	SUB-TASKS		
<p style="text-align: center;">E</p> <p>CLIMATE-CONTROL and PLUMBING SYSTEMS</p>	<p>15. Diagnoses/ services climate-control system and components.</p>	<p>15.01 Assists in removal, reinstallation, and replacement of air-conditioning components.</p>	<p>15.02 Assists in removal, reinstallation, and replacement of heating-system components.</p>	<p>15.03 Diagnoses/ services caboose-heater.</p>
	<p>16. Diagnoses/ services plumbing system and components.</p>	<p>16.01 Diagnoses/ services pumps, hoses, and related components.</p>	<p>16.02 Diagnoses/ services tanks, and related components.</p>	
<p style="text-align: center;">F</p> <p>YARD SYSTEMS</p>	<p>17. Operates reraiment equipment.</p>	<p>17.01 Sets up and uses rerailers (replacers).</p>	<p>17.02 Operates jacks to rerail cars.</p>	<p>17.03 Operates crane to rerail cars.</p>
	<p>18. Performs switching.</p>	<p>18.01 Operates railcar-mover per switching assignment and Yard Operating Rues.</p>	<p>18.02 Operates switches and derails.</p>	
	<p>19. Performs Certified Car Inspector (CCI) duties.</p>	<p>19.01 Applies Transport Canada specifications re: CCI responsibilities.</p>	<p>19.02 Monitors/reports violations per regulatory requirements.</p>	<p>19.03 Participates in Joint Inspection Procedure to identify defects and remedies.</p>